The Changing Landscape of Heart Failure Hospitalizations*

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Heart failure (HF) is a major public health problem. In the mid-1990s, temporal trends from vital statistics appeared so alarming that the hypothesis of a new epidemic of HF was formulated (1). Subsequent studies that formally investigated the epidemic demonstrated that the incidence of HF had not changed appreciably in the past 2 decades, and that survival, although still poor, had improved (2,3). These data convincingly established that, as the prevalence of HF increased, an epidemic of hospitalizations among older patients (4) was unfolding, causing a major burden on patients, healthcare systems, and society. The American Heart Association forecasts an alarming 25% increase in the prevalence of HF, which will further exacerbate the epidemic (5).

Heart failure also constitutes a major clinical problem because it is not a disease but a syndrome, the pathophysiology of which remains somewhat elusive. It can present with preserved or reduced ejection fraction (EF), and the two entities differ in frequency, presentation, outcomes, and importantly, management options. The case mix of HF is changing over time (6), with a growing proportion of cases presenting with preserved EF, for which there is currently no specific effective treatment. These persisting clinical challenges and unfavorable trends will also magnify the epidemic of hospitalizations.

This context underscores the importance of studies that evaluate hospitalizations in HF, such as the study by Blecker et al. (7) published in this issue of the Journal. This work provides important insights into the determinants of the epidemic of hospitalizations, which are crucial to design effective prevention strategies. The investigators used the Nationwide Inpatient Sample (NIS) to evaluate trends in HF hospitalizations between 2001 and 2009. The total number of hospitalizations with any mention of HF increased from 2001 to 2009. Hospitalizations were categorized as either primary or secondary HF hospitalizations based on the position of HF in the listing of discharge diagnoses. Primary HF hospitalizations decreased over time, whereas secondary HF hospitalizations increased during the same period. Common primary diagnoses for secondary HF hospitalizations were pulmonary disease, renal failure, and infections. The investigators concluded that the burden of all HF hospitalizations remains substantial. Although primary HF hospitalizations declined, hospitalizations with a secondary diagnosis of HF were stable, underscoring that strategies to reduce the burden of hospitalizations among HF patients should target both cardiac disease and noncardiac conditions.

A number of methodological points should be considered to interpret the data. The NIS sample is part of the Healthcare Cost and Utilization Project, supported by the Agency for Health Care Policy and Research. Because the unit of analysis was hospitalizations, not individual patients, 1 patient might have contributed to multiple hospitalizations. Diagnostic codes and their respective order on the dismissal diagnosis list were used to ascertain HF and comorbidities, and to categorize events as primary versus secondary HF. Thus, temporal shifts in coding practices could have confounded the reported temporal trends. No information on EF was available; thus, the role of the type of HF on the observed trends, which is an important issue, could not be addressed by this report. These data, therefore, should be considered as hypothesis-generating rather than hypothesis-testing. Generating questions and hypotheses is, however, critically important to help advance knowledge. Hence, these limitations notwithstanding, the investigators should be commended for their comprehensive evaluation of the contemporary burden of hospitalizations in HF.

The findings reported by Blecker et al. (7) in this issue of the Journal, are congruent with other reports from other data sources. Data from the National Hospital Discharge Survey between 1979 and 2004 indicated that hospitalizations with any mention of HF tripled between 1979 and 2004, whereas the proportion of hospitalizations with respiratory diseases and noncardiovascular, nonrespiratory diseases as the first-listed diagnoses increased (8). Among Medicare beneficiaries hospitalized between 1998 and 2008 with a principal diagnosis code for HF, HF hospitalizations declined by almost 30%, underscoring that hospitalizations attributed chiefly to HF were declining (9). These 2 reports, like the Blecker et al. study, relied on diagnostic codes with events rather than the patients as the unit of analysis. Using a cohort design, a community study within a geographically de-
fined population of patients with incident HF in Olmsted County, Minnesota, indicated that hospitalizations among patients with HF were less frequently directly related to HF (10) or even to cardiovascular disease than to other comorbid conditions. Hence, there is a convergence of data indicating that hospitalizations for HF does not equate to hospitalizations because of HF. These data are particularly important because they highlight a fundamental dissonance between epidemiological data and guidelines and policies. Current standards to manage HF rely on disease-centric clinical guidelines, applied within provider-centric systems of care and evaluated by performance measures focusing on processes rather than outcomes. This approach ignores the epidemiology and the complexity of the HF syndrome, which occurs with other chronic diseases in an elderly population, as the aforementioned studies illustrated (7–10).

Hence, it is perhaps not unexpected that interventions to prevent readmissions in HF have shown divergent effectiveness on HF-related and all-cause hospitalizations (11). These interventions have been reported in several meta-analyses, reflecting large numbers of studies and patients (12–18). Although they differ, their common feature is a disease-centric approach targeting the cardiovascular system and largely ignoring multimorbidity. These interventions have been effective chiefly on HF-related hospitalizations among patients who present with HF and reduced EF, with a more modest effect on hospitalizations related to other causes (11), which, however, constitute most hospitalizations in HF (7–10). Thus, disease-centric interventions cannot be expected to have a far-reaching effect on the population burden of hospitalizations in HF; new approaches are needed to contain the hospitalization epidemic among all patients with HF. The Hospital Readmissions Reduction Program of the Patient Protection and Affordable Care Act plans to adjust downward Medicare payment beginning in 2013 for hospitals with “excess” 30-day readmissions rates. As readmissions become a formal quality indicator, the need to inform policy by a clinical understanding of the taxonomy, causes, and distribution of causes of readmissions is becoming urgent (19). The report by Blecker et al. (7) is helpful in this regard.

To be effective, new approaches must recognize that the “most common chronic condition experienced by adults is multimorbidity” (20), a consideration of crucial relevance to HF (21). To improve population health, treatment guidelines and performance measures must be designed while factoring how diseases present and evolve in clinically relevant communities (22). This is essential to avoid unattended and potentially negative consequences of relying on disease-centric approaches (23).

Specifically for HF, as the current report by Blecker et al. (7) indicates, it is time to recognize that to effectively prevent readmissions in these patients in whom HF coexists with multiple other diseases, we need a greater focus on comorbidities across the spectrum of the HF syndrome.

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