

# The Three Rs for Preventing Heart Failure Readmission: Review, Reassess, and Reeducate

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Despite improvements in heart failure therapies, hospitalization readmission rates remain high. Nationally, increasing attention has been directed toward reducing readmission rates and thus identifying patients with the highest risk for readmission. This article summarizes the evidence related to decreasing readmission for patients with heart failure within 30 days after discharge, focusing on the acute setting. Each patient requires an individualized plan for successful transition from hospital to home and preventing readmission. Nurses must review the patient's current plan of care and adherence to it and look for clues to failure of the plan that could lead to readmission to the hospital. In addition, nurses must reassess the current plan with the patient and family to ensure that the plan continues to meet the patient's needs. Finally, nurses must continually reeducate patients about their plan of care, their plan for self-management, and strategies to prevent hospital readmission for heart failure. (*Critical Care Nurse*. 2019;39[2]:85-93)

**H**ear failure (HF) is a chronic disease that affects 6.5 million people in the United States, with 960 000 incident cases per year. The prevalence and 5-year survival continue to increase. Each year, more than 1 million people are hospitalized with HF.<sup>1</sup> Despite improvements in HF therapies, hospital readmission rates remain high.<sup>2</sup> In 2009, the US Centers for Medicare & Medicaid Services (CMS) began public reporting of all-cause readmission rates after an index HF hospitalization; CMS subsequently financially penalized hospitals with high readmission rates during the first 30 days after discharge. Nationally, increasing attention has been directed toward reducing readmissions and thus identifying patients with the highest risk for readmission. Although recent reviews of mortality rates for patients with HF show an increase in mortality as 30-day readmission rates have declined,<sup>3</sup> we are focusing on treatment strategies to reduce readmissions because that is the current CMS policy.

Many of the existing readmission data have been derived from registries, databases generated from randomized clinical trials, and Medicare administrative claims. Often, readmissions have been categorized as preventable or unpreventable. In other cases, reasons for readmission have been categorized as clinical, behavioral, and patient-centric, with recognition that the responsibility for readmission may reside with the patient, provider, hospital system, or any combination thereof (Table 1).

Studies have shown that a single intervention may not be sufficient to address the multiple needs of patients with HF and that the transition of care should be individualized and multifaceted to achieve additive and synergistic effects. Readmission may reflect a failure of the discharge process; thus, discharge planning should start at the time of admission. Nurses are ideally suited to reviewing the current plan of care, reassessing and revising the plan of care with the HF treatment team, and reeducating the patient and family about self-care to reduce the risk of readmission (see Figure). Multiple strategies have been reported for decreasing readmissions. This article summarizes the evidence related to decreasing readmission for patients with HF within 30 days after discharge, focusing on clinical, psychosocial, and systems-based factors in the acute setting.

## Clinical Factors

### Self-management

Self-management is essential to optimizing outcomes and preventing hospitalizations. To engage in

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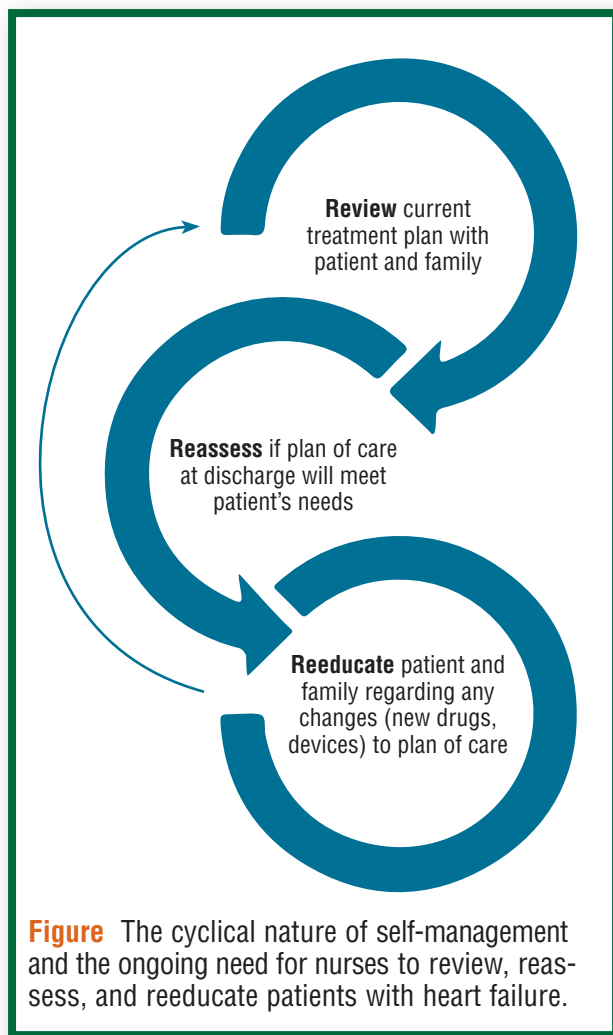
**Table 1** Summary of factors across studies that may influence readmission rates

