SUPPLEMENTAL MATERIAL

Table S1. Enrollment by study site.

Site	Number screened	Number enrolled
Beth Israel Deaconess Medical Center	255	46
University of Pittsburgh Medical Center	375	16
Brigham and Women's Hospital	109	8
Beaumont Hospital	45	11
University of Alabama	34	2

*The University of Pittsburgh Mercy Hospital participated in screening towards the end of the trial, but did not enroll any patients.
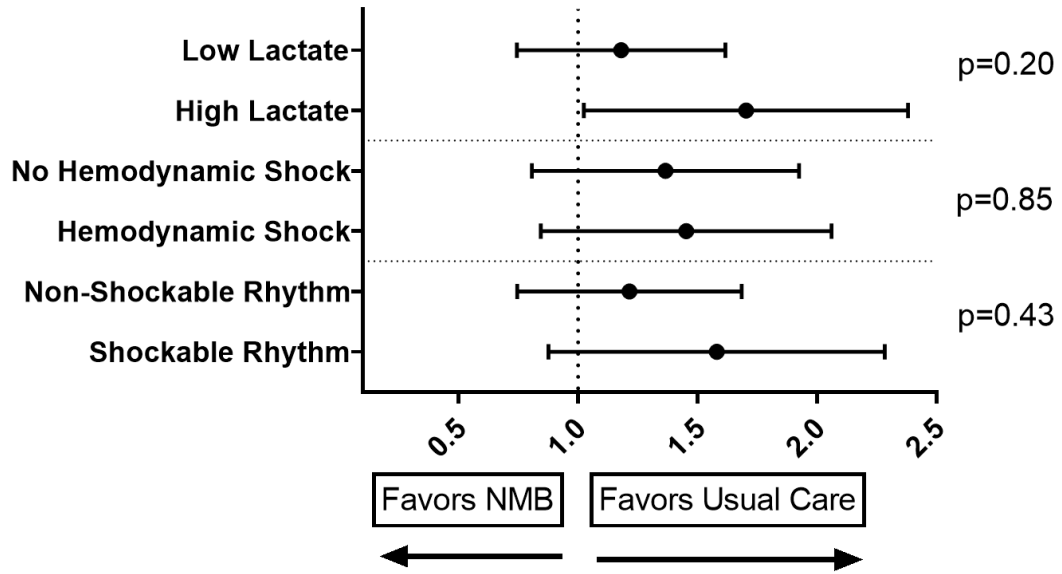
Table S2. Protocol Amendment Summary.

Change	Date	Rationale
Inclusion criteria changed from enrollment within 6 hours of ROSC to within 6 hours of TTM start.	11/12/14	Few patients were able to be consented and fully enrolled within 6 hours of ROSC
Exclusion criteria removed for patients not breathing over the set ventilator rate removed.	8/18/2015	Difficulty determining a patient's ability to breath over the set ventilator rate. Concerns regarding the potential influence of sedation.
Inclusion criteria of serum lactate >2mmol/L added.	02/13/17	Concern that patients enrolled with low lactate levels would be at low likelihood to benefit from the intervention with respect to the primary outcome of lactate change.

