

The burden of respiratory disease in childhood

Introduction

The prevalence of long-term respiratory illness in children is greater than that from all other chronic conditions combined (table 1). Respiratory disease (both acute and chronic) accounts for 20% of weekly GP consultations, 15% of hospital admissions and 8% of deaths in childhood. Among respiratory illnesses, acute viral upper respiratory infections and asthma attacks are the commonest with asthma also being the most common chronic disease in children. A significant proportion of drug costs are also generated by childhood respiratory illnesses. Morbidity is substantial including time spent symptomatic, school loss and work absence in the parents of young children.

GP consultations

Among children, about a fifth of all GP consultations are classified as resulting from the respiratory system with another 2% registered as symptoms and signs involving respiratory disease (see also factsheet 95/3). Across all age groups, the greatest rate of consultations is for the common cold and other upper respiratory tract infections (figure 1a). Bronchiolitis is the most common illness of the lower respiratory tract in the under 1 year olds and acute cough or bronchitis in the 1-4 year olds (figure 1b, note the differing scales). Asthma is the second most common respiratory cause over all ages (3% of all consultations) with a weekly incidence rate of GP consultations of almost 1 per 1000 population, in the 1-4 year olds. In the older age group the rate of consultation for hayfever and allergic rhinitis is comparable with that for asthma.

Weekly acute asthma consultation rates rose steeply in earlier decades (figure 2) but have fallen rapidly more recently. The prevalence of GP treated asthma in 5-15 year olds shows only a slight increase over the years 1994-1998 (figure 3). The rate in 0-4 year old children has not changed and in both age groups asthma prevalence is higher in boys

Table 1

Prevalence of long-term illness and percentages of weekly GP consultations, annual hospital admissions and deaths in children, by broad underlying cause groups

	Prevalence of long-term illness ¹ per 1000	Weekly GP consultations ² %	Hospital admissions ³ %	Deaths Neonatal ⁴ %	Childhood ⁵ %
I Infectious and parasitic	2	8	6	<1	8
II Neoplasms	2	<1	3	<1	12
III Endocrine, nutritional, metabolic, immunity	5	<1	1	1	3
IV Blood & blood-forming organs	2	<1	2	<1	1
V Mental disorders	11	1	1	<1	<1
VI Nervous system and sense organs	17	9	8	1	12
VII Circulatory system	8	<1	1	3	6
VIII Respiratory system	138	20	15	1	8
IX Digestive system	10	2	10	<1	2
X Genitourinary system	7	2	4	1	1
XI Pregnancy, childbirth, puerperium	-	<1	-	-	-
XII Skin and subcutaneous tissue	43	9	2	0	0
XIII Musculoskeletal system & connective tissue	17	2	2	<1	<1
XIV Congenital anomalies	-	<1	6	18	15
XV Conditions originating in the perinatal period	-	}43	15	71	3
XVI Symptoms, signs and ill-defined conditions	-		14	2	11
XVII Injury and poisoning	-	3	10	1	18
Total number			1,189,899	2828	2584

1 Age 2-15 years, England 1995-1997 (Health Survey for England)
 2 Age 0-14 years, England 2002 (FCGP Weekly Returns Service)
 3 Age 0-14 years, England 2000/01 (Hospital Episode Statistics)
 4 Age <28 days, England & Wales 2001 (Office National Statistics)
 5 Age 28 days-15 years, England & Wales 2001 (Office National Statistics)



