

Prevalence and management of heart failure in general practice in England and Wales 1994 – 96

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ONS

INTRODUCTION

Heart failure is very common, increases in prevalence with age, and results in high levels of ill-health and mortality (see Box One). The number of hospital admissions for heart failure has increased substantially over the last 20 years and it is now one of the most common reasons for admission to hospitals in developed countries. Even in milder cases detected through community screening programmes, five-year survival rates are around 50 per cent and are worse than for many forms of cancer. Furthermore, in studies of the major chronic illnesses, heart failure reduced quality of life more than illnesses such as diabetes and hypertension.¹

Heart failure has been traditionally treated with drugs such as diuretics and digoxin but there have been several recent developments in management.² Because of these developments, and the burden of ill-health it causes, the management of heart failure is becoming an increasingly important area for the National Health Service.³ There is some evidence that in the past many patients with heart failure were inadequately investigated and treated both in hospitals and in primary care.^{4,5} Moreover, several studies have shown that the use of Angiotensin Converting Enzyme (ACE) inhibitors in patients with heart failure can lead to a substantially improved prognosis and a better quality of life.⁶ However, relatively little is known about the prevalence of heart failure in primary care or how heart failure is currently being managed by general practitioners.

Many previous studies of heart failure have either used selected groups of patients, such as those attending hospital clinics, who may not be typical of all patients with heart failure, or data from only a small number of general practices.^{7,8} The objectives of this study were to determine the prevalence of heart failure in primary care, based on

This study examines the prevalence and management of heart failure in England and Wales. The data come from 288 general practices, and 2.1 million patients, in the General Practice Research Database. In 1996, the age-adjusted prevalence of heart failure was 9.7 per 1,000 males and 8.2 per 1,000 females. Between 1994 and 1996, the percentage of heart failure patients prescribed ACE-inhibitors increased from 40 per cent to 51 per cent of men and 28 per cent to 36 per cent of women. The findings suggest that management of heart failure in primary care is changing to reflect current guidelines, with an increase in the percentage of patients who are being prescribed ACE-inhibitors.

Box one

Heart failure

Heart failure arises when the heart is unable to pump enough blood to meet the demands of the body. Some people with mild heart failure may have very few symptoms. Patients with moderate or severe heart failure suffer from a number of problems including shortness of breath (particularly when lying flat); waking up suddenly at night with a feeling of breathlessness; general tiredness or weakness; swelling of the feet, ankles and legs; rapid weight gain; and chronic cough. Heart failure is a serious condition with a poor prognosis and one which can markedly reduce quality of life.

Heart failure has many causes. The most common causes are ischaemic heart disease, problems with the heart muscle (cardiomyopathy); high blood pressure (hypertension); problems with any of the heart valves; abnormal heart rhythms (arrhythmias); and toxic substances (such as alcohol abuse). The diagnosis is sometimes clear from the history and examination but usually has to be confirmed by investigations such as chest x-ray or echocardiography.

Heart failure is treated in several different ways. The aims of treatment are to reduce progression of the disease, reduce hospitalisation, and extend life. A very important aspect of treatment is dealing with any underlying problems such as high blood pressure. The main groups of drugs used to treat heart failure are:

- **ACE-inhibitors.** ACE-inhibitors help open (dilate) arteries and lower blood pressure, thus improving blood flow.
- **Diuretics.** Diuretics are often called 'water pills' because they help keep fluid from building up in the body. They can also decrease the amount of fluid that collects in the lungs, which helps breathing.
- **Beta-blockers.** Beta-blockers can improve blood flow and may help prevent some heart rhythm problems.
- **Digoxin.** Digoxin can help the heart pump better.

diagnoses recorded in general practice, and to examine the use in primary care of diuretics and ACE-inhibitors in patients with heart failure during the period 1994–96. We used data from a large general practice database to carry out our study, and hence it is among the largest studies ever to examine the prevalence and management of heart failure in the United Kingdom.