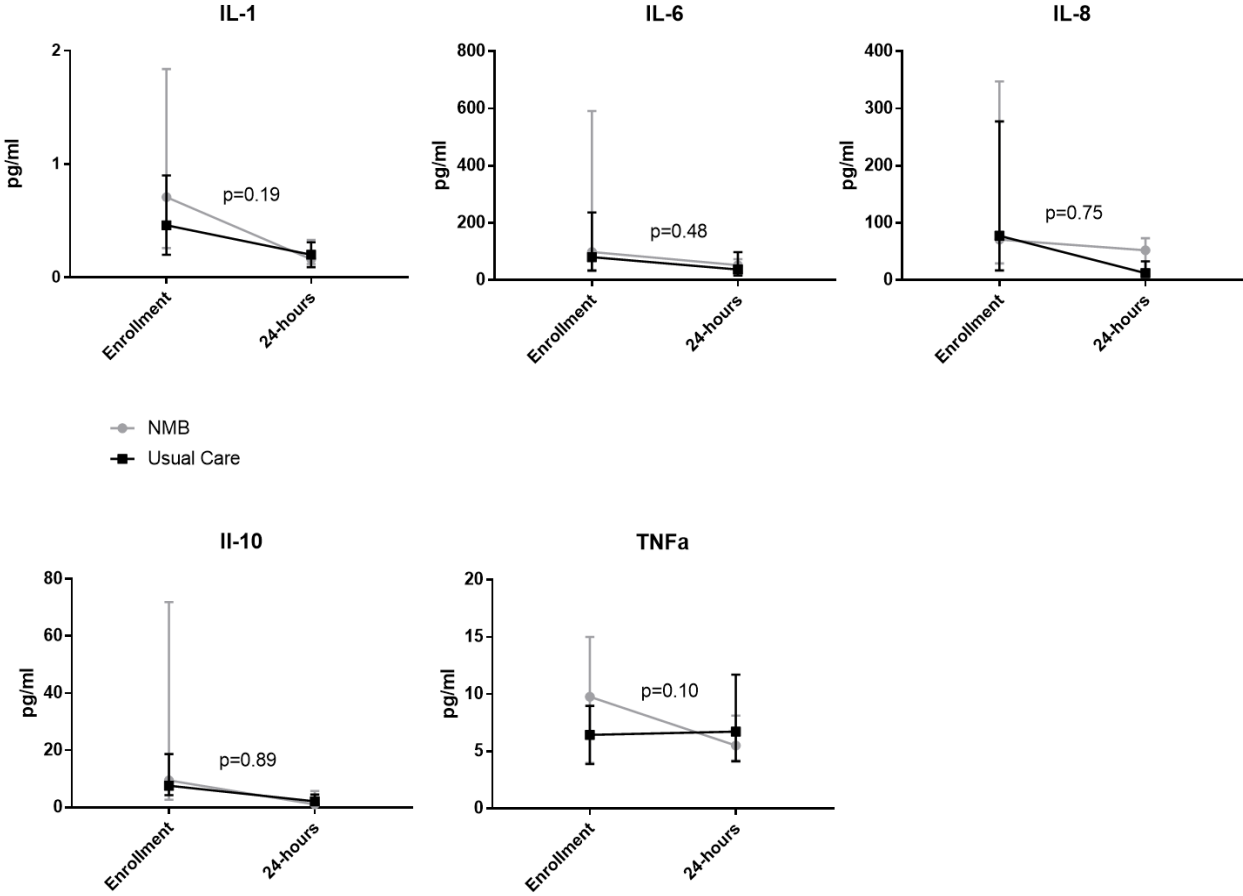## Table S3. Sedative and Paralytic Use.

