

# Prevalence of Heart Failure: A Reflection of the Good and the Bad of Modern Cardiovascular Care

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Recently, significant advances have been made in the management of many cardiovascular diseases. However, there remains a major concern that the problem of heart failure continues to grow, and that despite more effective therapies, this syndrome will continue to produce significant morbidity and place an ever increasing strain on health care resources.<sup>1,2</sup> Feeding this epidemic of heart failure is the ageing population, better survival from myocardial infarction, continued suboptimal management of hypertension and improved prognosis for those with established heart failure. Indeed, the dramatic improvement in outlook for patients with this syndrome has changed the perspective on heart failure from that similar to a malignancy to one of a chronic disease. This paradigm shift underlines the need for a contemporary review of the epidemiology of heart failure, primarily to allow for the development of accurate and effective strategies to manage this growing problem.

Therefore, the information provided by the PRICE study comes at an opportune time.<sup>3</sup> The data from this well-structured demographic study of 15 healthcare centres in Spain underline the growing prevalence of heart failure in those above the age of 45 years with estimated figures of 6.8% for the total population, and only modestly higher figures in women compared with men. As anticipated, the prevalence increases with age with on average 16.1% of those over 74 years having a diagnosis of heart failure. In this and similar epidemiological studies there is always concern regarding the accuracy of the diagnosis of heart failure. In this regard the design of the PRICE study provides greater certainty at least with respect to false positive diagnoses, by ensuring that all suspected and confirmed heart failure

patients were reviewed by a cardiologist. Indeed, one of the interesting tangential observations from this work is the strong concordance between the observations and the diagnoses of the primary care physicians and the specialists.

The reported prevalence of heart failure supports the general international observation of an increasing number of patients with this condition, reflecting the factors outlined above. And while this work does not make any comment on incidence rates for heart failure, recent studies suggest that the rate of new diagnoses remains stable. For example, Senni and colleagues in a report in 1999 could not demonstrate any change in the incidence of new onset of heart failure while more recently Roger et al showed static incidence rates with declining mortality, observations which together would drive the overall prevalence upwards.<sup>4,5</sup>

These epidemiological observations underline the public health concern posed by heart failure, with increasing numbers of elderly patients likely to suffer from this condition in the years ahead. It is therefore of critical importance that we put into place effective strategies to combat this problem. Foremost in this regard, is the need for optimally developed heart failure services providing state-of-the-art care for this patient population. For far too long, heart failure has been the Cinderella of cardiovascular disease receiving proportionally far less attention than, for example, management of acute coronary syndromes and arrhythmia. The reasons for this are not entirely clear, but may in part be explained by the assumption that prognosis for this population was hopeless. As a consequence, in many cases cardiologists had abdicated responsibility for the management of this problem to doctors with less training in the area. This has simply compounded the problem with less effective care being provided for this group of patients, as underlined by the recent publication of a review on the awareness and perception of heart failure among cardiologists, internists, geriatricians, and family practitioners in several European countries.<sup>6</sup> This audit demonstrated a concerning lack of appreciation of the need for complete investigation, referral to specialist and benefit of several proven therapies. The solution to this "practice deficit" includes greater availability of medically-led disease management programs. The

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development of these programmes has revolutionised management and outcomes for patients with heart failure.<sup>7,8</sup> Focusing predominantly on the sicker component of the heart failure group, these disease management programmes have significantly reduced heart failure hospitalisations, improved quality of life and patient self care and have reduced mortality.<sup>7</sup> Central to the improvement in outlook has been more effective application of proven therapies. The full benefit of disease management programmes in heart failure has yet to be realised as to date they have been predominantly confined to the sicker group of the heart failure population. This approach now needs to be extended to all patients with a diagnosis of heart failure to ensure that the benefits of structured care, education, self care, better application of therapy, and more complete investigation are applied to all.<sup>8</sup> By so doing, we stand a better chance of patients remaining stable with heart failure in the community and minimizing their need for hospitalisation, the major economic cost of this syndrome.

However, widespread applications of disease management programmes will not by themselves curb the epidemic of heart failure. To do so effectively, increasing focus needs to be directed at prevention of heart failure. The importance of this development is underlined by the recent publication of a joint position statement from several councils of the American Heart Association wherein potential strategies for an organised approach to the prevention of heart failure were discussed and outlined.<sup>9</sup> In this regard, particular attention needs to be directed to those populations at risk of asymptomatic ventricular systolic dysfunction (ASLVD), such as survivors of myocardial infarction, those with multiple cardiovascular risk factors such as hypertension and diabetes mellitus and, potentially, family members of those with established idiopathic dilated cardiomyopathy. Several epidemiological studies have demonstrated a relatively high prevalence of ASLVD in the community with rates as high as 2% increasing with age.<sup>10</sup> It is also well known that this group of patients has a significantly increased risk of cardiovascular events in general and development of new onset heart failure in particular. Work from the Framingham cohort underlined the overall cardiovascular risk of impaired systolic function of the left ventricle.<sup>11</sup> Observations from SOLVD–Prevention demonstrated heightened risk for development of heart failure in asymptomatic individuals with an ejection fraction of less than 35% while data from Vassan and colleagues underlined the importance of ventricular dimensions to the later development of heart failure.<sup>12,13</sup> Identifying these individuals would allow for effective therapies to be prescribed which have been shown to improve overall cardiovascular outlook and in particular the incidence rates of heart failure, thereby potentially having a positive impact on the concerning epidemiology of this syndrome. Judicious use of screening techniques, for example using natriuretic peptide analysis, may be

the most effective means of defining this at-risk group. There is now an extensive data set underlining the value of both B-type natriuretic peptide (BNP) and N-terminal prohormone B-type natriuretic peptide as screening tools. This was first demonstrated in the MONICA study and subsequently supported by other protocols in different populations.<sup>14</sup> The cost effectiveness of this approach has also been demonstrated. This would likely be most effective when applied to true at risk populations. For example, Loehr and colleagues have shown that the incidence of heart failure is significantly greater in African Americans in the Atherosclerotic Risk in Community Study reflecting the greater prevalence of risk factors in that group.<sup>15</sup>

Therefore, as we strive to overcome the growing epidemic of heart failure it is clear that an effective well-structured heart failure prevention programme should be an important component of the strategy. However, we should not be satisfied with confining our intervention to those with ASLVD. Recent work has identified an even greater prevalence of asymptomatic left ventricular diastolic dysfunction (ALVDD).<sup>16</sup> The prognostic importance of this observation needs further clarification. Furthermore, research is required to define the benefits of intervention in this population, and if shown, how best to screen for this group. In this regard, it is of interest that BNP has also been shown to be predictive of grades of ALVDD.<sup>18</sup> In brief, future research needs to identify ventricular damage as its earliest stage, potentially allowing for the most effective preventative strategy.

In summary the PRICE study is a valuable addition to the epidemiological data base on heart failure providing further evidence of this growing epidemic. It underlines the need for health care providers to ensure that systems are put in place to address this problem as it unfolds.

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