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Effective management of heart failure requires affordable, objective and accurate tools

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Heart failure (HF) continues to be the most common reason for admission to a hospital for people over 65 years of age. Congestion, or fluid overload, is a primary clinical characteristic of patients presenting with HF.

In some patients, congestion can occur very rapidly but for most patients, congestion is a more generalized process that develops gradually, often leading to peripheral edema. Its identification and subsequent monitoring require affordable, objective and accurate tools to both reduce the cost burden this presents to the healthcare system and improve quality of life for these patients.

The clinical and cost burden of HF in the United States is enormous and projected to grow substantially as more people age into retirement and life expectancy increases. Today, there are approximately 6.5 million patients living with HF in the United States and 25 percent of them are classified as Class III (moderate-to-severe). HF incidence is nearly one-in-five after age 40, with prevalence increasing with age. Researchers predict that HF prevalence will increase approximately 46 percent in the next 15 years.

High cost of HF management

Management of HF currently costs the U.S. healthcare system approximately \$31 billion

in hospitalization costs alone. 4 Overall, the global economic cost in 2012 was estimated at \$108 billion per annum.

HF is the most common discharge diagnosis among patients older than 65 years and the primary cause of readmission within 60 days. Costs are incurred from readmissions, as well as the mortality of the HF population at risk. Studies have found that approximately 50 percent of HF patients die within five years of diagnosis, but for those with a HF hospital admission, 22 percent die within one year. One-in-nine U.S. deaths has HF mentioned on the death certificate.

Fluid management

Clearly, management of fluids in these patients is crucial. Accumulation of fluid in these patients is typically a gradual process. Techniques aimed at identifying large fluid accumulations over short periods of time are mostly ineffective. Many patients will not present until they have developed widespread peripheral edema. At this point, the need for medical intervention is obvious, but often too late.

A substantial number of patients with subclinical congestion will not be clinically diagnosed despite several symptoms, such as shortness of breath, fatigue, weakness, reduced ability to exercise, lack of appetite and more. Identification of this subclinical congestion at an earlier stage could allow for earlier changes in treatment and alter the progression of the condition.

Congestion is important in patients with HF. The discomfort of swollen legs, shortness of breath and impaired cognitive function, to name a few, precipitate hospitalizations. In fact, fluid retention and congestion are the most common causes of hospitalizations for patients with HF. Not only do these symptoms serve as powerful indicators of adverse prognosis, but they could potentially be equally important as a therapeutic marker.

Diuretics are the basis of management for patients with congestion. Most clinicians, however, would probably agree that diuretic use is based more on empirical judgement and subjective evaluation than objective, clinical evidence. Although several interventions might improve congestion, it often goes underdiagnosed.

Clinical guidelines

Current clinical guidelines for the prevention and treatment of HF include a comprehensive approach. This may include pharmacologic intervention, lifestyle recommendations, treatment of comorbidities, and device therapy during hospitalizations, as well as coordination of care at home or during palliative care.

Because of the substantial burden imposed on the U.S. healthcare system, payers, providers and other stakeholders must work together to develop better, objective, relevant approaches for HF patients and their treatment.

In the face of all of this, the most effective approach for improving care and reducing hospitalizations has been through penalties for lack of care and incentives for reporting quality information and HF-related measures.

In 2005 Centers for Medicare and Medicaid Services (CMS) published their first set of core process measures, which was then updated in 2008. This allowed visitors to compare hospitals based on outcome measures (30-day readmissions and mortality rates), as well as several process measures.

The CMS' Physician Quality Reporting System used incentive payments to encourage physicians and healthcare professionals to report HF-related measures, mainly centered around effective clinical care. In 2012 CMS introduced the Hospital Readmissions Reduction Program where hospitals are financially penalized for excess readmissions. In the first year of the program, over 2,200 hospitals experienced total penalties of about \$280 million in Medicare payments.

In the last few years, CMS has introduced several additional programs such as the Hospital Value-Based Purchasing Program where hospitals receive payment for achievements or improvements; the Bundled Payments for Care Improvement program aimed to financially incentivize improved quality and coordination of care at a lower cost to CMS; and the Medicare Shared Savings Program, which aims to achieve better health for individuals, improve population health and lower growth in expenditures.

Collectively, these efforts represent a significant investment in ensuring high quality of care for HF patients. Unfortunately, despite these efforts, the advances have been minimal. The prevalence of HF continues to rise, with only small improvements to survival being achieved, and costs continuing to increase.

A better approach

The time has come to provide better tools for managing patients, not simply imposing penalties for not providing quality care or incentives for doing slightly better than others. Medical technology today is evolving at an unprecedented rate, with new advances coming to the forefront to improve the lives of patients through smarter technology. The same should be happening with HF patients. Accurate, affordable noninvasive tools are critical for clinicians and patients alike.

Clinicians shouldn't have to guess if a patient has too much fluid or whether fluid has increased or decreased. The art of the clinical assessment is rapidly declining because of increased reliance on advanced tools, the slowness of making an accurate assessment and vague, misleading signs. The result: physicians are less skilled in clinical assessment and many patients subsequently go undiagnosed.

Finally, fluid analysis tools should be quick, efficient, and easy to use so that any medical professional can use them. In fact, patients should also be able to use them at home for self-monitoring.

For example, bioimpedance spectroscopy (BIS) technologies can be used in non-invasive clinical assessment and monitoring of tissue composition and fluid status. One FDA-cleared and CE Marked medical device, SOZO, can be used for multiple indications, including heart failure and lymphedema, to not only analyze personal data but also use population health data to compare individual data with others of similar demographics to better understand each patient's health needs.

These smarter tools and technology offer individualized assessment and management and are currently available for improved fluid analysis and management among HF patients.



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