Figure 1

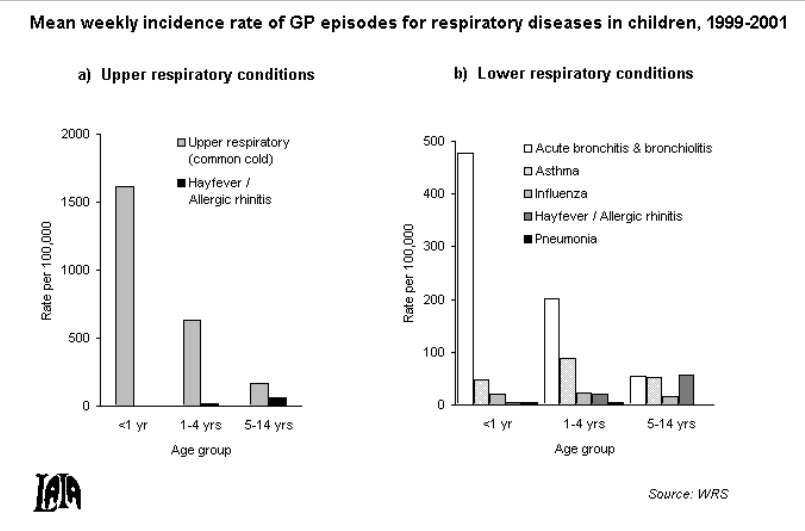
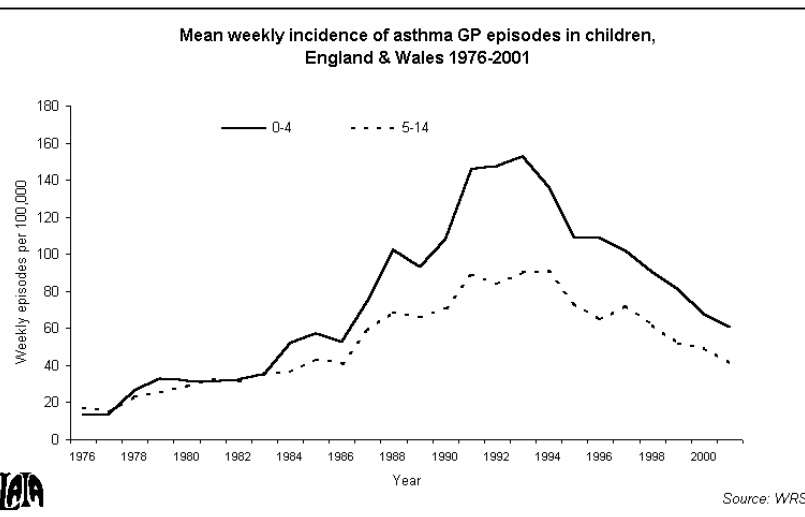


Figure 2



compared with girls (13% in boys compared with 10% in girls in 5-15 year olds and 10% versus 7% in 0-4 year olds).

The decline in new episodes of acute asthma in general practice parallels the decline in hospital admissions. This, despite the absence of a decline in GP treated prevalence rates, may indicate improved treatment.

Hospital Admissions

In 2000/01, respiratory disease accounted for 15% of all children's hospital admissions in England. Almost a third of all lower respiratory admissions in children and 40% in the 1-4 year olds were due to asthma (table 2). Croup and pneumonia are important causes in the under 5 year olds.

Acute bronchiolitis is the second most common cause for admission in all children. This is a disease limited to very young children with a hospital admission rate of 3611 per 100,000 in the under 1 year olds. There is a marked seasonal variation in these admissions (see factsheet 93/3). Bronchiolitis peaks in winter and poses a considerable burden on all health care resources, particularly GP time and in-patient beds.

There has been a rapid downward trend for asthma admissions during the last decade (figure 4). This contrasts with the rising trend seen over the 1970s and 1980s (see fact sheet 96/2). During this same period, admissions for acute bronchitis have also fallen, from 18 to 7 per 100,000, whilst those for acute bronchiolitis and other acute lower respiratory tract infections have remained broadly stable.

Neonatal admissions are largely the consequence of prematurity. Many of these have associated respiratory disease (N=23,640, 4200 per 100,000 livebirths in 2000) of which 7400 were for respiratory distress of the newborn.

