Hospital Admission and Absence from Work Attributed to Asthma

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Brit. med. J., 1969, 1, 402-403

Summary: Study of a 10% sample of hospital admissions for asthma in England and Wales shows that in each age and sex group deaths have increased by at least a half between 1959 and 1964, while for males aged 15-44 years they have doubled. The number of deaths in hospital has risen in a similar way, and hence the hospital fatality rate has not changed over this period. Since study of certified absences from work has shown no comparable increase, it is suggested that the increase has occurred in the number of attacks of severe asthma requiring admission to hospital.

Hospital Admission

Recent papers (Smith, 1966; Speizer *et al.*, 1968a) have shown that a substantial increase occurred in deaths attributed to asthma in England and Wales between 1960 and 1966. Death is, however, a relatively rare outcome of an attack of asthma, and the recorded increase in deaths could be due to either an increase in this low case fatality or an increase in the incidence of asthma with an unchanged case fatality, or a combination of the two. There is little or no information on the incidence of asthma on a national scale, but some information on the incidence of asthma requiring admission to hospital is available on a country-wide basis from the Hospital In-patient Enquiry (Ministry of Health and General Register Office, 1961-8). This reports annually on a 10% sample of discharges and deaths from National Health Service hospitals in England and Wales, excluding psychiatric hospitals, and the volumes up to 1965 have been published. The information collected includes, in addition to diagnosis, age, sex, place of residence, department in which treated, source of admission, and duration of stay; for many items "admission rates per 10,000 population" are quoted. The hospital fatality ratio is also given, and this in conjunction with the number in the sample makes it possible to calculate the number of deaths recorded in the 10% sample.

Table I shows some figures concerning asthma extracted from the volumes for 1959-65. The second column gives the estimate of total admissions each year for asthma, based on the 10% sample. The total number of admissions fluctuated between 16,400 and 19,400 in the years 1959-62, and then increased progressively by 3,000 to 4,000 per year to reach a total of just over 30,000 in 1965, not quite double the figure for 1959. Table I also shows that this substantial increase in admissions has not been accompanied by any great change in

the mean duration of stay, though this has increased slightly. Throughout the period under review the great majority of admissions were classified as immediate, from 84% to 93% being in this category. This item was not published for the years 1961 and 1965.

The last part of Table I shows that there has been some change in the departments to which cases of asthma have been admitted. This information has been published only for 1959 and 1964; in both of these years more than half the patients with asthma were admitted to general medical departments, though the proportion fell from 61.8% to 56.3%. There was a substantial increase in the proportion admitted to departments of chest diseases from 12.6% to 21.4%. The increasing proportion admitted to departments of chest diseases is no doubt due to the increasing number of beds available for the treatment of non-tuberculous respiratory disease in these departments as the number of beds required for the treatment of tuberculosis declines. However, relating the percentages in the right-hand part of Table I to the estimated totals in column 2 shows that this increased proportion of admissions to departments of chest disease does not account for the increase in admissions of asthma, since the number of asthma admissions to departments of general medicine alone increased between 1959 and 1964 from approximately 10,000 to about 15,000.

Further indications that the increase of asthma admissions in recent years is a real one is shown by comparison with the changes that have occurred for other causes of admission (not tabulated here). Between 1960 and 1965 there was a slight decrease in the admission rates for pneumonia, and an increase of 22% in the admission rates for males with bronchitis; the increase for asthma in males was 76%. In females the increase in admissions for bronchitis was 20%, but asthma admissions increased by 50% between 1960 and 1965.

Table II shows estimated hospital admission rates for asthma per 10,000 population for four broad age groups of each sex for each year 1959-65. The absolute numbers in the 10% samples on which these figures are based are of reasonable size, being between 100 and 500 except for females aged 5-14 years in the years 1959-62, for which they lie between 90 and 100, and for males age 65 and over in all years, for which they are between 70 and 100.

TABLE II.—Asthma: Estimated Hospital Admission Rates per 10,000 Population; Age Groups of Each Sex for Each Year 1959-65

Age group (years):	Males				Females			
	5-	15-	45-	65-	5-	15-	45-	65-
1959	4.4	2.0	4.0	3.3	2.9	3.7	5.3	3.3
1960	4.0	2.1	4.1	3.6	2.9	4.0	6.0	4.1
1961	5.4	2.5	4.3	3.6	2.8	4.2	5.8	4.2
1962	4.4	2.2	4.1	4.3	3.1	4.4	6.0	3.9
1963	6.0	3.1	5.6	4.6	3.4	4.8	7.5	4.8
1964	7.3	3.6	6.2	4.1	4.8	5.6	8.3	4.3
1965	7.7	4.1	7.0	5.8	5.3	5.8	9.0	6.1
% Increase 1959-65	75	105	75	76	48	57	70	85

Table II repeats the general tendency for asthma admission rates to increase, and during the period from 1959 to 1965 the admission rates for age groups of males have increased by 75 to 100%, those for females by from 50 to 85%. Table II also shows an excess of asthma admissions in young males

