Rising incidence of heart failure demands action

Heart failure is a life-threatening syndrome with substantial morbidity and mortality and is a burden to patients, their carers, and health systems. Estimates of heart failure incidence and prevalence are difficult to generate. Accurate epidemiological estimates of heart failure, however, are crucial to ensure resources are appropriately and adequately allocated to treat patients with existing disease, and to inform prevention methods among those at risk.

The population-based study of 4 million individuals by Nathalie Conrad and colleagues in The Lancet is a valuable contribution to the literature on heart failure epidemiology. At first glance, the standardised incidence reported in this study, which uses data from the UK Clinical Practice Research Datalink (CPRD), could be encouraging: a reduction of 7% was noted between 2002 and 2014 (from 358 to 332 per 100,000 person-years; adjusted incidence rate ratio 0.93, 95% CI 0.91–0.94), primarily driven by a decrease in those aged 60–84 years of age. However, on further inspection, the data are cause for concern. First, the incidence has increased in people older than 85 years. This group of patients has been excluded from most randomised controlled trials that form the evidence base for treating heart failure. Although data from randomised controlled trials are routinely extrapolated to these patients, the balance of benefits and risks for standard therapies could differ in the very elderly (>85 years). It is problematic that the benefits and risks of treatment are uncertain for an already large and growing number of patients. Traditional prospective randomised trials to test standard therapies in the very elderly might be challenging, but randomised registry trials using electronic health records (as has been previously done with the CPRD) could be suitable alternatives for evidence generation in this group of patients.

Second, the increases in the estimated absolute number of individuals with newly diagnosed heart failure (from 170,727 in 2002 to 190,798 in 2014 [12%]) and the number of prevalent heart failure cases in the UK (from 750,127 to 920,616 [23%]) are concerning. The authors postulate that these increases are partly attributable to better survival after myocardial infarction. Although new heart failure cases can be viewed as an ironic success if they arise from more patients surviving myocardial infarction because of advances in acute coronary syndrome management, these cases should be viewed as failures when they originate from poor adherence to heart failure prevention strategies—for example, inadequate hypertension control. In this analysis, socioeconomic deprivation was associated with a higher incidence of heart failure at a younger age and more comorbidities. It is concerning that from 2002 to 2014, the socioeconomic gradient in age at first presentation with heart failure widened. By contrast with the heart failure trends reported by Conrad and colleagues, the incidence of myocardial infarction has declined by about 30%, suggesting that heart failure prevention strategies have been less successful than have strategies to prevent coronary artery disease. Many reports cite the widespread inadequacy with which blood pressure is controlled in clinical practice, whereas the greatest benefit of blood-pressure lowering is actually the prevention of heart failure. Heart failure can also now be prevented by use of sodium-glucose cotransporter-2 inhibitors in patients with diabetes. Both hypertension and diabetes are also more common in lower socioeconomic groups. Prevention strategies targeting these specific comorbidities could have an impact on reversing the epidemiological trends reported in this analysis.

Finally, the increasing prevalence of heart failure might also be attributed to implementation of effective evidence-based therapies that prolong survival in patients with the disorder with reduced ejection fraction (HFrEF). Fewer patients with HFrEF are dying suddenly than before, leading to more patients living longer with chronic heart failure, progressing to advanced stages of the disease, becoming candidates for advanced therapies for heart failure (eg, mechanical circulatory support devices, heart transplantation), and having more frequent and costly hospital admissions. Considering the large and growing number of patients that will progress to advanced heart failure, and the costs of these advanced interventions, provision of these treatment options is probably not sustainable for most health systems. The potential for advanced heart failure therapies to divert limited resources away from...
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prevention and treatment is concerning, analogous to the epidemic of chronic kidney disease in which the majority of resources are consumed by chronic dialysis. Furthermore, heart failure specialists are increasingly focused on providing advanced treatment options, relegating prevention and chronic management of the disorder to general practitioners. The ultimate outcome of this shift in the provision of care is unknown, but one could surmise that patient outcomes might suffer if adherence to evidence-based guidelines is compromised as a result.

Several other findings of the analysis by Conrad and colleagues are also of interest. The comparison between incident heart failure and cancer cases is compelling. Despite their similar epidemiology, and worse survival for patients with heart failure compared with many forms of cancer, there is a continued disparity between the diseases in terms of research investment, focused prevention, and societal awareness. Perhaps these data will stimulate change and encourage heart failure to be addressed as an equal priority with cancer.

This study also exemplifies the use of electronic health records for clinical research. More than half of the practices represented in the CPRD have agreed to link data to hospitalisation and mortality data sources. Although tempting to do, it is challenging to extrapolate the findings of this study from the UK to the rest of the world where generation of similar data is needed but limited; longitudinal systems with high-quality data collection and linkage to outcomes are often not feasible because of fragmented health-care systems and absence of a single national e-health database (eg, in the USA) or restrictive data privacy laws that impede application of electronic health records for clinical research (eg, in France).

Although prevention is often touted as a means to combat heart failure, effective prevention strategies have clearly not been widely embraced, suggesting that the approach to prevention also needs to evolve. Mechanistic bioprofiling of patients (ie, selecting subgroups of patients on the basis of biomarker profiles, which are indicative of underlying mechanisms that are more specifically activated in those with heart failure) and matching preventive strategies to mechanistic biotargets could hold future promise for more effective implementation of heart failure prevention strategies.

This Article by Conrad and colleagues should raise awareness and ignite efforts to address the growing heart failure epidemic. It should be put in the hands of all health policy makers to encourage the wiser use of resources for the prevention of heart failure.

Faiez Zannad
Inserm, Centre d’Investigations Cliniques-1423, and Inserm U1116, CHRU Nancy, Université de Lorraine, Nancy, France; and FIGHT-HF and F-CRIN INI-CRCT, Nancy, France f.zannad@chru-nancy.fr

I have received steering committee fees from Janssen for the COMMANDER-HF trial (co-chair, nivolumab in heart failure), Bayer for the ARTS-HF trials (co-chair, fenerone in heart failure), Pfizer (co-chair, eplerenone trials in heart failure), Novartis for the PARAGON trials (member, sacubitril/valsartan in heart failure), Boston Scientific for the NECTAR HF trial (vagal modulation in heart failure), Resmed for the SERVE-HF trial (member, ASV in heart failure and sleep apnoea), Takeda for the EXAMINE trial (member, alogliptin in diabetes), General Electric for the ADI*MRI-HF trial (co-chair, MRI/MRI imaging in heart failure), Boehringer Ingelheim for the EMPOROR trial (co-chair, empagliflozin in heart failure), CVRx for the BEAT-HF trial (baroreflex), and AstraZeneca for the AURORA trial (member, rosvastatin in end-stage renal disease), and consulting fees from Amgen for heart failure, Quantum Genomics for OGI01 in heart failure early development, Relypsa for patiromer for hyperkalaemia, ZS Pharma ZS9 in hyperkalaemia, AstraZeneca for new diabetes medications, Roche Diagnostics for biomarker programme developments, and Vifor Fresenius for patiromer for hyperkalaemia. I am co-founder owning equity of Cardioes, a start-up company for home monitoring solutions in heart failure, and founder owning equity of CVCT, a company advising about scientific organisation of meetings.

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