Title: Prognostic Factors of Survival in Veno-Arterial ECMO Patients: A Multivariable Logistic Regression Analysis

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Contributor Role	Role Definition	Authors 1	2	3	4	5
Conceptualization	Ideas; formulation or evolution of overarching research goals and aims.	X			X	X
Data Curation	Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later reuse.	X	X	X	X	X
Formal Analysis	Application of statistical, mathematical, computational, or other formal techniques to analyze or synthesize study data.	X			X	X
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Investigation	Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection.	X		X	X	X
Methodology	Development or design of methodology; creation of models	X			X	X
Project Administration	Management and coordination responsibility for the research activity planning and execution.	X			X	X
Resources	Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools.					X
Software	Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code components.	X				X
Supervision	Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team.					X
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Discussion Points:

- Demographics can be important predictors of Veno-Arterial Extracorporeal Membranous Oxygenation survival. Which factors have a significant impact on survival, and at which time points?
- Predictors of surviving VA-ECMO support are increasingly important in resource limited intensive care units. Learn how to use demographics to help guide patient selection.

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ABSTRACT.

Background

Several models exist to predict mortality in patients on Veno-arterial (VA) extracorporeal membrane oxygenation (ECMO). Whether expanded demographic data points have prognostic implications is less understood. This study assessed the prognostic value of demographics in patients on VA-ECMO.

Methods

This retrospective cohort study investigated 410 patients who received VA-ECMO. Survival to hospital discharge, survival to intensive care unit discharge and survival to ECMO explantation were examined. A multivariable logistic regression was performed incorporating 11 demographic variables.

Results

44% (181/410) of patients survived to ECMO explant, 37% (152/410) of patients survived to ICU discharge, and 36% (146/410) of patients survived to hospital discharge. There was an increase in odds of survival to hospital discharge in patients who were less than 55 years old (Odds Ratio (OR) = 3.91 [95% Confidence Interval (CI) 2.35-6.49]). There was a decrease in odds of survival to hospital discharge in patients who had a prior cardiac arrest (OR = 0.35 [95% CI 0.20-0.63]). Patients who survived to hospital discharge less frequently had a history of smoking (51% vs 65%, respectively; p=0.008), and were younger compared to those who did not survive (51.4+/- 14.03 vs 57.3+/- 16.54).

Conclusion

Age less than 55 years old was a prognostic indicator of survival to hospital discharge following VA-ECMO, while history of smoking, history of dialysis, and history of cardiac arrest were associated with mortality. Sex, BMI, atrial fibrillation, hypertension, DM, and COPD were not significant indicators. These data may help guide optimal patient selection for VA-ECMO support.

Key Words: Extracorporeal Membrane Oxygenation, Heart Failure, Survival

INTRODUCTION

Extracorporeal Membranous Oxygenation (ECMO) is used as a temporary adjunct for respiratory and cardiac support in patients with either severe respiratory failure or cardiogenic shock.[1] Featuring large bore cannulae, an external oxygenator, temperature control unit, and pump circuit, ECMO has been used increasingly in intensive care unit settings for patients refractory to conventional therapeutics. This highly invasive procedure requires substantial training in the initiation and maintenance of ECMO physiology. Veno-Venous ECMO (VV-ECMO) continues to be used for patients in respiratory failure with preserved cardiac function,[2] treating acute respiratory distress syndrome (ARDS) patients, where it has been instrumental in providing lung rest, while Veno-Arterial ECMO (VA-ECMO) has allowed for both cardiac rest and end organ resuscitation.

As ECMO has grown in prevalence due to its ability providing to support patients until more definitive, durable cardiac recovery can be achieved.[3] The prognostic implications of this increase in prevalence, however, hinge on a multitude of factors, especially as higher risk cohorts with additional comorbidities are provided ECMO support.[4] Both the ethical concerns of poor ECMO candidate selection, and the resource requirements make identifying optimal candidates for ECMO a critical, and practical part of any successful ECMO program. Giving clinicians tools to predict who will be successfully bridged to recovery is of paramount importance. Several studies have described prognostic factors associated with VV or VA-ECMO, but due to the differences in indications, optimal candidates for VV or VA-ECMO differ significantly.

The COVID-19 pandemic has spurred research in selecting candidates for VV-ECMO,[5-7] with 2020 yielding more ECMO research than any year prior, but questions still remain about the optimal VA-ECMO candidate.[8] The Survival After Veno-Arterial ECMO (SAVE) score,[9, 10] duration of ECMO support,[11] and other lab values have been used to describe the prognosis of candidates for VV-ECMO, and VA-ECMO, but additional demographic, comorbidities, and disease factors are not well understood, or described.[12, 13] Identifying these traits to help better identify optimal candidates for limited availability[14] going forward is of central importance to ensuring positive patient outcomes, safe staffing ratios,[15, 16] and managing goals of care. This study seeks to help bridge that gap.