METHODS

The data for this study came from 288 general practices in England and Wales, total list size 2.1 million, contributing data to the United Kingdom General Practice Research Database (GPRD). The GPRD was originally set up in 1987 by VAMP Ltd and was subsequently acquired by Reuters who donated it in 1994 to the Department of

Health. The Medicines Control Agency has been responsible for its overall management and financial control since April 1999. The Office for National Statistics (formerly the Office of Population Censuses and Surveys) operated the database from 1994–99. General practices participating in the GPRD follow agreed guidelines for the recording of clinical and prescribing data, and submit anonymised patient-based clinical records for inclusion in the database at regular intervals. Consequently, the database contains longitudinal information on diagnoses, prescriptions and hospital referrals.⁹ The accuracy and comprehensiveness of the data recorded in the GPRD has been documented previously.^{10,11,12} All 288 practices included in this analysis contributed data throughout the period 1994–96 and passed regular quality checks. The combined population of the practices had a very similar age-sex composition to the population of England and Wales.^{13,14}

Definition of heart failure

We defined patients with heart failure as those who had ever had a diagnosis of heart failure recorded on their computer record and who had been prescribed either a diuretic or ACE-inhibitor during the study year. For example, the prevalence of heart failure in 1994 was based on a previous diagnosis of heart failure and a prescription for a diuretic or ACE-inhibitor during 1994. We did this to help ensure that only active cases of heart failure were included in the analysis and to exclude cases where the original diagnosis of heart failure had been incorrect. We then determined what percentage of patients with heart failure had been prescribed an ACE-inhibitor during the study year.

Inter-practice variation

Four practices with list sizes of less than 1,000 patients were excluded from the analysis of inter-practice variation. For each of the remaining 284 practices, we calculated the prevalence of heart failure in 1996 using the same method as described above. We then calculated the percentage of patients with heart failure who had been prescribed an ACE-inhibitor during 1996 to determine the inter-practice variation in prescribing.

RESULTS

The crude overall prevalence of heart failure in 1996 was 11.5 per 1,000 in men and 15.5 per 1,000 in women. Age-standardised prevalences, calculated using the European standard population, were 9.7 per 1,000 in men and 8.2 per 1,000 in women. Prevalence rates increased with age from less than 1 per 1,000 in people aged under 45 years to 176 per 1,000 in men and 186 per 1,000 in women aged 85 years and over. Although the crude overall prevalence of heart failure was higher in women than men, age-specific prevalence rates were higher in men than in women except for the most elderly group, patients aged 85 years and over (Table 1). The prevalence of heart failure was similar in 1996 and 1994 but the percentage of patients with heart failure prescribed ACE-inhibitors increased substantially during this period, from 40 per cent to 51 per cent in men and from 28 per cent to 36 per cent in women (Table 2). Younger patients with heart failure were more likely to be prescribed ACE-inhibitors than older patients. This was particularly true for men; among women there was substantially less variation in the percentage of patients prescribed ACE-inhibitors.

Inter-practice variation

Both the recorded prevalence of heart failure and the percentage of patients with heart failure prescribed ACE-inhibitors varied widely in the 284 practices included in the examination of inter-practice differences in prescribing (Table 3). The unadjusted prevalence of heart failure varied from 0.7 to 30.4 per 1,000 in men (median 11.0)

Table 1 Number of patients with heart failure and prevalence of heart failure per 1,000 in 288 general practices in England and Wales in 1996

Age group (years)	Males		Females	
	Number of patients with heart failure	Prevalence per 1,000	Number of patients with heart failure	Prevalence per 1,000
0-34	25	0.1	35	0.1
35-44	54	0.4	40	0.3
45-54	318	2.5	187	1.5
55-64	1,240	13.7	784	8.7
65-74	3,064	42.4	2,891	34.6
75-84	3,965	103.5	5,814	95.6
85+	1,546	175.5	4,463	186.0
All ages (crude rate)	10,212	11.5	14,214	15.5
All ages (age standardised)	-	9.7	-	8.2

Table 2 Percentage of patients with heart failure prescribed ACE-inhibitors in England and Wales in 288 general practices in England and Wales in 1994 and 1996

Age group (years)	Percentage of patients prescribed ACE-inhibitors			
	Males		Females	
	1994	1996	1994	1996
0-34	43.6	56.0	44.4	42.9
35-44	75.6	83.3	35.1	42.5
45-54	64.3	73.3	43.3	56.1
55-64	58.6	68.0	37.8	44.5
65-74	47.1	58.4	38.0	45.0
75-84	34.0	45.9	28.6	37.8
85+	21.4	28.4	17.7	24.5
All ages	40.3	50.8	27.9	35.7

and from 0 to 40.4 per 1,000 in women (median 15.0). Even after excluding the top and bottom 10 per cent of practices, there was still a more than two-fold variation in the prevalence of heart failure. The percentage of patients with heart failure prescribed ACE-inhibitors varied from 0 per cent to 100 per cent in men (median 52 per cent) and from 0.7 per cent to 67 per cent in women (median 37 per cent). There was a strong association between the reported prevalence of heart failure in men and women in the 288 practices ($r=0.70$, $P<0.0001$). The correlation between the proportion of men and women with heart failure prescribed ACE-inhibitors in 1996 was 0.36 ($P<0.0001$).