Increase readmissions	Decrease readmissions
<b>Patient or psychosocial factors</b>	
Heart rate $\leq 80/\text{min}^4$	Normalization of hemoglobin 10-14 g/dL <sup>4</sup>
Abnormal troponin <sup>4</sup>	Normalization of sodium at discharge to 135-140 mEq/dL <sup>4</sup>
Serum creatinine 1.0-2.5 mg/dL <sup>4</sup>	
SBP > 130 mm Hg <sup>5</sup>	
African American ancestry <sup>4</sup>	Predischarge BNP $\leq 430$ pg/mL <sup>9</sup>
History of renal disease <sup>6,7,8</sup>	History of cardiovascular disease <sup>8</sup>
History of diabetes <sup>7</sup>	
HF admission within 1 year <sup>7</sup>	
Advanced age <sup>4,8</sup>	
Atrial fibrillation <sup>8</sup>	
<b>System-based factors</b>	
Medicaid <sup>10</sup>	Discharged to long-term care facility <sup>8</sup>
Admitted to a teaching hospital <sup>8</sup>	Hospital has dedicated HF services <sup>a,8</sup>
Discharged against medical advice <sup>8</sup>	Follow-up visit scheduled before discharge <sup>11</sup>
Discharged to home <sup>8</sup>	

Abbreviations: BNP, B-type natriuretic peptide; HF, heart failure; SBP, systolic blood pressure.

<sup>a</sup> Defined as having HF-specific plan for discharge and/or HF outpatient program.

self-management, patients and their families or caregivers need to acquire knowledge and skills. In a qualitative study designed to explore the root cause of HF readmission, Retrum et al<sup>12</sup> discovered 5 patient-identified factors as reasons for readmission: distressing symptoms, unavoidable illness progression, psychosocial factors, imperfect self-care, and health system failures. In a recent study, patients reported that they believed their HF admission could have been prevented if they had more knowledge and adhered to their diet.<sup>13</sup> Bradley et al<sup>11</sup> surveyed hospitals successful at reducing readmissions that were enrolled in the Hospital to Home initiative and created a summary of 10 key practices. Of the 10 practices, 3 centered on medication management. Education about the purposes of each medication, changes in dose or frequency, which to stop, which to start, and how to take them correctly was identified as essential to self-management. Nurses in the hospital have numerous opportunities to make an impact on self-management



**Figure** The cyclical nature of self-management and the ongoing need for nurses to review, reassess, and reeducate patients with heart failure.

by reviewing medication and other self-management skills with patients and their families. As the patient's condition or life situation changes, or HF progresses, nurses may be the first to identify such shifts and help the patient acquire new skills and knowledge to adapt.

### Patient Education

Current HF guidelines recommend that patients with HF receive "specific education to facilitate self-care."<sup>14(p263)</sup> All patients with HF need to know how to monitor and report their symptoms and weight fluctuations, restrict sodium intake, adhere to their prescribed medication regimens, and stay physically active (Table 2). A systematic review of 35 educational intervention studies found that knowledge, self-monitoring, medication adherence, time to hospitalization, and days in the hospital improved with education.<sup>18</sup> Educating patients before discharge has been shown to reduce readmissions, and poor adherence

## Table 2 Important topics for discharge teaching

### General topics<sup>13-17</sup>

- Explanation of the pathophysiology of heart failure
- Expected symptoms vs symptoms of worsening heart failure
- Psychological responses
- Self-monitoring, including daily weight tracking and blood pressure monitoring
- Action plan in case of increased symptoms/access to provider
- Treatment of sleep disorders
- Prognosis and disease progression
- Importance of social support network
- Smoking cessation
- Influenza/pneumococcal vaccinations
- Adherence strategies for follow-up appointment

### Dietary recommendations<sup>13-17</sup>

- Sodium restriction and foods to avoid
- Fluid restriction if needed
- Alcohol avoidance
- Fat and cholesterol restriction if coronary artery disease is present
- Glucose control if diabetes is present