METHODS

We performed a retrospective cohort analysis of a major heart failure center for patients who received veno-arterial extracorporeal membrane oxygenation (VA-ECMO) between 2016-2020. We identified 545 patients over the age of 18 who underwent all categories of ECMO. 122 patients were excluded because they underwent veno-venous ECMO, while an additional 13 were excluded for receiving a configuration of ECMO which was not considered to be purely veno-arterial throughout their ECMO duration (e.g., VA-ECMO to right ventricular assist device or mixed Veno-arterial-venous ECMO).

We utilized retrospective electronic medical record chart review in conjunction with data collected through the University of Rochester Medical Center (URMC) ECMO QA/QI database to build a dataset including demographic, clinical, and outcome data for this patient population. Specifically, age, sex, body mass index (BMI), history of hypertension, history of diabetes mellitus (DM), history of chronic obstructive pulmonary disease (COPD), history of smoking, history of dialysis, and history of prior cardiac arrest were collected by a trained data abstraction team from EMR. Training was standardized between abstractors to ensure homogeneous data definitions, and criteria, but abstractors were not blinded to the hypothesis.

The primary outcome of interest was survival to discharge from the hospital. Secondary outcomes included ECMO explantation and discharge from the intensive care unit (ICU). Explantation was defined as removal of ECMO without replacement for greater than 24 hours. Discharge from the ICU was defined as removal of ECMO with stable hemodynamics not requiring vasoactive chemotherapeutics and otherwise meeting clinical criteria for floor status. Discharged from hospital was defined as discharge from the floor with placement being either home, physical medicine rehabilitation center (PM&R), or skilled nursing facility (SNF).

To understand associations between demographic factors and clinical history on outcomes following VA-ECMO, we utilized t-test, and univariate analysis for continuous variables, while a chi squared test was used for categorical variables. An F test was used to test to test for heterogeneity of variance. A multivariable logistic regression was also performed to analyze outcomes when stratified by outcome (explantation, ICU discharge, or hospital discharge) incorporating 11 variables (age less than 55, sex, BMI, history of hypertension, history of DM, history of COPD, history of smoking, history of dialysis, and history of cardiac arrest).

After performing multivariable logistic regression, we performed Welch two-sample, two-sided t-test analysis on characteristics of interest (characteristics which were found to be significant or nearly significant during logistic regression analysis). Equal variance was first tested with an F test and subsequent t tests were performed based on equality or inequality of variances. These characteristics included age, history of hypertension, history of smoking, history of dialysis, and history of prior cardiac arrest. Running t-tests for these populations helped us tease out instances where multicollinearity had occurred. An additional Welch two-sample, two-sided t-test was performed for time on VA-ECMO support. As this is not a historical factor of a patient’s history, it was not included in the multivariable logistic regression analysis. A significance threshold of 0.05 was chosen. R Studio Software (Version 1.4.1717) was utilized for data analysis. Google Documents and Microsoft Word were used for generating tables and figures. This study was approved by University of Rochester's RSRB (ID: STUDY00007291).

RESULTS.

Of 410 patients who were included in the study, the mean age was 55.2 years old. 32% of patients were female. The average BMI was 31 kg/m^2. 26% of patients had a history of atrial fibrillation, 63% has a history of hypertension, 33% had a history of diabetes mellitus, 15% had a history of COPD, 60% had a history of smoking, 6% had a history of dialysis, and 23% had a history of cardiac arrest. Demographics and descriptive characteristics were also stratified by survival to hospital discharge. Complete demographic characteristics are found in **Table 1**.

Of 410 patients, 44% (181/410) of patients survived to ECMO explant. 37% (152/410) of patients survived to ICU discharge. 36% (146/410) of patients survived to hospital discharge. For the following analyses, findings reaching significance are described textually while complete findings (significant and non-significant) are reported in **Tables 2-3**.

A multivariable logistic regression was run to elucidate associations between survival to ECMO explantation and various known clinical factors (age less than 55, history of hypertension, smoking, dialysis, and prior cardiac arrest). There was an increase in odds of survival to explantation in patients who were less than 55 years old (Odds Ratio (OR) = 3.05 [95% Confidence Interval (CI) 1.87-4.98]). There was a modest but significant increase in odds of survival to explantation in patients who had hypertension (OR = 1.67 [95% CI 1.01-2.76]). There was a decrease in odds of survival to explantation in patients who had a prior cardiac arrest (OR = 0.29 [95% CI 0.17-0.51]). A t-test or chi-squared test was performed to further characterize associations between survival to ECMO explantation (for continuous variables and categorical variables respectively) (age, history of hypertension, smoking, dialysis, and prior cardiac arrest). Of patients who survived to explantation, mean age was 53.3+/-14.8 years; of patients who did not survive to explantation, the mean was 56.8+/-16.6 (p = 0.030). Patients who survived to explantation were less likely to have a history of cardiac arrest when compared to patients who did not survive to explantation (13% vs 32%, respectively; p <0.0001).

