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Letter to the Editor for: “The Utility of Therapeutic Hypothermia for Post-Cardiac Arrest Syndrome Patients With an Initial Non-Shockable Rhythm” by Perman et. al

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Keywords

Hypothermia; Outcomes

To the Editor

Using data from the 6-center PATH registry, Perman et al. found that patients with a non-shockable cardiac arrest treated with therapeutic hypothermia had a ~3-fold increased odds of both survival to hospital discharge and favorable neurological survival.¹ The authors posited that their analysis was more rigorous than prior observational studies as they used a propensity score analysis to mimic a quasi-experimental design.

Although the authors are to be lauded in addressing this important clinical question, their analyses are limited in several ways. First, a propensity score is only as useful as the measured covariates for which it accounts. The propensity score in this study adjusted for only 5 variables: age, sex, location of arrest, witnessed arrest, and duration of arrest. None of these variables reflect patients’ severity of illness, especially among those with in-hospital cardiac arrest, and the latter 3 variables pertain to only out-of-hospital cardiac arrest. Given the paucity of variables in deriving the propensity score in this study, differences in *unmeasured* covariates between treated untreated patients could have affected survival outcomes.

Second, did the authors consider including in their propensity score 2 variables they did have at their disposal—the calendar year of the arrest and the PATH hospital site? Their Figure 1 shows that many patients from the non-hypothermia cohort were from years 2000–2007, while the hypothermia cohort did not have any cases before 2005 and were enrolled mostly after 2007. Since out-of-hospital and in-hospital cardiac arrest survival have both improved during this time period,^{2, 3} non-adjustment of the year of cardiac arrest may have biased their results. Moreover, given that significant variation in cardiac arrest survival has been documented among hospitals⁴, it would only strengthen their results if they had included the PATH hospital site (as well as the year of the arrest) in their propensity score model.

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Conflicts of Interest: None

Results of prior studies of hypothermia treatment for non-shockable cardiac arrest rhythms have varied widely.⁵ Given the small sample size and the limited number of variables for propensity score adjustment in this study, the verdict remains inconclusive as to whether patients with cardiac arrests due to asystole or pulsless electrical activity benefit from hypothermia treatment. Short of a large clinical trial, a much larger cohort study which uses a *robust* propensity score that can adequately adjust for patient severity of illness remains a high priority in order to demonstrate the effectiveness of hypothermia treatment for patients with non-shockable cardiac arrest rhythms.

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Disclosures

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