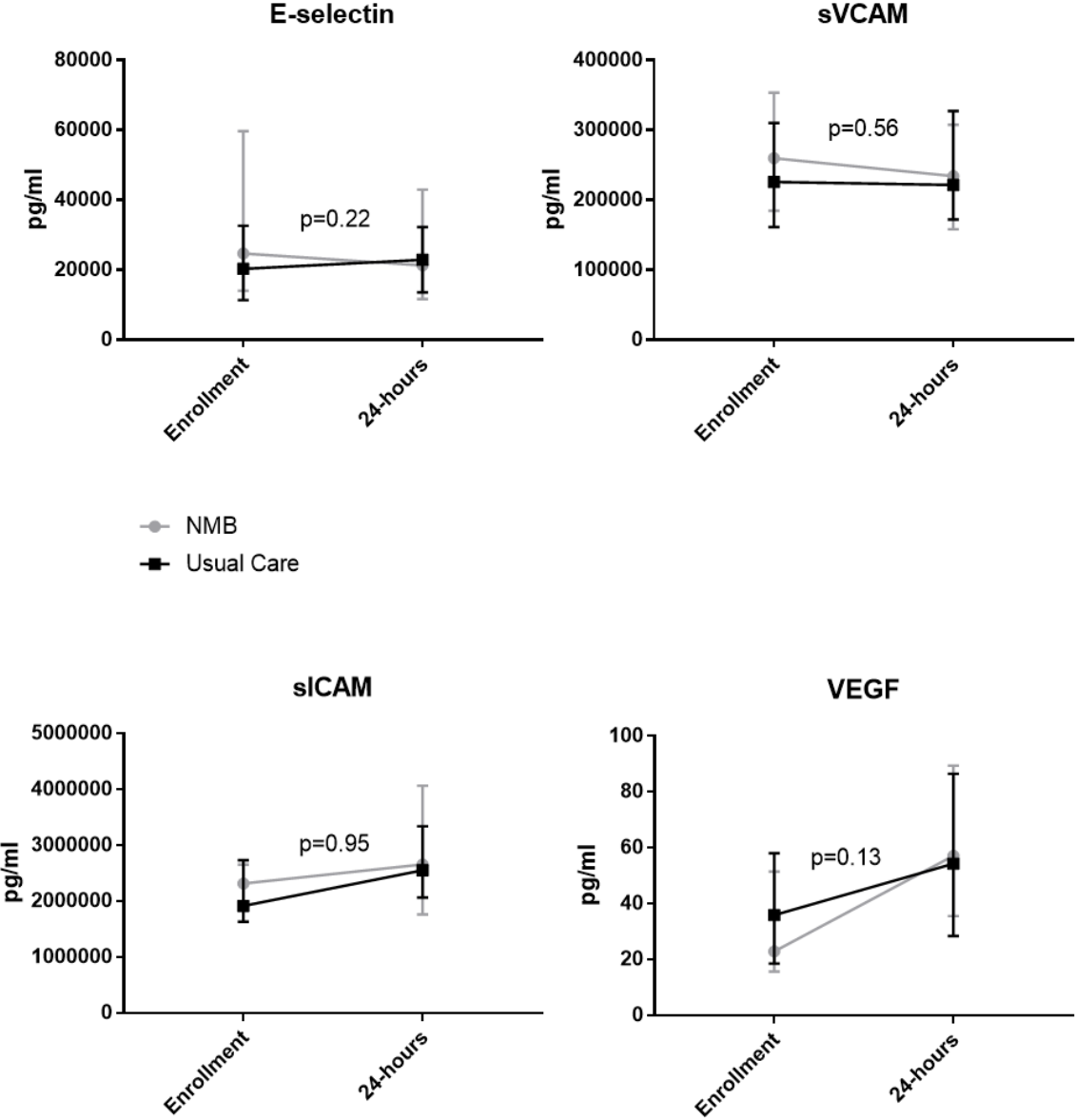|	NMB			Usual Care		
Sedation and Analgesia, n(%) receiving	ROSC-Enroll (n=37)	0-12h (n=37)	12-24h (n=37)	ROSC-Enroll (n=43)	0-12h (n=43)	12-24h (n=42)
Propofol	14 (38)	19 (51)	19 (51)	26 (61)	31 (72)	29 (67)
Midazolam	21 (57)	20 (54)	18 (49)	17 (40)	16 (37)	15 (36)
Lorazepam	3 (8)	2 (3)	3 (8)	2 (5)	1 (2)	0 (0)
Dexmedetomidine	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Fentanyl	28 (76)	32 (87)	33 (89)	31 (72)	31 (72)	28 (67)
Paralytic, n(%) receiving						
Rocuronium	4 (11)			0 (0)	1 (2)	2 (5)
Vecuronium	2 (5)			1 (2)	1 (2)	1 (2)
Cisatracurium	0 (0)			1 (2)	4 (9)	5 (12)

Figure S1. Subgroup Analyses.

Effect estimates reflect the ratio of geometric mean differences. p-values reflect the relevant interaction term.

