1 The Epidemiology of Asthma

Key points:

- Asthma is one of the most common chronic diseases, affecting all age groups.
- It is currently estimated that 300 million people in the world have a diagnosis of asthma.
- In the UK, 5.2 million people currently receive treatment for asthma.
- In the UK, one in ten children have a diagnosis of asthma.
- The incidence of asthma is highest in affluent English-speaking countries.
- Asthma mortality is falling but the majority of asthma deaths are preventable.
- In 2005, 1136 people died as a result of asthma.
- Asthma costs the NHS £889 million a year.
- The total cost of asthma to the UK economy is £2.3 billion a year when you take into account sickness benefits and lost production.

INTRODUCTION

Asthma is one of the most common chronic diseases affecting all age groups, and is particularly prevalent in children. Despite a lot of research, it is still not known why some people get asthma and some don’t. We do know that it is more common in people who have a family history of asthma or related atopic conditions such as eczema or allergic rhinitis, and also that people who have these allergic-type diseases themselves are more likely to suffer from asthma.

INCIDENCE AND PREVALENCE

The incidence of a condition refers to the number of new cases that arise during a specified period of time. Prevalence describes the proportion of people who have that condition, and may be measured at a single point in time, over a defined period of time or over an individual’s entire lifetime.

It has been estimated that around 300 million people in the world currently have asthma, with large variations in prevalence in different regions. The condition is much more prevalent in childhood, and it is thought that at least one in ten children currently have a diagnosis of asthma in the UK. It is also more common in boys than in girls.
ASTHMA CARE IN THE COMMUNITY

during childhood, but this difference evens out as children approach adolescence and then it becomes more common in girls.

True figures about the prevalence of asthma are very difficult to ascertain due to methodological difficulties in obtaining this sort of data. There are large variations in classification, and inconsistent methods of interpreting symptoms in different countries. Diagnostic procedures are not consistent as there is no specific diagnostic tool that can be used to identify asthma. Most of the data therefore is derived from written questionnaires which have used the occurrence of self-reported wheeze as being the most important symptom for identifying asthma. The two main studies to report on asthma prevalence used this format and asked specifically about self-reported wheeze in the previous 12 months.

The International Study of Asthma and Allergies in Childhood (ISAAC), in its Phase 1 Study [1], investigated symptom prevalence in children in the 13–14 year age group and found that prevalence varied between 6 and 32%. Prevalence was lowest in India, Eastern Europe, China and the former Soviet Union, and highest in the affluent English-speaking countries. The other study, the European Community Respiratory Health Survey (ECRHS) [2] concentrated on the 20–44 year age group, and found an overall prevalence of 6.9%, with prevalence being highest in Australia, New Zealand, the United States and the UK, and lowest in parts of Spain, Germany, Italy and India.

In its Phase III study [3], ISAAC found that the prevalence of asthma, allergic rhinoconjunctivitis and eczema is continuing to increase in the younger age group children, that is children aged 6–7 years, but decreasing in those children in the higher age group, that is children in the 13–14 year age range.

Despite general acceptance of this method of collecting information, it should be recognized that there are a number of limitations in the interpretation of such data. It can not be taken for granted that self-reported wheeze is diagnostic of asthma, as wheeze can be a symptom of many respiratory diseases. Many children, for example, have wheezing episodes during infancy that never become asthma. Similarly, older children and adults may suffer from respiratory infections which cause wheezing, but which disappear after treatment.

In the UK in 2003, the General Medical Services Contract for General Practitioners was introduced [4]. One of the components of the Contract is the Quality and Outcomes Framework (QOF), which was developed to try to improve the quality of care for a number of long-term conditions, including asthma. The QOF identifies certain service indicators for each condition and the practice is financially rewarded if these indicators are achieved. One of the indicators for asthma is that the practice can produce a register of asthma patients. Although at present this data has not been validated for epidemiological purposes, it is thought that in the future it may well provide a valuable and reliable source of information about asthma prevalence in the UK.

Until there is considerable improvement and agreement in diagnostic criteria between countries, however, the self-reported questionnaire continues to be the mainstay of obtaining data about the prevalence of asthma worldwide.
THE EPIDEMIOLOGY OF ASTHMA

PREVALENCE OF ASTHMA IN THE UK

In the UK, it is estimated that 5.2 million people currently receive treatment for asthma, 1.1 million of these are children under the age of 16 [5]. In its recently updated statistics report, the British Thoracic Society [6] state that in England, about 4% of the population report wheezing in the past year. Recent reports from the QOF data suggest that the number of patients currently being treated for asthma range from 3.2 to 7.4% across England [7]. This variation is thought to reflect differences in age groups and socio-economic factors.