### Activity and exercise<sup>14,17</sup>

- Exercise program/cardiac rehabilitation
- Sexual activity

### Medications<sup>14,16,17</sup>

- Purpose of each drug, dosing, and possible side effects
- Coping with a complicated regimen
- Cost issues

to discharge instructions can lead to worsening HF and readmissions.<sup>15</sup> Nurses are critical to the success of patient education; however, the recommended 1 hour of comprehensive patient education may be difficult to incorporate into practice.<sup>16,19</sup> The American Heart Association (AHA) Get-With-The-Guidelines-Heart Failure program is a hospital-based quality improvement program to promote the use of evidence-based guidelines when caring for patients with HF. The AHA provides a tool that includes patient education in the form of a discharge checklist, which is available at [www.heart.org/heartorg/Professional/TargetHFStroke/TargetHF/Target-HF-Strategies-and-Clinical-Tools\\_UCM\\_432444\\_Article.jsp#.WnDpEK6nHcs](http://www.heart.org/heartorg/Professional/TargetHFStroke/TargetHF/Target-HF-Strategies-and-Clinical-Tools_UCM_432444_Article.jsp#.WnDpEK6nHcs). A variety of educational methods may be used to best meet the patient's needs, keeping in mind that patient education should be culturally appropriate. Discharge planning and education should reflect a multidisciplinary team approach and may include cardiologists, pharmacists, social workers, physical and occupational therapists, and discharge planners.<sup>15</sup> However, nurses play a pivotal role in discharge education,

as they are often the ones providing patients with the discharge instructions. One efficient way to teach patients and increase their knowledge is the teach-back method. This method is an effective way to deliver HF education and, when bundled with prompt follow-up appointments and telephone calls, reduces 30-day readmissions.<sup>20,21</sup> A tool kit for the teach-back method provided by the Agency for Healthcare Research and Quality is available at [www.ahrq.gov/professionals/quality-patient-safety/quality-resources/tools/literacy-toolkit/healthlittoolkit2-tool5.html](http://www.ahrq.gov/professionals/quality-patient-safety/quality-resources/tools/literacy-toolkit/healthlittoolkit2-tool5.html). Instructional videos for the teach-back method can be found on the American Association of Heart Failure Nurses website at [www.aahfn.org](http://www.aahfn.org).

### Biomarkers

Routine laboratory tests of hemoglobin, electrolytes, and renal and liver function are helpful to discern end-organ dysfunction in advanced HF. Natriuretic peptides (B-type [BNP] and N-terminal pro [NT-proBNP]) and cardiac troponin I (cTnI) may be of value to predict outcomes, including readmission. Patients with a predis-

Measuring and monitoring cardiac troponin levels are important as elevations may indicate myocardial ischemia and necrosis even in the absence of pain.

charge BNP of 430 pg/mL or less are less likely to be readmitted within 30 days.<sup>22</sup> Predis-

charge NT-proBNP is also more strongly associated with outcomes than NT-proBNP level at admission.<sup>5,9</sup> Bettencourt et al<sup>9</sup> found that a 30% reduction in NT-proBNP was associated with a higher risk of death or readmission. A higher BNP measured at discharge may serve as a prompt for an earlier clinic appointment or discharge telephone call to assess the patient's condition and help prevent readmission.

Cardiac troponin levels (cTnI, cTnT) add prognostic information to that obtained from other clinical data. Elevations in cTnI and cTnT both correlate with a poor prognosis and increased risk of mortality, but current evidence indicates that elevated cardiac troponin levels do not predict 30-day readmission rates.<sup>22</sup> However, measuring and monitoring cardiac troponin levels are important, especially in the acute setting, as elevations may indicate myocardial ischemia and necrosis even in the absence of chest pain.<sup>17</sup>

The New York Heart Association (NYHA) class is an indirect interpretation of patients' symptoms, history, and results of cardiac testing that is generally assessed and assigned by clinicians. Although it is an imperfect measure, several studies have shown that NYHA class is a predictor of mortality and readmission for HF patients.<sup>23-25</sup> Holland et al<sup>24</sup> allowed patients with both reduced and preserved ejection fraction HF to self-assign their NYHA class and found that those with a higher class (III and IV) had more frequent hospital readmissions than patients with baseline classes I and II (who had a similar incidence of readmission). Ahmed et al<sup>23</sup> studied only patients with an ejection fraction greater than 45%. They reported that ambulatory patients with NYHA class III and IV HF and preserved systolic function also had higher readmission rates. Both of these studies indicated that multiple factors other than NYHA class directly affect risk for readmission.

