Time to Intravenous Therapy and Clinical Outcomes in Older Patients Presenting with Acute Decompensated Heart Failure: An Analysis of the ADHERE Registry Emergency Module

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Authors: Yee Weng Wong, Gregg C. Fonarow, Xiaojuan Mi, Roger M. Mills, Frank W. Peacock, IV, Lesley Curtis, Laura Qualls, Winslow Klaskala, Adrian F. Hernandez, Duke Clinical Research Institute, Durham, NC, USA

Background: Most patients hospitalized with acute decompensated heart failure (ADHF) present through the emergency department (ED). Prior studies suggest that ED treatment delay may be associated with an increased risk of in-hospital mortality; however, the association with 30-day mortality and re-admission rates remains uncertain. We examined the association of time to first intravenous (IV) HF therapy with in-hospital and 30-day outcomes.

Methods: Using the ADHERE Registry Emergency Module (ADHERE-EM) linked to Medicare claims data, we identified patients aged ≥65 years old admitted for ADHF (index admission) who were enrolled in fee-for-service Medicare. Patients who did not receive IV HF therapy (e.g. diuretics, vasodilators and/or inotropes) during index admission were excluded. Cox proportional hazard models were used to assess the association of time to first IV HF therapy with 30-day all-cause mortality and or re-admission. Generalized linear mixed models were used to examine the association of time to first IV HF therapy with in-hospital mortality and length of stay.

Results: 6,971 patients were included in this analysis. Most patients received the first IV HF therapy promptly, with median time to treatment of 2.3 hours (IQR 1.1, 4.4). The cumulative incidence of 30-day all-cause mortality or re-admission did not differ by quartile of time to treatment. In the adjusted Cox model, time to first IV HF therapy was not associated with an increased risk of 30-day all-cause mortality or re-admission. Confirming earlier studies, time to first IV HF therapy had a statistically significant but modest clinical impact on in-hospital mortality rate (adjusted OR 1.01 per hour delay; 95% CI 1.00, 1.02; P=0.001) and length of stay (adjusted estimate 0.057 day per hour delay; 95% CI 0.047, 0.066; P<0.0001).

Conclusions: Among older patients presenting to an ED with ADHF, most received prompt IV HF therapy. Increased time to administration of first IV HF therapy was not associated with an increased risk of 30-day all-cause mortality or re-admission. Longer time to first IV HF therapy was associated with modest but statistically significant increases in both index admission mortality rate and length of stay.