

## Editorial



# A Practical Way to Reduce Healthcare Costs in Patients With Heart Failure: Outpatient IV Diuretics Therapy

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### Conflict of Interest

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The prevalence of heart failure (HF) is continuously growing worldwide due to the rapidly aging population and advances in therapy.<sup>1</sup> The estimated prevalence of HF is over 23 million globally<sup>1</sup> and approximately 1.2 million in Korea.<sup>2</sup> Moreover, HF carries substantial morbidity and mortality.<sup>1,2</sup> Traditionally, the treatment goal in patients with HF has been targeted at improving clinical outcomes such as reducing HF hospitalization and cardiovascular death. Recently, patient-reported endpoints, such as quality of life and dyspnea, have also emerged as important treatment goals in the field of HF.<sup>3</sup> Healthcare cost and cost-effectiveness is another important aspect that we need to consider, although they are relatively unfamiliar themes for many clinicians. When we look at the clinical outcome of “hospitalization” from a broader perspective (societal or health system perspective), hospitalization can be interpreted as a healthcare burden.<sup>4,5</sup> A recent cohort study demonstrated that most healthcare costs for HF originated from hospitalization,<sup>4</sup> which shows another reason why we should put an effort to reduce hospitalization.

In this context, the study by Nair et al.<sup>6</sup> provides us with new insights into how to reduce the healthcare burden of HF. This single-center retrospective cohort study examined whether outpatient-based intravenous (IV) furosemide therapy could safely lower the 30-day readmission rate and financial burden in recently admitted patients with HF. All study subjects (n=56) were administered a single dose of IV furosemide (40 mg) over 3 hours in an outpatient clinic. Follow-up schedules varied depending on each individual’s condition. During the study period, the 30-day readmission rate was 6–9%, which was substantially lower than the national level (25%). This led to net savings of \$600,000–700,000 (700,000,000–800,000,000 KRW; US \$1=1,188 KRW as of January 2022) per year. Additionally, there was no evidence of the deterioration of kidney or liver function. The current study confirmed the findings of previous studies that demonstrated benefit and safety of outpatient IV furosemide in HF.<sup>7,8</sup> However, this study also had some limitations. First, they did not include a control group, which limits causal inferences. Although hospitalization decreased during the study period, it was not clear whether this was driven by outpatient IV furosemide or other etiologies. Second, it would be more informative if the authors provided information regarding the previous 2–3-year HF readmission rate before outpatient IV diuretics therapy. Third, subsequent studies that compare the mode and frequency of IV diuretics therapy would be helpful. In this study, all patients with HF who were recently hospitalized were enrolled without the requirement of additional evidence of volume overload

(e.g., BNP cutoff level). Additionally, the same dose of IV diuretics (40 mg) was used in all recently admitted patients with HF. However, some patients might be able to tolerate oral agents. Further research is needed to figure out 1) who will most benefit from outpatient IV diuretics and 2) the best way to apply IV diuretics in the outpatient setting (individualized therapy or fixed single-dose therapy). Lastly, long-term observation with another hard endpoint (death) is warranted. A previous study has shown that a hospital readmission reduction program was associated with fewer readmissions at the expense of more deaths.<sup>9)</sup>

More effort should be placed on reducing hospitalization to accomplish the goal of improving patient clinical outcomes and reducing healthcare burdens. As suggested in the study by Nair et al.,<sup>6)</sup> outpatient IV diuretics therapy might be one practical option to reach the goal in mild cases of HF. One prior study has shown the utility of outpatient IV diuretics therapy as an opportunity for providing patient education and care coordination, in addition to volume control.<sup>7)</sup> To achieve the maximal effect, a concerted effort through a multi-disciplinary team will be warranted.<sup>10)</sup> Similar to the outpatient clinics in rheumatology or oncology which provide IV immunomodulators or chemotherapy, an outpatient diuretics clinic in cardiology is expected to act as a buffer for reducing hospitalization and healthcare costs in patients with HF.

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