

Response to Letter Regarding Article, “Early Deaths in Heart Failure Patients Discharged From the Emergency Department: A Population-Based Analysis”

We thank Pang et al for their interest in our work highlighting a gap in knowledge and an area that is in need of further research.¹ Our study demonstrates the clinical equipoise in the area of acute heart failure and the emergent care of this condition by identifying predictors of early mortality. Our study highlights a number of important points. First, there was substantial overlap in the predicted probabilities of death between those who were admitted and discharged from the emergency department, confirming that decision-making in this context is empirical and potentially susceptible to misclassification. Second, although few formal guidelines exist regarding admission or discharge of patients with acute heart failure, the predicted mortality risk distribution was bimodal, suggesting that clinicians are able to discriminate to some degree based on their clinical impression. However, our study clearly demonstrates that there is a need for decision-making tools that can be used in the emergency department setting because there was significant early mortality among those who were discharged.

Clinical decision assist methods that can identify high-risk patients could have an impact by suggesting that patients should be admitted to the hospital because of an increased risk of early mortality. From the perspective of safety, patients who are at higher mortality risk may benefit from hospital admission and acute care. In contrast, from the perspective of health system efficiency, some patients may be well enough to discharge from the emergency department to seek outpatient care. The current study used linked administrative databases to gain insights into some of the potential predictors that may contribute to such decision-making. These factors included age, male sex, arrival by emergency medical services, initial triage acuity, number of previous heart failure hospitalizations, valvular heart disease, peripheral vascular disease, length of emergency department stay, and noncardiac comorbidities.

The c-statistics for prediction of 7-day and 30-day death were 0.806 and 0.755, respectively.

Using the model covariates, we were able to determine predicted mortality risk and examine the observed mortality rates according to quintiles of predicted death. Mortality rates at 7 days for those in the lowest to highest quintiles of risk were: 0.2%, 0.3%, 0.5%, 1.1%, and 3.9%, respectively (P -trend <0.001). Mortality rates at 30 days for those in the lowest to highest quintiles of risk were 1.0%, 1.4%, 2.6%, 4.2%, and 10.7%, respectively (P -trend <0.001). Predictive models with a relatively wide range of predicted probabilities of death may therefore be useful to identify both lower- and higher-risk patients.

Disclosures

None.

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Reference

1. Lee DS, Schull MJ, Alter DA, Austin PC, Laupacis A, Chong A, Tu JV, Stukel TA. Early deaths in patients with heart failure discharged from the emergency department: a population-based analysis. *Circ Heart Fail.* 2010;3:228–235.

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