

REPLY: Time to Diuretic in Acute Heart Failure



Dr. Wussler and colleagues made some important and legitimate remarks about our study results recently published in *JACC: Heart Failure* (1). We agree with their concerns that variables not following normal distribution should be presented as medians and interquartile ranges (IQRs) and that their differences should be tested with nonparametric tests. Using Mann-Whitney *U* test, we found there were no differences between B-type natriuretic peptide levels in the early group and those in the delayed group (1,025 pg/ml; interquartile range [IQR]: 596 to 1,871 pg/ml vs. 1,013 pg/ml; IQR: 571 to 1,836 pg/ml, respectively; $p = 0.729$). N-terminal pro-B-type natriuretic peptide levels (5,322 pg/ml; IQR: 2,532 to 12,346 pg/ml vs. 6,100 pg/ml; IQR: 2,927 to 14,218 pg/ml, respectively; $p = 0.078$), troponin I (0.05 ng/ml; IQR: 0.03 to 0.31 ng/ml vs. 0.06; IQR: 0.03 to 0.25 ng/ml, respectively; $p = 0.121$), and troponin T (0.03 ng/ml; IQR: 0.02 to 0.10 ng/ml vs. 0.03 ng/ml; IQR: 0.02 to 0.07 ng/ml, respectively; $p = 0.921$) did not differ between the groups either.

Regarding the predictors of delayed door-to-diuretics (D2D) time, we found there had been a mistake during coding of the categorical variables (i.e., ischemic heart disease, atrial fibrillation, and chronic obstructive pulmonary disease [COPD]) in the binary logistic regression analysis. To be more precise, the presence and absence of the comorbidities were erroneously switched. After correction, the presence of atrial fibrillation, COPD, and higher Get With the Guidelines score were independently associated with delayed D2D time, whereas the presence of ischemic heart disease, advanced New York Heart Association functional class, and higher heart rate were associated with early D2D time (Table 1). We offer our sincerest apology to the readers of *JACC: Heart Failure* for the inattentiveness. Nonetheless, the conclusion remains unaffected, and the D2D time was not associated with clinical outcomes in our study population.

Finally, we reported significant differences among clinical characteristics of patients with acute heart failure (AHF) in different registries (2), and we also coauthored the study of different post-discharge outcomes between patients with AHF from East Asia and those from Europe (3). As acknowledged in that report, our study results cannot be generalized to all patients with heart failure. Nonetheless, considering the subacute nature of AHF with heterogenous causes and pathophysiology, we are skeptical that D2D time

TABLE 1 Predictors of Delayed Door-to-Diuretics Time

	p Value	Odds Ratio	95% CI
Ischemic heart disease	0.004	0.74	0.60-0.91
Atrial fibrillation	0.017	1.31	1.05-1.64
COPD	0.033	1.43	1.03-1.98
NYHA	<0.001	0.76	0.65-0.88
Heart rate	<0.001	0.99	0.98-0.99
GWGT Score	0.030	1.01	1.00-1.03

Data are binary logistic regression with forward conditional modeling (delayed group as outcome variable). Variables included were age and sex and variables with p value < 0.1 in univariate analysis. Those variables were sex, age, ischemic heart disease, atrial fibrillation, previous VHD, COPD, current smoker, CRT implantation, NYHA functional class, systolic blood pressure (mm Hg), heart rate, lung congestion in X-ray, LVEF, GWGT score, and institution name.

COPD = chronic obstructive pulmonary disease; CRT = cardiac resynchronization therapy; GWGT = Get With the Guidelines; LVEF = left ventricular ejection fraction; NYHA = New York Heart Association; VHD = valvular heart disease.

would be more critical in Caucasians than in Asians with AHF.

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REFERENCES

1. Park JJ, Kim SH, Oh IY, et al. The effect of door-to-diuretic time on clinical outcomes in patients with acute heart failure. *J Am Col Cardiol HF* 2018;6: 286-94.
2. Lee SE, Cho HJ, Lee HY, et al. A multicentre cohort study of acute heart failure syndromes in Korea: rationale, design, and interim observations of the Korean Acute Heart Failure (KorAHF) registry. *Eur J Heart Fail* 2014;16: 700-8.
3. Akiyama E, Van Aelst LNL, Arrigo M, et al. East Asia may have a better 1-year survival following an acute heart failure episode compared with Europe: results from an international observational cohort. *Eur J Heart Fail* 2018;20: 1071-5.

Chronic Heart Failure Care and Costs



What Is the Efficiency of Investing in Quality?

We have read the recent study by Wadhwa et al. (1) with great interest. Rising direct health care costs associated with pandemic conditions such as chronic heart failure (CHF) are becoming major threats to the sustainability of health care systems in most Western countries. This concern has boosted the development