Measuring Quality in Heart Failure
Do We Have the Metrics?

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As we approach the end of the first decade of the 21st century, it is evident that the epidemic of heart failure has not abated, nor have concerns about the quality of care received by patients with this condition. Recent data from the American Heart Association and the Centers for Disease Control and Prevention reaffirm that the number of patients hospitalized with heart failure has grown steadily over the past 30 years. With aging of the US population, this trend will undoubtedly continue, but it is also noteworthy that the increase in heart failure hospitalizations over the past few decades is not limited to the Medicare population. Moreover, the outcome of heart failure patients after hospital discharge is not improving. Despite evidence-based guidelines, performance measures, quality improvement programs, and public reporting of hospital-level performance data, the number of patients dying or readmitted to hospitals within 30 days of hospital discharge has not declined and is equivalent in patients with depressed and those with preserved left ventricular systolic function. Hospital readmission is expensive and contributes to the increasing economic burden of heart failure, but this is often a preventable event. However, the characteristics of patients who will require rehospitalization have not been identified, and it is impossible to predict which patients will be readmitted. In many cases it is not the patient, but the healthcare system involving multiple providers and transitions of care, that makes the conditions ripe for high readmission rates.

The fundamental first step in identifying and correcting gaps in healthcare quality is setting standards of care through development of evidence-based clinical practice guidelines. From quality indicators emphasized in guidelines, clinical performance measures can be derived to evaluate the quality of care provided by hospitals and by individual practitioners. Implementation of measures may then identify areas in which additional knowledge gaps exist, stimulating further research. This paradigm is not rigorous in many areas of medicine in which there is an inadequate evidence base, but heart failure would appear to be a condition that is well suited for this quality process, propelled by an abundance of multicenter randomized clinical trials and well-vetted practice guidelines.

This foundation has led to process measures that evaluate both hospital-specific and physician-specific clinical performance in heart failure care. However, despite significant improvement in adherence to the heart failure performance measures among US hospitals at the national level, with improvement in the Joint Commission heart failure composite score from 60% in 2002 to 84% in 2006, there continues to be great heterogeneity in hospital performance at the regional and local levels. In addition, even among hospitals with excellent adherence to the hospital measures, it appears that the process metrics now employed for measuring in-hospital heart failure care may not accurately predict short-term outcomes in terms of death and hospital readmission rates. These processes of care are designed to serve only as surrogates for outcome, and not necessarily short-term outcome. Measuring rates of smoking cessation counseling, anticoagulation therapy for atrial fibrillation, and ejection fraction is unlikely to affect short-term death and readmission rates. The single measure that may have the most impact on short-term postdischarge outcome, the provision of discharge instructions, is the measure with the lowest adherence and greatest heterogeneity among hospitals. Thus, the apparent inability of process measures to predict outcome has led to a growing impetus to develop valid outcomes measures. But do we have the necessary metrics to measure outcomes in heart failure? Medical record abstraction is cumbersome and ineffective in measuring subsequent outpatient outcomes and readmissions, as patients may die before readmission or be readmitted to another hospital in the same or distant community.

In this inaugural issue of Circulation: Cardiovascular Quality and Outcomes, Keenan et al present a model using Medicare administrative claims data to measure 30-day hospital readmission rates after discharge from an index heart failure hospitalization. The model was derived from >280,000 patients hospitalized in 2004 with a principal heart failure diagnosis, representing 50% of 2004 heart failure admissions in the Medicare population. Inpatient and outpatient claims from the preceding 12 months were assessed to identify and adjust for comorbidities. The 23.6% unadjusted 30-day readmission rate is in agreement with previous data and underscores the magnitude of this issue. The model was then validated with the remaining 50% of the 2004 and all of the 2003 heart failure hospitalizations. State-level readmission rates using this model were then further validated against...
medical record data from the National Heart Failure Project,\textsuperscript{18} with remarkable fidelity between the claims and medical record profiles for hospital readmission rates.

When one considers the straightforward accessibility of administrative claims data and the ability to capture readmission to any acute care hospital (not just the discharging hospital), this model represents an important methodological advance toward profiling hospital performance on the basis of 30-day hospital readmission. It supplements the authors’ previous work using administrative claims data to measure hospital performance on the basis of 30-day mortality rates after discharge for a heart failure hospitalization.\textsuperscript{19} It is noteworthy and understandable that the model for 30-day rehospitalization differs from that for 30-day mortality because the mechanisms for rehospitalization (hemodynamic instability, volume overload) differ in most instances from those for sudden death (arrhythmias).

There are several important limitations of claims-based measurement, as noted by Keenan et al, that are worthy of reemphasis here. The model is valid only for Medicare claims. The methodology will be difficult to replicate in other healthcare plans, and the 37 variables in the model validated in patients ≥65 years of age may differ in a younger population.

The 37 variables in the model include 9 cardiovascular and 26 comorbidity variables but only 2 demographic variables (age and sex). Missing from the model are other important demographic factors such as ethnicity and socioeconomic status. Potential differences in outcome among ethnic groups and socioeconomic status levels may be accounted for in the risk adjustment model, but it would nonetheless be important to understand whether there are disparities in care reflected in 30-day outcome among more disadvantaged patients. Using claims data for the previous 12 months for risk adjustment may fail if patients have limited access to care.

A major sticking point of this model is the use of all-cause hospital readmission. This is the standard approach in current measures of 30-day readmission rates, and it provides a patient-centered approach to overall medical care. In addition, this approach minimizes the incentive for “gaming” the indication for repeat hospitalization. However, when one considers the multiple comorbidities of this elderly population, it is anticipated that the majority of hospital readmissions will not be related to heart failure. Older Medicare data, before the specter of measurement would incentivize gaming, indicate that heart failure is the cause for only 18% of readmissions after an index heart failure admission.\textsuperscript{3} Additional efforts to measure 30-day cardiovascular admissions, and specifically heart failure admissions, are necessary to provide greater granularity in profiling hospitals’ quality of heart failure care.

As with all quality measurements, one must be aware of the potential for unintended consequences of the 30-day readmission measure. Repeat hospitalization in some instances may be a reflection of availability of heart failure subspecialists and accessibility of beds, and hospitals unable to care for patients because of limited expertise or limited access may appear to have a more favorable profile. A more dire consequence could be that patients who should be readmitted are denied the advanced care they deserve.

A final issue related to the 30-day rehospitalization measure is attributing this event to the initial hospital. Is the hospital responsible for subsequent outpatient outcomes? It is clearly responsible if there is failure to provide needed diagnostic tests, evidence-based discharge medications, and culturally sensitive discharge education, and even more so if there is pressure to limit hospital length of stay. Beyond these processes, the failure to maintain health status after hospitalization may be related less to the care and planning in the hospital and more to the transitions of care and lack of management of the “handoffs” among multiple providers in the community. A number of organizations are active in this arena. The National Quality Forum is focusing on identification and endorsement of measures suitable for both public accountability and quality improvement related to outcomes and efficiency of hospital care,\textsuperscript{20} and the American Heart Association is developing tools to assist healthcare providers in managing the transitions of care.\textsuperscript{21} As noted by Keenan et al,\textsuperscript{17} numerous studies have shown that inpatient and postdischarge interventions can reduce hospital readmissions. Measuring and publicly reporting 30-day readmission may stimulate the stakeholders in heart failure care—hospitals, physicians, nurses, and pharmacists—to develop a team-based approach to provide more effective communications and planning with patients and their outpatient providers.

Disclosures

None.

References


KEY WORDS: Editorials [Heart failure] [Outcomes] [Quality]
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doi: 10.1161/CIRCOUTCOMES.108.813972

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