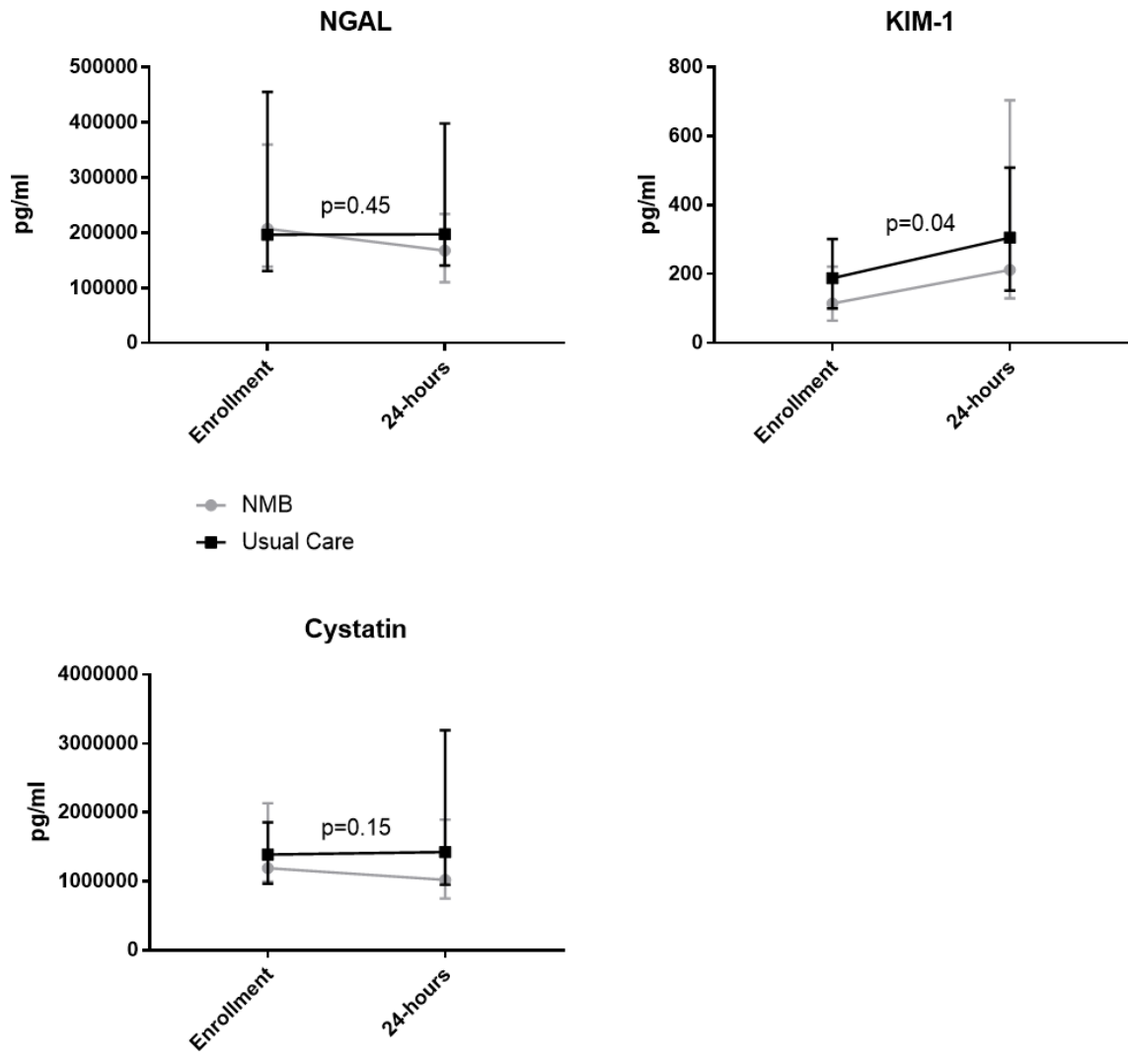# Figure S2. Inflammatory Biomarkers over Time.

Change in biomarker levels over time assessed via linear mixed model. Biomarker values log-transformed for the analysis as their distributions visually deviated from normal. p-values reflect the interaction between randomization group and time.

Figure S2. Endothelial and Vascular Biomarkers over Time.

Change in biomarker levels over time assessed via linear mixed model. Biomarker values log-transformed for the analysis as their distributions visually deviated from normal. p-values reflect the interaction between randomization group and time.

Figure S3. Biomarkers of Renal Injury over Time.

Change in biomarker levels over time assessed via linear mixed model. Biomarker values log-transformed for the analysis as their distributions visually deviated from normal. p-values reflect the interaction between randomization group and time.