### Comorbidities

The recently released American College of Cardiology (ACC)/AHA/Heart Failure Society of America HF focused update includes recommendations for addressing important comorbidities in HF patients.<sup>5</sup> The update notes that anemia may be independently associated with HF disease severity and is associated with decreased exercise capacity. Therefore, the update recommended that patients with NYHA class II or III HF who also have iron deficiency (ferritin < 100 ng/mL or 100-300 ng/mL if transferrin saturation is < 20%) receive intravenous iron replacement therapy. These new recommendations also include initiating therapies that maintain a systolic blood pressure of 130 mm Hg for patients with stage C reduced and preserved ejection fraction HF, noting that blood pressure control is associated with fewer adverse cardiovascular events. Lastly, the recommendations specify that patients with NYHA class II to IV HF and sleep-disordered breathing or excessive daytime sleepiness have a formal sleep assessment to determine whether they are experiencing obstructive or central sleep apnea. Continuous positive airway pressure may be used to improve sleep quality and decrease daytime sleepiness.<sup>5</sup>

### Psychosocial Factors

#### Health-Related Quality of Life

Low health-related quality of life (HRQOL) predicts readmissions in patients with HF. As mentioned in the 2013 ACC/AHA Guideline for the Management of Heart

Failure, lack of improvement in HRQOL after discharge is a powerful predictor of readmission.<sup>14</sup>

Clinicians often rely on patients' subjective assessment of their functional classification to guide treatment and management of their HF. Stull et al<sup>26</sup> found that HRQOL was an independent and significant predictor of HF-related hospitalizations across all age groups in patients with HF with reduced ejection fraction, compared with traditional clinical indicators such as NYHA functional class, ejection fraction, blood urea nitrogen, creatinine, or comorbidities. Previous studies have aimed to standardize the evaluation of health status from the patient's perspective to aid in clinical management.<sup>27</sup> Patient-reported outcomes (PROs) are standardized tools that can provide information on patients' health status, including HRQOL. One potential way to incorporate HRQOL is to use a PRO tool such as the Minnesota Living with Heart Failure Questionnaire. Heart failure-specific PRO tools have been increasingly used in multiple settings, including discharge follow-up visits, routine outpatient appointments, and hospitalizations, to guide treatment.<sup>28</sup>

## Depression

Depression is more common in people with HF than in the general population and is associated with all-cause readmissions in this population.<sup>29-31</sup> In fact, depression is an independent risk factor for multiple readmissions from all causes in the HF population, and more severe depression has a larger impact on the rate of readmissions.<sup>32</sup> Linder et al<sup>33</sup> were among the first to describe the relationship between depression and readmission. They reported a significant positive correlation (Spearman  $r = 0.549$ ,  $P < .001$ ) between depression level (mild, moderate, or severe) and readmission status (no readmission, 30-day, or 60-day), with more depressed patients being more likely to be readmitted.<sup>33</sup> They also found that patients with a positive depression screening were more likely to be readmitted ( $\chi^2 = 82.3$ ,  $P < .001$ ).<sup>33</sup> Recently, Xu et al<sup>34</sup> also identified a strong association between high levels of depressive symptoms and readmission, with the likelihood of being readmitted more than double among those patients.

The reported prevalence of depression in patients with HF ranges from 13% to 77.5%.<sup>35</sup> Signs and symptoms of HF and depression overlap and often make diagnosing depression challenging.<sup>36-38</sup> Patients with depression are less likely to adhere to medication

regimens and lifestyle recommendations and to complete cardiac testing, which puts them at risk for readmission.<sup>39</sup>

Depression can be assessed when patients with HF are hospitalized; however, addressing acute exacerbations of their HF takes priority and can make assessing for depression difficult.<sup>35</sup> Despite the challenges, every patient should be screened for depression. The AHA recommends screening for depression in patients with heart disease, including those with HF, because the effects of depression have been associated with HF disease progression.<sup>40</sup> Screening for depression is an important component of care planning during hospitalization, as nurses have the support and resources to facilitate individualized interventions after screening is completed.<sup>33</sup> The 2 methods used to assess depression are interviews and self-reported symptom inventories.<sup>35</sup> Numerous tools can be used to screen for depression, each with specific advantages and disadvantages. Nurses should use the tool that their hospital has selected.