MORTALITY

Fortunately, deaths from asthma are not common and the death rate is steadily falling, although not as fast as one would hope, given that there are much more effective treatment strategies available now than there were in the past. Over the last 40–50 years, mortality from asthma has declined; however, there have been several, short-lived, and largely unexplained, increases in asthma mortality. For example in the mid 1960s there appeared to be an increase in the numbers of asthma deaths reported, which was thought to be related to certain medication usage, as will be discussed later in this chapter. Similarly in the late 1980s and early 1990s there was a sharp rise in numbers of asthma deaths, but it has been suggested that changes in diagnostic practices, especially in differentiating between COPD and asthma, may explain this event. Up until around the mid 1990s, about 2000 people died every year from asthma in the UK. However, since then, there has been a slow but steady decrease as shown in Figure 1.1. In 2005, 1136 people died as a result of asthma.

The sad fact about asthma deaths is that a large proportion of them should never have happened. In 1982, the then British Thoracic Association published a study looking at asthma deaths in England and found that 86% of these deaths may have been preventable by better management [8]. The report concluded that patients needed more rigorous drug treatment and better follow-up. It would be reasonable to expect that things have improved since then; however, subsequent studies are still showing serious shortcomings in asthma management and, unfortunately, unnecessary deaths [9–11]. These studies highlighted under-treatment with inhaled steroids and inadequate routine monitoring of patients.

A number of other contributing factors to asthma deaths were also identified in these studies which are much more difficult to deal with. These included patient behaviour and circumstances. In all the studies, the majority of patients who died from asthma were shown to have adverse psychosocial factors such as depression, psychosis, stress or poor living conditions. It was also found that many patients who died from asthma delayed calling for medical help in the final, fatal attack. Poor concordance with preventer medication and over-reliance on reliever inhalers have also been shown to contribute to asthma deaths.
Figure 1.1. Standardized mortality ratio for asthma deaths from 1991 to 2000.


Over the last 30–40 years there has been a great debate as to whether the use of short-acting B2 agonists has contributed to asthma deaths. In the mid 1960s, for example, there was a sharp rise and subsequent fall in asthma deaths in several countries, including the United Kingdom, which was linked to the introduction of isoprenaline, a nonselective B agonist drug. The death rate fell when the drug was subsequently withdrawn. In New Zealand in the 1970s, an increase in asthma deaths corresponded to an increase in prescriptions for another B2 agonist, fenoterol.

Three recent studies [12–14] found that there was high usage of short-acting bronchodilators among patients who died from asthma, but the authors could not conclude whether the drugs actually contributed to these deaths. It has been suggested that patients with severe disease would naturally be using more short-acting bronchodilators, and that it was the severity of the disease rather than the drugs that actually caused the deaths.

In 2006, the results of a large American study were published investigating asthma deaths in relation to the use of long-acting B2 agonists. This study concluded that there were more asthma deaths in the group of patients using a long-acting B2 agonist than in the placebo group [15]. However, the majority of the patients who died were not using an inhaled steroid and were from a more disadvantaged social background. Similarly, a meta-analysis of studies looking at long-acting B2 agonist use and asthma severity found that those patients using these drugs had a higher hospital admission rate and episodes of life-threatening asthma [16]. However, there has been some debate as to the interpretation of the data of this particular study. In contrast to both these studies, researchers in the UK found that there was no connection between
THE EPIDEMIOLOGY OF ASTHMA

asthma deaths and the use of long-acting B2 agonists [17]. The Commission on Human Medicines has now recommended that further, reliable research is conducted into this issue. (See Chapters 5 and 7 for current advice on the use of long-acting B2 agonist drugs.)

Asthma mortality is now falling by about 6% each year in England and Wales.

THE ECONOMIC AND SOCIAL BURDEN OF ASTHMA

It is estimated that asthma is costing the National Health Service (NHS) over £889 million a year [5]. The majority of this cost is taken up by prescriptions, closely followed by GP consultations and hospital admissions. However, other factors also have to be taken into account such as lost productivity, and social security benefits because of sickness and absence from work. The total cost is thought to be more in the region of £2.3 billion a year when these other factors are taken into account.

SUMMARY

Asthma is a common, chronic condition affecting all age groups, but with the highest prevalence in children. Accurate data is difficult to obtain due to methodological difficulties in collecting the information. It is important, however, to try to gain reliable information about the prevalence of asthma in order to develop services, and target resources effectively.

Mortality from asthma is fortunately relatively rare, but given that there are very effective treatments available for asthma, the death rate is unacceptable. Studies have shown that the majority of asthma deaths may have been preventable by better management and follow-up. We should also be looking for ways of reaching patients who are psychologically, or socially disadvantaged, as this group of people has been shown to be more likely to suffer fatal or near fatal attacks of asthma.

REFERENCES

6 ASTHMA CARE IN THE COMMUNITY