Figure 3

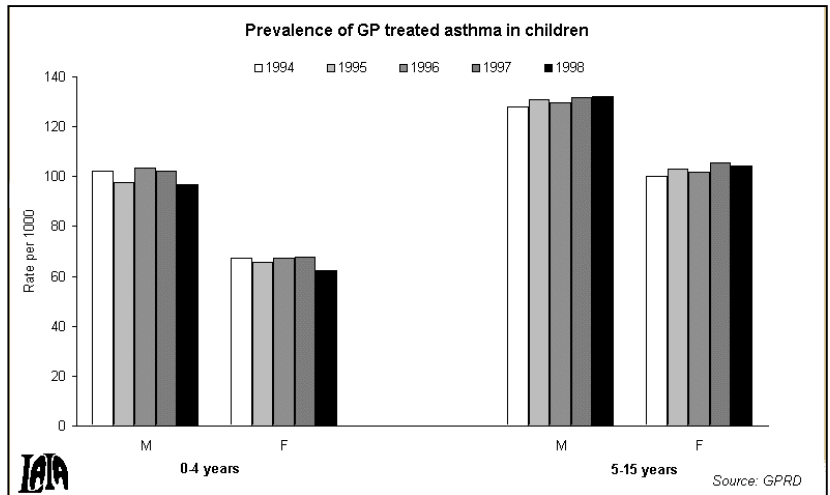
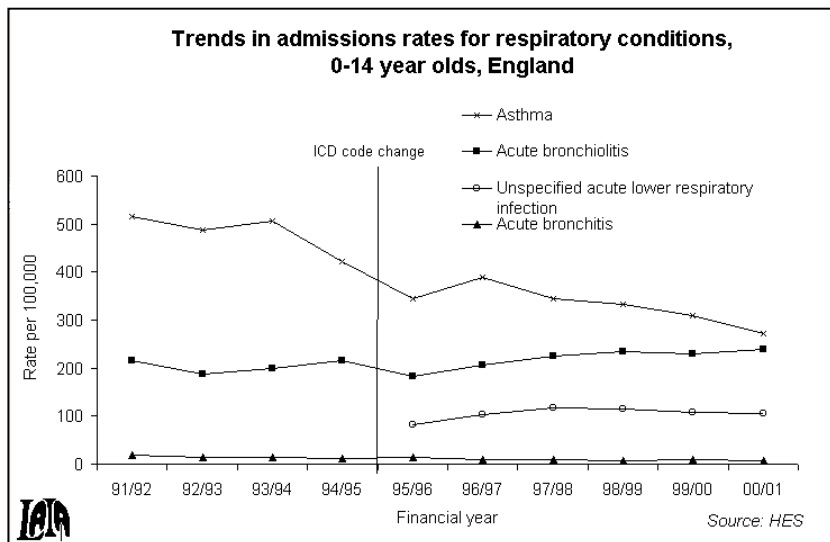


Table 2

	Age in years				
	<1	1-4	5-9	10-14	All children
Asthma	179	558	211	135	272
Acute bronchiolitis	3611	73	1	0	240
Pneumonia	373	246	55	24	113
Unspecified acute lower respiratory infections	402	230	43	23	106
Croup	299	253	33	5	96
Cystic fibrosis	38	29	34	54	40
Acute bronchitis	46	12	2	1	7
Empyema	10	5	3	2	4
Bronchiectasis	3	2	2	2	2
Respiratory tuberculosis	4	2	0	2	2
Interstitial lung disease	3	2	0	0	1
Total	4967	1414	385	249	882

Figure 4



Mortality

Neonatal Deaths

There were 2335 neonatal deaths in England and Wales in 2000 with diseases of the respiratory system accounting for one third of these (131 per 100,000 livebirths). However, diagnostic labels are not always specified; approximately 50% of neonatal respiratory deaths were classified as "other conditions" (figure 5). Sixteen percent were from respiratory distress syndrome associated with prematurity while congenital anomalies, including diaphragmatic hernia, accounted for 14% of respiratory deaths.

Children's Deaths

Pneumonia is certified as the cause of four times more deaths in children aged 0-14 years than asthma (figure 6). Three-quarters of deaths from pneumonia occur under 4 years of age. In the year 2000, 13 (60%) of the total of 22 asthma deaths in England and Wales occurred in children aged 10-14 years. Difficulties in treatment adherence in this age group may be contributory.

Since 1986 deaths in neonates (under 28 days) have been classified separately and not included in children's deaths. Time trends from 1986-2000 are shown in figure 7. The most striking observation is the decline in deaths from pneumonia which continued until 1992 when a change in the rules on coding final cause of death may have raised the number classified as pneumonia. Rates from 1992-2000 have remained static. Mortality rates for many respiratory conditions have declined, including bronchiolitis, cystic fibrosis and bronchitis. A change in disease labelling may have contributed to, though does not explain, the fall in rates for bronchitis. Mortality rates from asthma increased in the early 1980s, declined from 1990 and have shown little change since 1993.

Other conditions

Tuberculosis

TB notification rates (including extra-pulmonary disease) in children in England and Wales fell during the 1980s (figure 8). After a transient peak in 1993 they have shown little fluctuation and stood at 4.6 per

