The Three-Phase Terrain of Heart Failure Readmissions

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Hospitalization for management of heart failure is a sentinel event with important prognostic implications.\(^1\) Although considerable advances in medical therapy, rates of mortality and readmission after heart failure hospitalization remain high.\(^2\) More than half of patients with heart failure are readmitted within 6 months of discharge,\(^3,4\) and one in 5 are dead by 1 year.\(^5\) The Medicare tab for the roughly one million heart failure hospitalizations annually in the United States alone exceeds $17 billion.\(^6\) Readmission rates vary widely among hospitals\(^4\) and some have projected that up to three fourths of readmissions may be preventable.\(^3\) Policymakers have increasingly targeted reduction in measured readmission rates as a means to simultaneously improve quality of care and reduce costs.

Recent legislation and evolving pay-for-performance initiatives have placed particular emphasis on reducing readmissions in the 30-day interval after discharge on the assumption that outcomes in this window can be influenced by greater attention to improving in-hospital heart failure treatment and care transitions. Although easily tracked and intuitively appealing, however, the 30-day metric may be shortsighted. Discharge from a heart failure hospitalization is followed by early readmission in approximately 24% of cases,\(^1\) but a minority of rehospitalizations in this window may be truly preventable.\(^7\) As well, these early readmissions may be driven more by patient- and community-level factors than care processes under hospital or provider control.\(^4\) The apparent inverse relationship between 30-day hospital readmission and mortality rates\(^8\) underscores that early readmissions may occasionally reflect enhanced access to hospital care for those with urgent needs rather than poor-quality care.\(^9\) Excessive focus on prevention of readmissions at this single time point may have unintended consequences such as competition for the lowest-risk patients or delayed hospitalization of high-risk patients while also stifling the development of a more integrated approach designed for more sustained improvement in patient outcomes.\(^10\)

In this issue of Circulation: Heart Failure, Chun et al\(^11\) provide important new data that help to more clearly define the landscape of readmissions beyond the 30-day window. Based on longitudinal follow-up of a cohort of 8543 newly discharged Canadian patients with heart failure, they describe a 3-phase terrain of lifetime risk for readmission after heart failure hospitalization that may have important implications for the design of future prevention strategies. The median survival for the cohort was 1.75 years, and 66.5% of patients were rehospitalized for cardiovascular reasons (predominantly recurrent heart failure) within the first year after discharge. Examining the postdischarge survival duration by deciles, it was noted that approximately 30% of all readmissions occurred within the first 2 months of hospital discharge and 50% occurred within the 2 months before death with much lower admission rates (15%–20%) during the intermittent “plateau phase” (Figure). At nearly every time point, the proportion of hospitalizations attributed to cardiovascular and noncardiovascular causes was similar. After multivariable adjustment and accounting for repeat hospitalizations, the lifetime readmission risk was indistinguishable for patients with heart failure with reduced versus preserved ejection fraction but was higher for those with ischemic heart disease than for those with nonischemic causes of heart failure.

These data confirm the hazard for rehospitalization early after discharge and underscore that this vulnerable period does indeed merit attention. Simultaneously, however, they highlight that the real impact on the readmission problem may require a broader focus on approaches to managing the continuing hazard over the lifetime of the disease, including the period just before death. Negotiating the uneven terrain of readmission risk will likely require an adaptive strategy with shifting goals for each phase of illness. Priorities during the heart failure admission should include thorough decongestion and stabilization of fluid balance, identification and management of exacerbating factors, and titration of neurohormonal antagonists for long-term benefit. Once this is accomplished, comprehensive discharge planning, emphasizing patient and caregiver education, medication reconciliation, effective care coordination and use of home nursing supports, and efficient handoffs to intermediate or ambulatory care providers may reduce early readmission rates by as much as 25%.\(^12\) Early clinic follow-up (within 1 week of discharge), ideally in collaboration between a primary care physician and cardiovascular specialist, is then critical, because nearly half of heart failure readmissions are reported to occur before the first scheduled ambulatory visit.\(^13,14\)

Although readmission rates do fall with increasing distance from the initial hospitalization, patients with heart failure appear to remain at substantial risk during the “plateau phase,” independent of their ejection fraction. In this period, longitudinal disease management focused on maintaining the fluid balance established during the hospitalization and optimizing disease-modifying therapies is likely the primary objective. For patients with heart failure and reduced ejection fraction, the approach to selection of pharmacological and

The opinions expressed in this article are not necessarily those of the editors or of the American Heart Association.