DISCUSSION

Our study confirms that heart failure is a very common condition, particularly in the elderly and that its prevalence increases markedly from the age of 65 years onwards. The crude prevalence of heart failure was higher in women than in men because of the greater number of women among the elderly. However, age-specific prevalence rates were higher in men than in women in all age groups except for patients aged 85 years and over. Some of the higher female prevalence observed among the 85 and over age group may be explained by the older age structure of women as compared to men within this age group. The

Table 3 Inter-practice variation in prevalence and management of heart failure in 284 practices in England and Wales in 1996.

	Median	Range	10 th Centile	90 th Centile
Prevalence per 1,000 in men	11.0	0.7 to 30.4	6.0	17.3
Prevalence per 1,000 in women	15.0	0 to 40.4	8.9	23.8
Percentage of men prescribed ACE-inhibitors	51.5	0 to 100	36.8	66.7
Percentage of women prescribed ACE-inhibitors	36.6	0.7 to 66.7	22.0	50.0

Note: Four practices with total list sizes of less than 1,000 patients excluded.

overall prevalence of heart failure in this study of 1.2 per cent in men and 1.6 per cent in women was in line with the results of previous studies, which have generally found the prevalence of heart failure to be between 0.4 per cent and 2 per cent.¹⁵

Our study showed that the use of ACE-inhibitors in patients with heart failure increased in both men and women during the period 1994-96. We also found that younger patients with heart failure were more likely to be prescribed ACE-inhibitors than older patients. This may possibly reflect higher co-morbidity among the elderly and a reluctance by general practitioners to use ACE-inhibitors more extensively in this group. It could be that younger patients are put on the latest treatment while older patients may be happily established on more traditional treatments. We found the percentage of patients with heart failure prescribed ACE-inhibitors to be substantially higher than the 20-30 per cent reported in previous studies carried out in the first half of the 1990s. This suggests that guidelines on the management of heart failure advising greater use of ACE-inhibitors have had some impact on prescribing in general practice.

Our study was based on patients who had a diagnosis of heart failure recorded in their general practice record. Although there will be some errors in these diagnoses, previous validation studies of the clinical data recorded in the General Practice Research Database shows that the data are reasonably accurate. The additional stipulation that patients had to have been prescribed either a diuretic or an ACE-inhibitor to be included in this study would have helped ensure that only active cases of heart failure were included. Despite this, the large variation we found at practice level is unlikely to be due entirely to differences in the prevalence of heart failure or to differences in the age structure of the practice populations. Undoubtedly, some of the variation is likely to be due to differences in the way diseases are diagnosed by different clinicians and also to differences in the completeness of data recording. If electronic health records such as those proposed in the new NHS information strategy are to be developed successfully,¹⁶ variations in coding practice and completeness of data recording will have to be rectified and methods developed to improve the validity of data recorded on general practice computers.

In this preliminary analysis of data from the GPRD, we were unable to look at comorbidities or to examine the use of investigations such as chest x-ray or echocardiography which are required to confirm the diagnosis of heart failure. We were also unable to examine the use of beta-blockers, a relatively new development in the management of patients with heart failure.^{17,18} We hope to include these additional analyses in our next study of the prevalence and management of heart failure in general practice and also to examine time trends in prescribing for a longer period than the three years examined in this paper.

Key findings

- The management of heart failure is becoming an increasingly important area for the National Health Service due to the burden of ill-health it causes and the recent new developments in treatment.
- In 1996, the age-standardised prevalence of heart failure was 9.7 per 1,000 males and 8.2 per 1,000 females. Prevalence increased from less than 15 per 1,000 in the 55–64 age group to 176 per 1,000 in men and 186 per 1,000 in women aged 85 years and over.
- Between 1994 and 1996, the percentage of patients with heart failure prescribed ACE-inhibitors increased from 40 per cent to 51 per cent in men and from 28 per cent to 36 per cent in women.
- This study suggests that recent guidelines on the management of heart failure, advising greater use of ACE-inhibitors, have had some impact on prescribing in general practice.

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