TABLE I.—Hospital Admissions for Asthma, 1959-65

	Estimated Total Admissions per Year Patients	Mean Duration of Stay per Spell (Days)		Immediate Admissions (%)		Distribution by Department of 10% Sample			
		M	F	M	F	Gen. Med. (%)	Paed. (%)	Dis. Chest (%)	Other (%)
1959	16,400	17.7	16.9	87	86	61.8	16.1	12.6	9.5
1960	17,970	17.2	15.2	84	86				
1961	19,340	17.1	17.9	90.5	90.5				
1962	18,580	16.7	16.3	89.4	92.6				
1963	23,314	18.7	18.1	91.3	89.5	56.3	15.5	21.4	6.7
1964	26,257	18.1	18.0	—	—				
1965	30,034								

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compared with females, as the admission rate for males aged 5–14 years exceeds that for females by at least 25% in each year; there is a higher admission rate in females than males at ages 15–44 years and 45–64 years. The main point, however, for the present purpose is that in each age group the admission rates have increased by at least 50% between 1959 and 1965, and they have doubled in this period for males aged 15–44 years.

Table III shows the number of deaths in the 10% sample of admissions for asthma for each year 1959–65, for the age group 5–44 years. The numbers are extremely small and show considerable fluctuation, but taking both sexes together the mean number of deaths in the sample was 8.4 for the years 1959–61 and 19 for the years 1964–65, rather more than double the earlier period. During this period recorded deaths from asthma for the whole country for the age group 5–34 years increased from a mean of 140 in 1959–61 to 248 in 1964–5. If allowance is made for the different age grouping the increase in all deaths is therefore similar to the increase in hospital deaths as shown by the rather small sample number. Hospital admissions for asthma rose by roughly the same amount during this period, so that it follows that there has been no appreciable change in the hospital fatality ratio during the period under review.

TABLE III.—Number of Deaths in Hospital Attributed to Asthma in 10% Sample of Admissions, Age Group 5–44 Years

	Males	Females	Total
1959	3	5	8
1960	3	2	5
1961	5	7	12
1962	4	2	6
1963	2	9	11
1964	11	8	19
1965	9	10	19

Absence from Work

In the Annual Reports of the Ministry of Pensions and National Insurance (1960–6) and the Ministry of Social Security (1967–8) claims for national insurance are analysed by the certified cause of absence. This information covers only the age groups of insured working life (15–64 years), and since 1964 no analysis by cause has been given for females. Table IV shows for males the number of spells of absence attributed to asthma starting in the period stated (the total spells current

TABLE IV.—Sickness Absences Attributed to Asthma in Males of Working Age

Period	Spells Beginning in Period Specified. Thousands	Total Days Off Work in Period. Millions
June 1958–May 1959	39.0	2.01
June 1959–May 1960	33.8	2.05
June 1960–May 1961	38.8	2.22
June 1961–May 1962	Not available	
June 1962–May 1963		2.11
June 1963–May 1964		2.02
June 1964–May 1965		1.97
June 1965–May 1966	40.0	2.04

at some time in any year are about 5,000 to 6,000 greater owing to “carry over” from the previous year) and the total days off work in each yearly period.

There is no evidence at all of any recent increase in the total number of days off work owing to asthma: the highest figure of all, 2.22 million days, occurred in 1960–1, and the total then fell to within 0.04 of 2 million days for each of the years in the period 1963–6. The number of spells of absence beginning in each period fell from 38.8 thousand to 35.1 thousand between 1960–1 and 1962–3, was unchanged in 1963–4, but then increased to 37.2 thousand in 1964–5 and to 40.0 thousand in 1966–7. These changes are quite in keeping with the fluctuations observed in previous years, but could represent a rising trend since 1963–4. If so, the increase is of only 13.5%, very much less than that recorded for hospital admissions for asthma, and for deaths.

Discussion

Hospital admissions for asthma increased substantially between 1960 and 1965, roughly parallel to the previously recorded increase in deaths attributed to asthma. Certified absences from work due to asthma have shown no similar increase, though a much smaller increase may have occurred between 1963 and 1966. This relatively constant level of absence from work owing to asthma tends to confirm the observations from general practice recorded by Speizer *et al.* (1968b).

The general picture therefore appears to be of an increased number of attacks of severe asthma, requiring admission to hospital, and an increase in deaths, but with no increase in the overall number of episodes of asthma requiring medical care or of certified absence from work.

Unfortunately, it is not possible to determine whether the increase in hospital admissions recorded here is due to an increased number of admissions from a constant number of asthmatics or to an increase in the number of persons with asthma; nor can the cause of the increased number of admissions be deduced. The possible causes for the increase in deaths have been fully discussed by Speizer *et al.* (1968a), and the same considerations are likely to apply to the increase in hospital admissions.

It is a pleasure to acknowledge the helpful comments made by Dr. R. Doll and Dr. J. M. Smith after reading a preliminary draft of this paper.

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