

and identifying their clinical characteristics may be a critical initial clue to detect a high-risk population, possibly leading to a risk reduction in rehospitalization.

Although a broad range of potential factors associated with worsening and rehospitalization of HF exist, many factors are complicated and not fully explained (4). Regarding medical factors, unstable pathophysiological manifestations, such as blood pressure lability, large variations in body weight, higher levels of relevant biomarkers, underlying impaired cardiac performance, comorbidities, and/or refractoriness to therapy, are likely to play a central role in the primary determinants of HF adverse clinical outcomes. Meanwhile, in the clinical settings, general factors, including social environmental dimensions, also contribute substantially to the clinical course of HF and mortality (5). In particular, both early interventions after discharge by a skilled medical team, including home doctors, nurses, pharmacists, and nutritionists, and stay-at-home self-monitoring of vital signs and symptoms by patients themselves or a family member would help to detect high-risk patients and subsequently reduce rehospitalization. Total social care systems need to be incorporated into hospital-to-home transitional management of patients with HF.

Collectively, there seems to be a clinical entity in which HF patients with brittle dimensions in medical and social environments are prone to rehospitalization and mortality, and the prognosis of patients with HF would be largely influenced by this entity (Figure 1). Focusing further on this entity, continued medical follow-up and intervention after discharge, in addition to the limited interval within hospitalization, should be provided to reduce HF rehospitalization and improve the quality of HF care.

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REFERENCES

1. Sud M, Yu B, Wijeyesundera HC, et al. Associations between short or long length of stay and 30-day readmission and mortality in hospitalized patients with heart failure. *J Am Coll Cardiol HF* 2017;5:578-88.

2. Feltner C, Jones CD, Cene CW, et al. Transitional care interventions to prevent readmissions for persons with heart failure: a systematic review and meta-analysis. *Ann Intern Med* 2014;160:774-84.

3. Allen LA, Stevenson LW, Grady KL, et al. Decision making in advanced heart failure: a scientific statement from the American Heart Association. *Circulation* 2012;125:1928-52.

4. Dunbar-Yaffe R, Stitt A, Lee JJ, Mohamed S, Lee DS. Assessing risk and preventing 30-day readmissions in decompensated heart failure: opportunity to intervene? *Curr Heart Fail Rep* 2015;12:309-17.

5. Calvillo-King L, Arnold D, Eubank KJ, et al. Impact of social factors on risk of readmission or mortality in pneumonia and heart failure: systematic review. *J Gen Intern Med* 2013;28:269-82.

REPLY: "Who Will Be Rehospitalized Next? Targeting Heart Failure Patients With Brittle Dimensions"



We thank Drs. Tanaka and Node for highlighting the challenges that exist in predicting readmissions in stabilized patients with acute heart failure (HF). We agree with the authors that many predictive factors have not been delineated, which may underscore the difficulty in developing clinical and administrative models to predict readmissions (1). Length of stay (LOS) is an important metric for patients, clinicians, and hospital systems that may be overlooked during discharge planning. In our population-based study of patients admitted with HF, we reported a complex association between hospital LOS and readmissions after adjustment for numerous baseline predictors (2). Both short and long LOS were associated with an increased risk of early cardiovascular readmission. It is plausible that appropriate discharge planning and transitional care are underused in the former rather than latter group.

Additionally, although the social determinants of HF readmission (i.e., social supports, a safe living environment, education level, economic stability, and access to care) have not been fully elucidated, extrapolation from studies in general medical patients suggests that these factors play a pivotal role in global readmission rates (3). It is unclear if and how these factors differ between patients with a tendency for shorter versus longer hospital LOS. In our study, higher socioeconomic status was associated with a shorter LOS. Were these patients less likely to receive post-discharge planning because of the perception of social stability? This remains unclear, but it is important to design future prospective studies that can adequately define how these and other social factors may influence readmission rates and aid in risk stratification.

Finally, we emphasize the importance of systematically studying the utility of post-discharge transitional care because these strategies may address both the medical factors and the social determinants of HF

readmission alluded to by Tanaka et al. in their “road map” of HF care.

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REFERENCES

1. Dunbar-Yaffe R, Stitt A, Lee JJ, Mohamed S, Lee DS. Assessing risk and preventing 30-day readmissions in decompensated heart failure: opportunity to intervene? *Curr Heart Fail Rep* 2015;12:309-17.
2. Sud M, Yu B, Wijeyesundera HC, et al. Associations between short or long length of stay and 30-day readmission and mortality in hospitalized patients with heart failure. *J Am Coll Cardiol HF* 2017;5: 578-88.
3. Hersh AM, Masoudi FA, Allen LA. Postdischarge environment following heart failure hospitalization: expanding the view of hospital readmission. *J Am Heart Assoc* 2013;2:e000116.