Figure 5

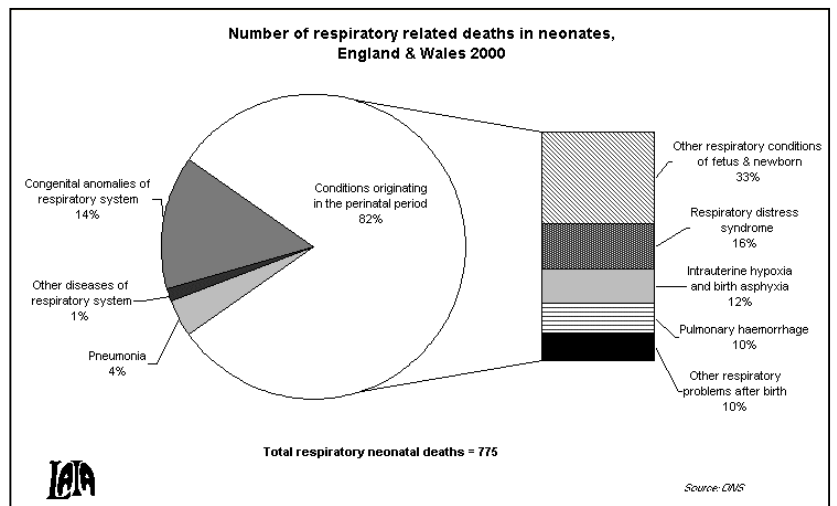


Figure 6

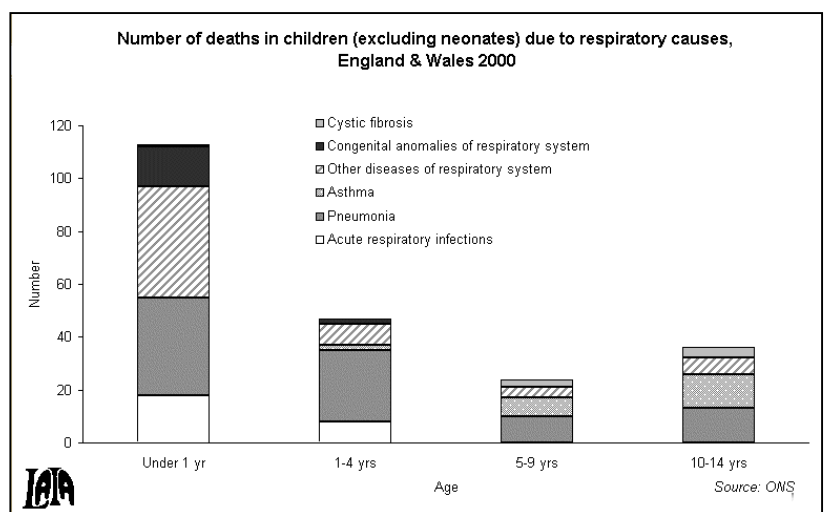


Figure 7

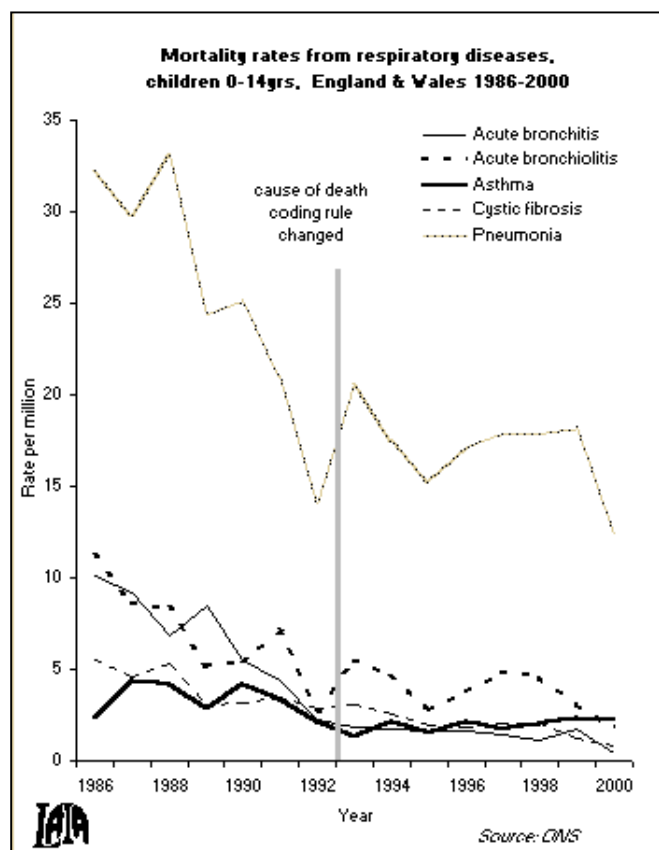
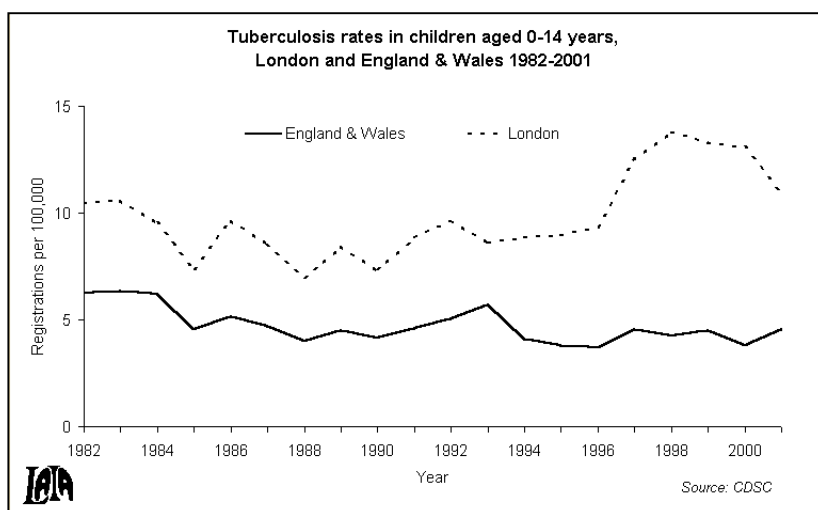