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(Circ Heart Fail. 2012;5:398-400.) © 2012 American Heart Association, Inc.

Circ Heart Fail is available at http://circheartfailure.ahajournals.org
DOI: 10.1161/CIRCHEARTFAILURE.112.968735
Device therapy is informed by data from randomized controlled clinical trials of neurohormonal antagonists, defibrillators, and cardiac resynchronization therapy. Despite comparable risk of recurrent hospitalization, however, there is a paucity of data to guide the selection of treatment for the nearly 50% of those hospitalized with heart failure and preserved ejection fraction who are a growing portion of the heart failure burden. Regardless of ejection fraction, because most heart failure readmissions are related to progressive rise in cardiac filling pressures, effective ambulatory heart failure management must include a strategy for longitudinal surveillance to identify and treat early signs of congestion. Traditional approaches emphasizing intensive surveillance of weight and vital signs have not been consistently effective in reducing readmission rates, but novel approaches emphasizing the use of implantable hemodynamic monitors appear more promising.

Perhaps the most striking observation by Chun et al is the sharp rise in heart failure admissions in the 30 to 60 days before death, which confirms in a community population the experience of a more selected population in transplant centers. Although a substantive proportion of readmissions at the beginning of this interval may be unavoidable, there is an urgent need to design an approach to this phase of illness that incorporates acceptable alternatives to hospitalization for those with end-stage disease. Disease management approaches that are effective in preventing rehospitalization earlier in the postdischarge trajectory are often ineffective in the later stages as hypotension, worsening renal function, hemodynamic instability, and diuretic resistance ensue. In this context, a shift in priorities of care may be appropriate for many patients. Frank discussion and acknowledgement of limited prognosis may facilitate discussion of end-of-life preferences and introduction of palliative care approaches focused on symptom management. As for patients with terminal cancer, broader use of advanced care planning might enhance overall quality of life and enable some patients and families to avoid the downward spiral of repeat hospitalizations leading up to death.

Although an effective 3-phase strategy may help to reduce the burden of preventable cardiovascular hospitalizations, approaches limited to heart failure-specific issues are unlikely to reduce the nearly 50% of rehospitalizations attributable to noncardiovascular causes highlighted in this article and in others. Simultaneous attention to optimizing the management of comorbid medical illness, including diabetes, anemia, chronic kidney disease, and obesity, is likely equally important to reduction in overall rehospitalization rates. Leveraging team-based healthcare delivery models such as the patient-centered medical home to accomplish this integration may be a critical step toward the reorganization of ambulatory heart failure care.

Recent data regarding the lack of impact of pay-for-performance measures on clinical outcomes in heart failure is an important object lesson regarding the limitations of process metrics for gauging the overall quality of care. Strategies focused on 30 days in the life of a patient with heart failure will have limited impact on the burden of heart failure either for the nation or the individual. The broader landscape of readmission risk underscores the need for a more comprehensive approach to heart failure management that can efficiently coordinate care to address the peaks of risk in the postdischarge transition and palliative phase while providing longitudinal supports to extend the meaningful journey that stretches between.

**Disclosures**

None.

**References**


**Key Words:** Editorial - heart failure - hospital readmission follow-up studies - hospitalization
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Circ Heart Fail. 2012;5:398-400
doi: 10.1161/CIRCHEARTFAILURE.112.968735
Circulation: Heart Failure is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 1941-3289. Online ISSN: 1941-3297

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://circheartfailure.ahajournals.org/content/5/4/398

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