In Reply: “Impact of Targeted Temperature Management on ED Patients with Drug Overdose–Related Cardiac Arrest”

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We appreciate the interest from Dr. Eggleston and colleagues about our recently published article with reference to apparent racial disparities in the administration of targeted temperature management (TTM). Because the article itself did not contain a dedicated demographical statistical analysis, we are including it here. Of 47 patients who achieved ROSC at any time, TTM was initiated in 12/14 (86%) Whites (comparison group), 2/3 Blacks (67%, $p = 0.46$), 4/11 Asians (36%, $p = 0.017$), 3/6 Hispanics (50%, $p = 0.13$), and 8/13 other/unknown (62%, $p = 0.21$). Therefore, this sub-analysis is mostly underpowered to show significant differences, but the strongest suggestion of a disparity is among Asians, rather than Blacks or Hispanics in the study.

On a related note, our group recently published the first data [1] in the toxicology literature that used race as an independent predictor variable for treatment. We found that both non-Hispanic Black and Hispanic patients were less likely to receive any antidote when presenting with acute drug overdose. This held true even for the administration of antidotes with standardized criteria for administration (e.g., naloxone, N-acetylcysteine).

There is a growing body of evidence that racial and ethnic disparities are present in the acute care of the ED patient. For example, racial disparities have been reported for rates of analgesia for severe abdominal pain [2] and thrombolytics for stroke [3]. While some studies have examined demographic characteristics and sex differences in patients undergoing

targeted temperature management (TTM) [4–6], we were unable to find studies that directly investigated the effect of race on the administration of TTM.

Determination of a true racial disparity should ideally control for confounders including clinical features that determine the decision to cool, which are complex. These include issues such as down-time, comorbidities, primary respiratory events, and perhaps type of overdose. Furthermore, assessment for possible additional factors such as insurance status, provider race/ethnicity, and hospital level barriers must also be considered in future research. All of these factors are difficult to distinguish through retrospective chart review, and are better answered by prospective data collection. Ideally, such a study would have large enough sample size to allow for robust regression modeling in order to separate true disparities from confounding factors.

It is not clear exactly how or why race/ethnicity may drive the administration of TTM, though much of the literature on health care disparities attributes differential treatment to unconscious bias rather than deliberate “withholding” of needed care. Additional studies exploring race, ethnicity, and TTM initiation in large prospective cohorts would be necessary to determine national prevalence and the potential impact on patient outcomes of a significant disparity in the management of overdose-related cardiac arrest. As we move forward with new models to improve healthcare delivery for victims of cardiac arrest, we must ensure that patients of all ethnic and racial backgrounds receive quality healthcare at every access point in our system, including the ED.

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Compliance with Ethical Standards

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References

1. Wilder ME, Richardson LD, Hoffman RS, Winkel G, Manini AF. Racial disparities in the treatment of acute overdose in the emergency department. *Clin Toxicol (Phila)*. 2018;56(12):1173–8.
2. Shah AA, Zogg CK, Zafar SN, Schneider EB, Cooper LA, Chapital AB, et al. Analgesic Access for Acute Abdominal Pain in the Emergency Department Among Racial/Ethnic Minority Patients: A Nationwide Examination. *Med Care*. 2015;53:1000–9.
3. Aparicio HJ, Carr BG, Kasner SE, Kallan MJ, Albright KC, Kleindorfer DO, et al. Racial Disparities in Intravenous Recombinant Tissue Plasminogen Activator Use Persist at Primary Stroke Centers. *J Am Heart Assoc*. 2015;4:e001877.
4. Greenberg MR, Ahnert AM, Patel NC, Bennett CE, Elliott N, Lundquist M, et al. Sex differences in cardiac arrest survivors who receive therapeutic hypothermia. *Am J Emerg Med*. 2014;32:545–8.
5. Jena AB, Romley JA, Newton-Cheh C, Noseworthy P. Therapeutic hypothermia for cardiac arrest: real-world utilization trends and hospital mortality. *J Hosp Med*. 2012;7:684–9.
6. Lindner TW, Langorgen J, Sunde K, Larsen AI, Kvaloy JT, Heltne JK, et al. Factors predicting the use of therapeutic hypothermia and survival in unconscious out-of-hospital cardiac arrest patients admitted to the ICU. *Crit Care*. 2013;17:R147.