An additional multivariable logistic regression was run to investigate survival to ICU discharge. There was an increase in odds of survival to ICU discharge in patients who were less than 55 years old (OR = 3.89 [95% CI 2.35-6.45]). There was a decrease in odds of survival to ICU discharge in patients who had a prior cardiac arrest (OR = 0.35 [95% CI 0.20-0.62]). A t-test or chi-squared test was performed to further characterize associations between survival to ECMO explantation (for continuous variables and categorical variables respectively). Of patients who survived to ICU discharge, their average age was 15.6 +/- 14.2 compared to an average age of 57.4+/- 16.5 in folks who did not survive to ICU discharge (p = 0.0002). A history of smoking was associated with a decreased odds of survival to ICU discharge (52% vs 65%, respectively; p=0.008). Similar to ECMO explant, patients who survived to ICU discharge were less likely to have a history of cardiac arrest compared to patients who did not survive to ICU discharge (13% vs 29%, respectively; p <0.0001).

A third multivariable logistic regression was examining survival to hospital discharge. There was an increase in odds of survival to hospital discharge in patients who were less than 55 years old (OR = 3.91 [95% CI 2.35-6.49]). There was a decrease in odds of survival to hospital discharge in patients who had a prior cardiac arrest (OR = 0.35 [95% CI 0.20-0.63]). Of patients who survived to hospital discharge, their average age was 51.4+/-14.0 compared to those who expired, with an average age of 57.3+/-16.5 (p = 0.002). Patients who survived to hospital discharge were less likely to have a history of smoking compared to patients who did not survive to hospital discharge (51.4% vs 65.2%, respectively; p=0.006). Similarly, patients who survived to hospital discharge had lower rates of cardiac arrest compared to patients who did not survive to hospital discharge (13.0% vs 29.2%, respectively; p = 0.0002). No other statistically significant associations were noted.

When comparing time on VA-ECMO support by all outcome variables, there were no correlations found between length of VA-ECMO run time and outcome **(Table 3).** Specifically, those explanted had a similar time receiving ECMO support to those who were not explanted (205 vs 174 hours, respectively; p=0.09). Additionally, those who were discharged from the ICU had a similar time receiving ECMO support to those who were not discharged from the ICU (191 vs 185 hours, respectively; p=0.77). Lastly, those who were discharged from the hospital had a similar run time to those who were not discharged from the hospital (182 vs 191 hours, respectively; p=0.65). **(Table 3)**

Utilizing findings from both the multivariable logistic regressions and t-tests, we summarized the protective prognostic factors versus the harmful prognostic factors of discharge from the hospital following VA-ECMO **(Figure 1).** Age less than 55 was found to be protective in predicting discharge from the hospital following VA-ECMO. History of smoking, dialysis, or cardiac arrest were found to be harmful in predicting discharge from the hospital following VA-ECMO.

Location of ECMO cannula was also investigated. Central ECMO placement (in the thorax, rather than peripherally in femoral/axillary arteries) was associated with increased survival to hospital discharge (79.7% vs 61.6%; p = 0.005), with a lower rate of cardiac arrest noted (12.5% in central cohort, 25.43% in peripheral cohort; p = 0.024) in those receiving central ECMO. Conversely, central ECMO was associated with no difference in duration of ventilator support, (12.94 vs 13.70 days; p = 0.715), or duration of ECMO support (193.66 hours peripheral vs 154.31hours central; p = 0.137). There was a difference in rates of cardiomyotomy between central and peripheral cohorts (p <0.0001), but of note cardiomyotomy was not associated with a differential in survival to hospital discharge (p = 0.051).

DISCUSSION.

Advancing the predictive power of ECMO prognostic models continues to be important for critical care clinicians. Since ECMO is designed only for short term intervention, appropriate allocation of resources is necessary as institutions seek to bridge patients capable of recovering cardiac function to recovery, destination, or transplant for definitive support. Given limited resources now more than ever during the time of pandemics, ethical discussions have led to the need for more research regarding patient selection for ECMO.[5] Prolonged use of VA-ECMO causes significant hemolysis, inflammation, and other adverse complications.[17,18] