

## 5 General results

### Summary

This section gives an overview of relative contribution of different diseases to mortality and the variation in proportion of hospital admissions which are emergency or elective by condition. It documents the number of observed events on which calculations were based. It also provides a descriptive analysis of the smoking and social class data in the HSE95 on which regional adjustments were based.

The following results are considered:

- Frequency of deaths attributed to the different respiratory conditions
- Proportion of hospital admissions which were elective or emergency by disease
- Total observed number of events for each disease by data source
- Smoking and social class in the HSE95 by region

## Frequency of deaths attributed to the different respiratory conditions

The majority of deaths from respiratory conditions were due to pneumonia, accounting for over half of the deaths (Table 5.1). The next highest number of deaths was from chronic obstructive airways disease with a third of respiratory deaths. Other conditions were responsible for small proportions of respiratory deaths. Surprisingly, there was one death attributed to hayfever.

**Table 5.1 Number of deaths in England and Wales with date of death between 1991 and 1995 for selected respiratory conditions**

Condition	Number of deaths (%)
Pneumonia	199,048 (54.7%)
COPD or similar (not asthma)	123,728 (34.0%)
Other respiratory diseases	23,829 (6.6%)
Asthma	7,729 (2.1%)
Idiopathic fibrosing alveolitis	4,313 (1.2%)
Acute bronchitis or bronchiolitis	2,294 (0.6%)
Respiratory tuberculosis	1,480 (0.4%)
Cystic fibrosis	548 (0.2%)
Sarcoidosis	422 (0.1%)
Pneumothorax	227 (0.1%)
Hayfever	1 (0.0%)
Total	363,619 (100.0%)

## Proportion of hospital admissions which were elective or emergency by disease

### Method of admission

Almost all respiratory admissions in England which started in 1991-1994 could be classified as either elective or emergency (Table 5.2 and Table 5.3), but there was considerable variation in the proportion of each depending on the disease. Overall, elective admissions composed a third of all respiratory admissions and emergency admissions two-thirds. Almost all (96%) asthma admissions were emergency admissions, while 88% of COPD (excluding asthma) were emergency admissions. The majority of admissions for infections such as pneumonia and acute bronchitis or bronchiolitis were also emergency, contrasting with 82% of pneumothorax admissions, two-thirds of respiratory tuberculosis (TB) admissions and half of admissions for idiopathic fibrosing alveolitis and for cystic fibrosis. The highest proportion of elective admissions was seen in sarcoidosis, accounting for 72% of admissions.

**Table 5.2 Respiratory admissions (ICD9 codes 460-519), respiratory tuberculosis (ICD9 010-012), sarcoidosis (ICD9 135) and cystic fibrosis (ICD 277.0) by method of admission for 1991-1994**

	Elective Admissions	Emergency Admissions	Other Admissions	All Admissions
Diseases in ICD9 respiratory chapter (ICD9 460-519)	702,165 32%	1,463,195 66%	35,334 2%	2,200,694 100%
Asthma	10,480 3%	330,306 96%	3,166 1%	343,952 100%
COPD or similar (not asthma)	27,852 10%	244,760 88%	5,283 2%	277,895 100%
Hayfever	7,043 96%	295 4%	27 0%	7,365 100%
Pneumonia	9,084 4%	219,585 92%	9,421 4%	238,090 100%
Acute bronchitis or bronchiolitis	989 1%	91,803 97%	1,468 2%	94,260 100%
Respiratory tuberculosis	2,722 30%	6,036 66%	320 4%	9,078 100%
Sarcoidosis	4,123 72%	1,502 26%	88 2%	5,713 100%
Idiopathic fibrosing alveolitis	3,566 44%	4,322 53%	212 3%	8,100 100%
Cystic Fibrosis	10,811 49%	10,723 49%	552 3%	22,086 100%
Pneumothorax	2,340 9%	21,600 82%	2,278 9%	26,218 100%

### Day case elective admissions

Only 15% of elective admissions coded in the ICD9 respiratory chapter were possible day cases (Table 5.3). Approximately a third of elective asthma, COPD, pneumonia, acute bronchitis or bronchiolitis and respiratory tuberculosis admissions were possible day cases. Just under half of cystic fibrosis and hayfever elective admissions and just over half of idiopathic fibrosing alveolitis admissions were elective. The highest proportion of day case elective admissions was for sarcoidosis (61%) and the lowest was for pneumothorax (8%).

**Table 5.3 Number and percentage of possible day case elective admissions (date of end of episode same as the start date) for all diseases in the ICD9 respiratory chapter for 1991-4 and for respiratory tuberculosis, sarcoidosis and cystic fibrosis for April 1991 – December 1994**

	Possible day-case	Other	All Elective Admissions
Diseases in ICD9 respiratory chapter (ICD9 460-519)	103,611 15%	598,554	702,165 100%
Asthma	3,405 32%	7,075	10,480 100%
COPD or similar (not asthma)	9,142 33%	18,710	27,852 100%
Hayfever	3,127 44%	3,916	7,043 100%
Pneumonia	2,520 28%	6,564	9,084 100%
Acute bronchitis or bronchiolitis	316 32%	673	989 100%
Respiratory tuberculosis	974 36%	1,748	2,722 100%
Sarcoidosis	2,499 61%	1,624	4,123 100%
Idiopathic fibrosing alveolitis	1,909 54%	1,657	3,566 100%
Cystic Fibrosis	4,708 44%	6,103	10,811 100%
Pneumothorax	179 8%	2,161	2,340 100%

## Day attendances

The highest number of day attendances (Table 5.4) was seen in hayfever (24% of emergency admissions) and in cystic fibrosis (19%). The next highest was asthma with 9% of emergency admissions being day cases and all diseases in the ICD9 respiratory chapter (8%). All other diseases had a low percentage of day attendances.

**Table 5.4 Number and percentage of emergency admissions where episode ended on the same day as admission for all diseases in the ICD9 respiratory chapter for 1991-4 and for respiratory tuberculosis, sarcoidosis and cystic fibrosis for April 1991 – December 1994**

	Possible day attendance only	Other	All Emergency Admissions
Diseases in ICD9 respiratory chapter (ICD9 460-519)	115,932 8%	1,347,263	1,463,195 100%
Asthma	30,574 9%	299,732	330,306 100%
COPD or similar (not asthma)	10,028 4%	234,732	244,760 100%
Hayfever	72 24%	223	295 100%
Pneumonia	11,343 5%	208,242	219,585 100%
Acute bronchitis or bronchiolitis	5,815 6%	85,988	91,803 100%
Respiratory tuberculosis	201 3%	5,835	6,036 100%
Sarcoidosis	101 7%	1,401	1,502 100%
Idiopathic fibrosing alveolitis	209 5%	4,113	4,322 100%
Cystic Fibrosis	2,009 19%	8,714	10,723 100%
Pneumothorax	1,147 5%	20,453	21,600 100%

## Total observed number of events for each disease by data source

The observed number of events for 1994 and 1991 are presented in Tables 5.5 to 5.12. Number of events by region in 1994 and region plus urban rural division in 1991 were used to investigate whether numbers were large enough for meaningful geographical correlations between data sources. Where the number of events in at least one cell was less than ten (indicated by '†' in the tables), the ranking was judged to be unstable. This meant that statistical correlations were considered to be unreliable and so are not presented in the following results sections (sections 6 to 15, although they can be seen in the Appendices for each condition A6 to A15).

**Table 5.5 Total Observed Number of Events (1994 data) "All Ages":**

Condition	GPRD Age 0-84	HES Age 0-84	Mortality Age 0-84	HSE95 Age 2-84
Asthma	81,905	78,921	1,215	(self-reported) 1,273 (wheeze) 3,954 (inhaler use) 2,003
COPD	15,953	52,898	18,388	1,222
Pneumonia	3,260	43,784	22,436	-
Acute bronchitis or bronchiolitis	84,147	25,913	294†	-
Hayfever	55,596	71†	0†	2,832
Tuberculosis	174†	1,552	260†	-
Cystic fibrosis	100†	2,954	101†	-
Sarcoidosis	159†	427	75†	-
Idiopathic fibrosing alveolitis	211†	1,075	815	-
Pneumothorax	213†	4,937	41†	-

† Less than 10 events in at least one region

**Table 5.6 Total Observed Number of Events (1994 data) "Pre-School age":**

Condition	GPRD: age 0-4	HES: age 0-4	HSE95: age 2-4
Asthma	6,503	27,196	(self-reported) 99† (wheeze) 198† (inhaler use) 111†

† Less than 10 events in at least one region

**Table 5.7 Total Observed Number of Events (1994 data) "School age":**

Condition	GPRD: age 5-14	HES: age 5-14	HSE95: age 5-14
Asthma	20,403	13,427	(self-reported) 290 (wheeze) 456 (inhaler use) 379

**Table 5.8 Total Observed Number of Events (1994 data) “Children”:**

Condition	GPRD: age 0-14	HES: age 0-14
Asthma	26,906	40,623
Pneumonia	348	8,900
Acute bronchitis or bronchiolitis	18,889	23,386

**Table 5.9 Total Observed Number of Events (1994 data) “Adults”:**

Condition	GPRD: age 15-84	HES: age 15-84	HSE95: age 15-84
Asthma	54,999	38,298	(self-reported) 884 (wheeze) 3,300 (inhaler use) 1,513
Pneumonia	2,912	34,884	
Acute bronchitis or bronchiolitis	65,258	2,527	

**Table 5.10 Total Observed Number of Events (1991 data) “All Ages”**

Condition	GPRD: age 0-84	HES: age 0-84	Mortality: age 0-84
Asthma	57,970	79,574	1,551
COPD	13,657	54,785	20,714
Pneumonia	3,585	43,445	11,903
Acute bronchitis or bronchiolitis	95,538	24,364	378†
Hayfever	38,041	71†	0†
Tuberculosis	198†	1,167	269†
Cystic fibrosis	79†	1,751	108†
Sarcoidosis	145†	258†	86†
Idiopathic fibrosing alveolitis	184†	868	691†
Pneumothorax	228†	5,259	40†

† Less than 10 events in at least one region+urban rural division

**Table 5.11 Total Observed Number of Events (1991 data) “Children”:**

Condition	GPRD: age 0-14	HES: age 0-14
Asthma	19,581	43,316
Pneumonia	500†	9,474
Acute bronchitis or bronchiolitis	2,446	21,973

† Less than 10 events in at least one region+urban rural division

**Table 5.12 Total Observed Number of Events (1991 data) “Adults”:**

Condition	GPRD: age 15-84	HES: age 15-84
Asthma	38,389	36,258
Pneumonia	3,085	33,971
Acute bronchitis or bronchiolitis	73,092	2,391†

† Less than 10 events in at least one region+urban rural division

## Smoking and social class in the HSE95 by region

### Smoking

The percentage of current smokers ranged from 22.7% in Oxford to 31.8% in South East Thames (Table 5.13). Northern regions generally had higher prevalences of current smokers than southern regions. The percentage of never regular smokers ranged from 43% in South East Thames to 51% in Oxford region but this category did not show an obvious north-south difference.

**Table 5.13 Percentage of current smokers, ex smokers and never smokers aged 15+ years by region in the HSE95 ranked by percentage of current smokers**

Region	Current smokers	Ex smokers	Never regular smokers	Total
SE Thames	348 (31.8%)	281 (25.7%)	465 (47.2%)	1,094 (100%)
North Western	396 (31.2%)	284 (22.4%)	588 (42.5%)	1,268 (100%)
Northern	325 (30.2%)	262 (24.3%)	493 (50.9%)	1,080 (100%)
Mersey	225 (29.4%)	206 (26.9%)	334 (42.6%)	765 (100%)
Yorkshire	365 (29.0%)	315 (25.0%)	579 (50.2%)	1,259 (100%)
East Anglia	225 (28.7%)	207 (26.4%)	351 (47.7%)	783 (100%)
NW Thames	305 (27.9%)	269 (24.6%)	518 (47.5%)	1,092 (100%)
Trent	451 (27.3%)	422 (25.5%)	781 (48.1%)	1,654 (100%)
NE Thames	309 (26.6%)	270 (23.2%)	584 (47.3%)	1,163 (100%)
Wessex	272 (26.4%)	319 (31.0%)	438 (46.0%)	1,029 (100%)
SW Thames	270 (26.2%)	265 (25.7%)	495 (46.4%)	1,030 (100%)
West Midlands	446 (25.9%)	461 (26.8%)	816 (43.7%)	1,723 (100%)
South Western	295 (24.0%)	348 (28.3%)	586 (44.9%)	1,229 (100%)
Oxford	201 (22.7%)	231 (26.1%)	454 (45.6%)	886 (100%)
Total	4,433 (27.6%)	4,140 (25.8%)	7482 (46.6%)	16,055 (100%)

## Social class

The regional distribution of social class of head of household in the HSE95 is shown in Table 5.14. The percentage in social classes I and II ranged from 28% in Trent to 43% in South West Thames. The percentage in social classes IV and V ranged from 11% in South West Thames to 25% in Northern region. Generally, northern areas of England had the highest percentages of people in social classes IV and V and the lowest proportions in social classes I and II.

**Table 5.14 Social class distribution by region from the HSE95, ranked by percentage in social classes IV and V**

Region	Social class groupings (relating to social class of head of household)									
	I & II		IINM		IIM		IV & V		Other (student, armed forces etc)	
	No.	%	No.	%	No.	%	No.	%	No.	%
Northern	391	28.9%	127	9.4%	428	31.7%	335	24.8%	71	5.3%
Trent	579	28.3%	216	10.6%	622	30.5%	500	24.5%	126	6.2%
N Western	455	28.4%	205	12.8%	463	28.9%	367	22.9%	112	7.0%
Yorkshire	501	32.2%	192	12.4%	437	28.1%	331	21.3%	93	6.0%
W Midlands	660	30.9%	250	11.7%	675	31.7%	424	19.9%	124	5.8%
E Anglia	316	33.6%	114	12.1%	291	30.9%	177	18.8%	43	4.6%
Mersey	305	32.6%	94	10.0%	314	33.5%	173	18.5%	51	5.4%
SE Thames	498	36.9%	181	13.4%	331	24.5%	247	18.3%	93	6.9%
S Western	559	37.6%	198	13.3%	420	28.2%	271	18.2%	39	2.6%
NE Thames	479	33.0%	225	15.5%	386	26.6%	254	17.5%	108	7.4%
Wessex	488	38.8%	155	12.3%	357	28.4%	192	15.3%	66	5.3%
NW Thames	554	41.8%	176	13.3%	290	21.9%	183	13.8%	121	9.1%
Oxford	475	43.0%	122	11.0%	269	24.3%	151	13.7%	89	8.1%
SW Thames	540	43.2%	215	17.2%	276	22.1%	138	11.1%	80	6.4%
Total	6,800	34.4%	2,470	12.5%	5,559	28.1%	3,743	18.9%	1,216	6.2%