A multidisciplinary approach to treating depression is recommended, such as including a social worker in the care planning. Acute care nurses can benefit from understanding depression, its contribution to signs and symptoms of HF, and its effect on adherence to treatment to improve their ability to assess for depression as a contributor to hospitalizations.<sup>35</sup> This understanding can enable nurses to provide adequate social support to help alleviate symptoms of depression in patients with HF during hospitalization and to educate families about the importance of social support after discharge.<sup>35</sup>

## System-Based Factors

### Telephone Calls

A clinician-initiated discharge telephone call is a simple and cost-effective method of connecting with the patient after hospital discharge to check on his or her well-being, review or reinforce discharge instructions, and address issues that could lead to adverse outcomes.<sup>41,42</sup> This strategy may address a critical need in high-risk patients, especially those who are unlikely to initiate calls,<sup>43</sup> and thus help reduce readmission rates.

Centralizing discharge telephone calls from a person or department primarily focused on discharge communication can increase the percentage of patients reached, which can subsequently reduce readmission rates.<sup>44</sup> Schuller et al<sup>44</sup> found that 31% more patients were successfully contacted after centralization of telephone calls.

In addition, patients not reached by the discharge telephone calls had significantly higher readmission rates than those reached.<sup>44</sup>

The timing of patient contact is also important. According to Forster et al<sup>41</sup> and Hansen et al,<sup>45</sup> HF patients are at highest risk of adverse events in the first 2 weeks after discharge from the hospital. A study on telephonic intervention showed that the intervention had its greatest impact in averting readmission when performed as close to the discharge date as possible.<sup>42</sup> The initial telephone call focused on determining whether the patient had received appropriate services, such as whether medication prescriptions had been filled or durable medical equipment had been obtained.<sup>42</sup> Acute care nurses can inform patients to expect a discharge telephone call, stressing the importance of the initial call to ensure that they have received these services to facilitate their self-care.

Traditionally, nurses make these telephone calls. It is important to ensure that correct telephone contact information is on record before patients are discharged. Cur-

**Transitional care programs include patient education, telephone and in-clinic follow-up, early assessment, medication reconciliation, inclusion of caregivers, home visits, and handoff to postdischarge providers.**

rently, there is no defined process for how information gathered during telephone calls should be com-

municated with providers. In general, nurses should communicate troubling symptoms to the HF provider in whatever method their hospital typically uses (telephone call, page, etc). The important point is that nurses teach the patient to identify symptoms that may be of concern and relay that information to the HF provider in a timely manner to decrease readmissions.

### Transitioning Between Inpatient and Outpatient Settings

Transitional care programs use an integrated care approach and are designed to improve efficiency as patients transition from one setting to the next, often from the hospital to home.<sup>43</sup> Collaboration and coordination between settings are critical in improving patient outcomes, such as reducing readmissions. Components of transitional care programs include patient education, telephone follow-up, early follow-up in clinic after discharge, early assessment after hospital admission,

medication reconciliation, inclusion of caregivers, home visits, and handoff to postdischarge providers.<sup>43</sup> Patients should make an outpatient appointment before discharge to ensure an efficient and safe transition of care. In the inpatient setting, nurses often act as coordinators and liaisons for patient transitions.<sup>46</sup> Albert<sup>6</sup> found that successful transitional care for patients with HF demonstrated 8 common themes:

- Planning for discharge
- Multiprofessional teamwork, communication, and collaboration
- Timely, clear, and organized information
- Medication reconciliation and adherence
- Engaging social and community support groups
- Monitoring and managing signs and symptoms after discharge, and delivering patient education
- Outpatient follow-up
- Advanced-care planning and palliative and end-of-life care

Nurse home visits, nurse case management (nurse home visits combined with structured telephone support), and disease management clinics with comprehensive and multidisciplinary HF teams have been shown to significantly decrease all-cause readmissions compared with usual care.<sup>47</sup> Telemonitoring, telephone support, and pharmacist interventions did not significantly decrease readmissions.<sup>47</sup> Although nurse home visits were most effective in decreasing readmissions, followed by nurse case management and disease management clinics, there was no significant difference in their comparative effectiveness.<sup>47</sup> More research is needed to assess the benefits of implementing these themes.<sup>6</sup>

As stated by Van Spall et al, "There is no guideline-recommended nomenclature for the classification of transitional care services."<sup>47(p2)</sup> A multidisciplinary transitional care program for patients with HF, individualized to the hospital's patient population, has the potential to affect readmissions.