Figure 8

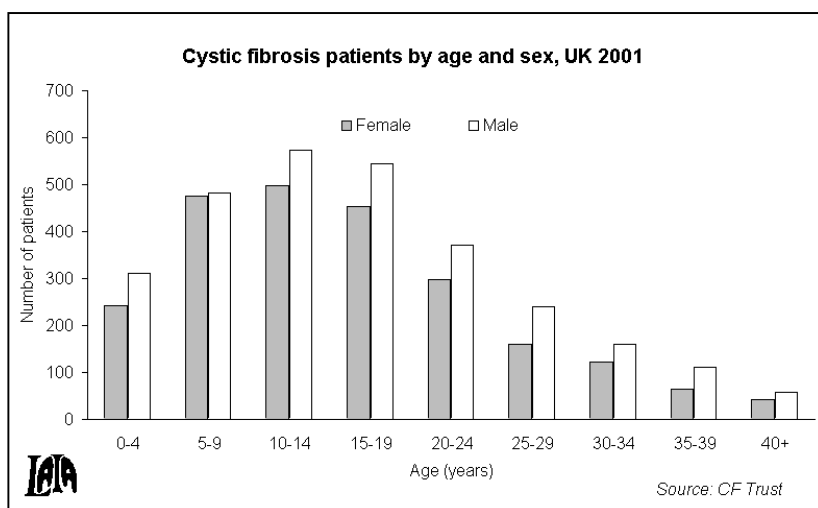
100,000 population (448 notifications) in 2001 in 0-14 year olds. Rates in London showed a similar trend until 1994 for all children's age groups. Since then, the rates have risen sharply peaking in 1998 with 13.8 notifications per 100,000 0-14 year olds. In 2001 the London rate was 11.0 per 100,000 (150 notifications), more than double the national rate. This recent increase in the capital could be due to increased deprivation, immigration, travel or incidence of HIV.



Cystic Fibrosis

There are approximately 3500 children aged 0-16 years with CF in the UK. Children aged between 10-15 years comprise the largest group but beyond this age, the numbers decline (figure 9). There are fewer than 700 patients over the age of 30 years. This distribution of ages is expected to change over the next 20 years, reflecting improvements in survival. Current median survival is about 30 years but children born in the last decade can expect a median survival of about 40 years. Much of the improvement in survival can be attributed to better nutrition and treatment.

Figure 9



Summary

- Respiratory conditions are the commonest chronic disease group in children.
- They account for approximately 20% of GP consultations and 15% of hospital admissions.
- Childhood asthma is the most common chronic illness, and overall in childhood, accounts for more admissions than any other single condition.
- In the under 1 year olds, however, bronchiolitis is the most common cause for admission.
- Mortality from respiratory disease is approximately 8% of all childhood deaths
- Mortality rates have fallen for most respiratory diseases over the last 2 decades whilst those due to asthma remain largely unchanged.

Sources

Health of Young People (Health Survey for England), England 1995-97.
RCGP Weekly Returns Service
Hospital Episode Statistics
Office of National Statistics, Mortality Statistics
General Practice Research Database
Communicable Disease Surveillance Centre
Cystic Fibrosis Trust (www.cftrust.org.uk)

We would like to thank Dr Anne Christopher and Dr Suzanne Crowley for preparing this factsheet.