

# Self-care Barriers Reported by Emergency Department Patients With Acute Heart Failure: A Sociotechnical Systems-Based Approach

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**Study objective:** We pilot tested a sociotechnical systems-based instrument that assesses the prevalence and nature of self-care barriers among patients presenting to the emergency department (ED) with acute heart failure.

**Methods:** A semistructured instrument for measuring self-reported self-care barriers was developed and administered by ED clinicians and nonclinician researchers to 31 ED patients receiving a diagnosis of acute heart failure. Responses were analyzed with descriptive statistics and qualitative content analysis. Feasibility was assessed by examining participant cooperation rates, instrument completion times, item nonresponse, and data yield.

**Results:** Of 47 distinct self-care barriers assessed, a median of 15 per patient were indicated as “sometimes” or “often” present. Thirty-four specific barriers were reported by more than 25% of patients and 9 were reported by more than 50%. The sources of barriers included the person, self-care tasks, tools and technologies, and organizational, social, and physical contexts. Seven of the top 10 most prevalent barriers were related to patient characteristics; the next 3, to the organizational context (eg, life disruptions). A preliminary feasibility assessment found few item nonresponses or comprehension difficulties, good cooperation, and high data yield from both closed- and open-ended items, but also found opportunities to reduce median administration time and variability.

**Conclusion:** An instrument assessing self-care barriers from multiple system sources can be feasibly implemented in the ED. Further research is required to modify the instrument for widespread use and evaluate its implementation across institutions and cultural contexts. Self-care barriers measurement can be one component of broader inquiry into the distributed health-related “work” activity of patients, caregivers, and clinicians. [Ann Emerg Med. 2015;66:1-12.]

Please see page 2 for the Editor’s Capsule Summary of this article.

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## INTRODUCTION

### Background

Acute heart failure is a major and potentially modifiable cause of US health care expenditures.<sup>1</sup> Patients with acute heart failure typically seek emergency department (ED) care and 80% of these are subsequently admitted to an inpatient setting.<sup>2</sup> Although approximately 20% of patients receive a diagnosis of de novo heart failure, most are experiencing an acute exacerbation of chronic heart failure.<sup>3</sup> For these patients, acute heart failure-related hospitalizations represent the largest proportion of their annual health care expenditures.<sup>1,4</sup> National estimates of heart failure 30-day readmission rates exceed 20%; heart failure is the top reason for readmission for Medicare patients.<sup>5,6</sup>

A majority of acute heart failure exacerbations result not only from physiologic disease progression but also because of challenges in self-care, particularly medication and dietary nonadherence.<sup>7-9</sup> Self-care nonadherence is believed to occur in part because of a variety of barriers such as knowledge limitations, lack of social support, regimen complexity, and access to or cost of therapy.<sup>10-12</sup> If barriers to self-care can be systematically identified and addressed alongside physiologic risk, it may be possible to reduce acute heart failure presentations, hospitalizations, and associated costs.<sup>8</sup> Identifying and addressing self-care barriers in the ED is desirable because patients may have insufficient outpatient care support, lack of motivation to address the issues before their ED visit, and needs that can be immediately addressed by ED providers and ancillary

### Editor's Capsule Summary

#### *What is already known on this topic*

Acute heart failure is a chronic medical condition that leads to substantial health care costs because of recurrent hospitalizations.

#### *What question this study addressed*

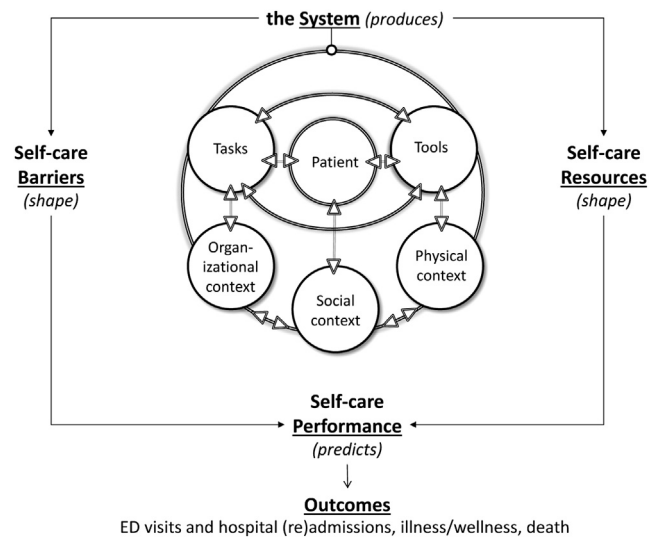
This 31-patient pilot study used a mixed-methods approach to understand barriers to receiving effective heart failure care.

#### *What this study adds to our knowledge*

Patients cited 47 barriers to self-care, grouped into person, self-care tasks, tools/technologies, organizational, social, and physical contexts, as factors in their care. Thirty-four factors were listed by greater than 25% of patients.

#### *How this is relevant to clinical practice*

Understanding why patients have trouble with self-care will help providers design systems and interventions to reduce emergency department recidivism and hospitalization.



**Figure 1.** A sociotechnical systems model of self-care barriers (and resources).

and contextual (or environmental) factors.<sup>26,27</sup> Several reviews and comprehensive interview-based studies have identified barriers across these system components, but to our knowledge no study in heart failure has used a systems model.<sup>10,11,28-31</sup> Furthermore, with few exceptions,<sup>14,32</sup> heart failure self-care barriers have not been investigated during an acute exacerbation in the ED.

In parallel to the above work on sociotechnical systems, there has been an increasing emphasis on capturing social determinants of health or contextual factors such as poverty and lack of transportation.<sup>33</sup> It has been argued that the failure to consider these factors in planning or evaluating care constitutes a “contextual error”<sup>34</sup> that results in poorer outcomes.<sup>35</sup> Furthermore, in 2014 the Institute of Medicine released 2 reports recommending the use of structured instruments to measure and capture these contextual factors in electronic health records.<sup>36,37</sup>

### Goals of This Investigation

Our study objectives were to pilot test a sociotechnical systems-based instrument to assess the prevalence and nature of barriers among patients presenting to the ED with acute heart failure and to conduct a preliminary feasibility assessment of this instrument in the time-sensitive ED setting.

### MATERIALS AND METHODS

A semistructured instrument for measuring self-reported self-care barriers was developed and administered to ED patients receiving a diagnosis of acute heart failure. The study was approved by the Vanderbilt University Institutional Review Board.

staff such as social workers and case managers, or through outpatient referral before ED discharge.<sup>13,14</sup>

A recent qualitative study of 28 patients readmitted within 180 days of discharge after an acute heart failure diagnosis found multiple self-reported reasons for readmission, including financial difficulties, suboptimal health care delivery, and undesirable effects of medications.<sup>15</sup> The authors urged further research with patients about their experienced challenges and a “shift from individual blame toward an empowerment and systems approach that considers the big picture.” Accordingly, the present study uses a patient-centered, sociotechnical systems model to assess barriers to heart failure self-care in a sample of patients with acute heart failure who presented to the ED.

Human factors engineering<sup>16,17</sup> is a discipline whose sociotechnical systems-based approach has been productively used to understand and improve clinician performance, particularly in the ED.<sup>18-21</sup> Recent work suggests that this approach can also be valuable for understanding patient and lay caregiver performance of activities such as self-care.<sup>22-24</sup>

Figure 1 shows a sociotechnical systems model of self-care barriers among acute heart failure patients. Drawing on previous human factors engineering models,<sup>16,23-25</sup> it depicts barriers as products of multiple patient, task, technology,

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