### Palliative Care

Palliative care is multidisciplinary care offered simultaneously with disease-oriented care that is intended to relieve suffering and improve quality of life for people with serious illnesses and their families. It is unlike hospice or end-of-life care in that it focuses on alleviating symptoms while life-lengthening treatments are pursued.<sup>48</sup> Palliative care has also been shown to improve

communication among the patient, family, and provider because it forces frank discussions about the disease entity, its therapeutic challenges, and patient preferences.<sup>49</sup> However, patients with HF are often not recognized by health care providers as being in need of palliative and/or hospice care until the final days of their disease because of the unpredictability of HF exacerbations and prognostic uncertainty.<sup>49</sup> Health care providers and families may not understand the goals of palliative care, which are directed at alleviating or controlling symptoms. Palliative care can be instituted much earlier than hospice care and is not dependent on prognosis or goals of treatment.<sup>50</sup>

Several organizations recommend palliative care for HF patients in their guidelines, including the AHA, ACC, Heart Failure Society of America, CMS, and The Joint Commission.<sup>6,48</sup> However, exactly what palliative care solution works best is not described. Studies have not shown a change in the disease trajectory of HF related to palliative care interventions.<sup>51</sup> They have, however, indicated that HF patients who receive palliative care have significantly reduced hospital admissions for HF.<sup>51-53</sup> The reasons for the decrease in readmission vary, which may be due partly to variance in the content and services offered in different palliative care programs. Taylor et al<sup>51</sup> reported a sharp drop in hospital readmissions in a veteran population enrolled in a community hospice program. Their report, however, focused on medication management and did not address other features of palliative care. In contrast, patients who were enrolled in the intervention group of the Palliative Advanced Home Care and Heart Failure Care (PREFER) model demonstrated a significantly lower mean (SD) number of hospitalizations than the control group (0.042 [0.60] vs 1.41 [1.81],  $P = .009$ ). This difference was attributed to an improvement in total symptom burden, self-efficacy, and quality of life. Wiskar et al<sup>53</sup> noted that palliative care consultations that focused on symptom control did not reduce readmissions but those that focused on advanced care planning did. Nurses at the bedside are in an ideal position to introduce the concept of palliative care to HF patients and to open the discussion of a palliative care consultation with providers.

### Low Socioeconomic Status

Acute HF is a common reason for readmission, and HF patients of low socioeconomic status are disproportionately affected.<sup>54</sup> These patients experience high rates

of readmission, consume high levels of resources, and often overuse the emergency department, resulting in fragmented care.<sup>55</sup> An effective strategy for reducing readmissions in patients with low socioeconomic status used in an urban teaching hospital was to initiate an immediate cardiology consultation in the emergency department. A provider who was familiar with the patient guided and performed the workup.<sup>55</sup> An important point to consider when managing patients with low socioeconomic status and preparing them for discharge is the impact of social factors on postdischarge outcomes, including 30-day readmission. Low socioeconomic status (low income and literacy levels), lack of insurance and social support, and substance abuse all influence self-management and increase the risk of readmission.<sup>56</sup>

### Clinical Implications

The existing evidence provides guidance for nurses caring for HF patients to help prevent readmissions. However, as demonstrated by the research, each patient requires an individualized plan for facilitating a successful transition from the hospital to home and preventing readmissions. Acute care nurses encounter patients with HF when the patient is unable to manage his or her condition at home or disease progression occurs. Therefore, it is essential that nurses review the patient's current plan of care and adherence to it, looking for clues to failure of the plan that led to readmission to the hospital. Nurses should also review with the patients and their caregivers current options for monitoring and follow-up that are being offered through their hospitals and clinics. Moreover, nurses must reassess the current plan with the patient and family to ensure that the patient's needs are being addressed and met. Identifying patients who lack adequate family support and may need assistance to implement self-care procedures after discharge is crucial for effective treatment. Finally, nurses must reeducate patients, not only just before discharge but continually throughout the length of stay, on their plan of care, their plan for self-management after discharge, and strategies to prevent hospital readmission related to HF. **CCN**

Financial Disclosures  
None reported.



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## See also

To learn more about caring for patients with heart failure, read “Two-Step Screening for Depressive Symptoms and Prediction of Mortality in Patients With Heart Failure” by Lee et al in the *American Journal of Critical Care*, May 2017;26:240-247. Available at [www.ajconline.org](http://www.ajconline.org).

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