Supplementary Table 1: Standardized mean differences for characteristics of the matched study cohorts.* †

	Standardized mean differences
Demographic characteristics	
Age	-0.027
Male sex	0.018
Race	
White	-0.003
Black	0.019
Hispanic	-0.008
Other or unknown	-0.017
Pre-existing medical conditions	
Congestive heart failure	0.001
Acute myocardial infarction	-0.026
Arrhythmia	-0.018
Hypotension or hypoperfusion	0.053
Respiratory insufficiency	—
Sepsis or pneumonia	0.018
Metabolic or electrolyte abnormality	-0.045
Renal insufficiency	-0.001
Hepatic insufficiency	—
Central nervous system depression	-0.002
Major trauma	0.041
Cancer	—
Characteristics before cardiac arrest event	
Patient illness category	
Medical cardiac	-0.036
Medical non-cardiac	-0.002
Surgical cardiac	-0.008
Surgical non-cardiac	0.020
Trauma	0.048
Other or unknown	0.006
Pulse oximeter placement	0.004
Electrocardiography monitoring	<0.001
Arterial catheter placement	-0.006
Assisted or mechanical ventilation	0.046
Vascular access	0.015
Vasoactive infusion	0.017
Characteristics of cardiac arrest event	
Location of event	
Intensive care unit	0.016
Inpatient monitored	-0.007
Inpatient ward	-0.011
Emergency department	-0.013
Other or unknown	-0.011
Night or weekend event‡	-0.005
Immediate cause of arrest	
Acute myocardial infarction	—
Hypotension or hypoperfusion	0.023
Acute respiratory insufficiency	-0.026
Inadequate invasive airway	-0.009

Acute pulmonary edema	—
Acute pulmonary embolism	—
Metabolic or electrolyte abnormality	—
First documented rhythm	
Asystole or pulseless electrical activity	-0.036
Ventricular fibrillation or tachycardia	-0.036
Number of shocks	—
Bradycardia	-0.002
Other or unknown	-0.021
Duration of resuscitation	0.032
Pharmacologic interventions during arrest	
Epinephrine bolus	0.024
Sodium bicarbonate	0.009
Calcium chloride or gluconate	0.022
Atropine	0.030
Fluid bolus	0.032
Lidocaine	-0.008
Amiodarone	-0.022
Magnesium sulfate	0.015
Dextrose bolus	—
Calendar year	
2006/2007	-0.006
2008	0.022
2009	-0.005
2010	-0.035
2011	<0.001
2012	0.027

* Standardized mean differences calculated as the difference in means between participants with and without any monitoring, divided by the standard deviation among participants without monitoring.
† A '—' indicates that the variable was not included in the propensity score because it was balanced in both the matched and unmatched cohorts.
‡ Night: 11:00pm to 6:59am; Weekend: Friday 11:00pm to Monday 6:59am.

Appendix

Get With The Guidelines-Resuscitation Investigators:

Besides the authors Dana P. Edelson, MD, MS and Raina Merchant, MD, MSHP, members of the Get With The Guidelines-Resuscitation Adult Research Task Force include:

Steven M. Bradley MD, MPH, VA Eastern Colorado Healthcare System; Saket Girotra, MD, University of Iowa Carver College of Medicine; Paul S. Chan, MD MSc, Saint Luke's Mid America Heart Institute; Michael W. Donnino, MD, Beth Israel Deaconess Medical Center; Robert T. Faillace, MD, ScM, Geisinger Healthcare System; Romergryko Geocadin, MD, Johns Hopkins University School of Medicine; Vincent N. Mosesso, Jr., MD, University of Pittsburgh School of Medicine; Joseph P. Ornato, MD and Mary Ann Peberdy, MD, Virginia Commonwealth University; and Mindy Smyth, MSN, RN.

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Nandita Mitra, Ph.D.
Associate Professor

February 12, 2016

Joseph P. Ornato, MD, FACP, FACC, FACEP
Resuscitation: American Editor
Virginia Commonwealth University Health System
Department of Emergency Medicine
401 N. 12th Street
Richmond, VA 23298-525

RE: Statistical review letter
Manuscript Title: Physiologic Monitoring of CPR Quality During Adult Cardiac Arrest: A Propensity-Matched Cohort Study
Authors: Sutton et al.
Project Statistician: Dr. Benjamin French Ph.D.

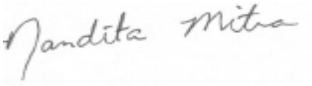
Dear Dr. Ornato,

This is a letter to confirm that I have reviewed the submitted work: "RESUS-D-15-00760, entitled "Physiologic Monitoring of CPR Quality During Adult Cardiac Arrest: A Propensity-Matched Cohort Study." I conclude that the statistical approaches used, including propensity score nearest-neighbor matching, are appropriate for this study. In direct response to the reviewer's request to evaluate the authors' handling of missing values, their approach to coding 'missing' as a separate category so that the propensity score balanced the distribution of missingness between groups is also appropriate and valid (Rosenbaum & Rubin, 1984; Mattei, 2009). Overall, the analysis was proper, thought-full and well-done.

I am an Associate Professor of Biostatistics at the University of Pennsylvania in the Department of Biostatistics & Epidemiology. My particular expertise is in causal inference, the analysis of observational studies and propensity methods. As such, I am well qualified to provide this independent statistical review of the authors' work. I was not part of the author group of the presented study and therefore have provided an unbiased assessment of the study analysis.

Please do not hesitate to contact me if you have any further concerns.

Sincerely,



Nandita Mitra, Ph.D.
Associate Professor of Biostatistics

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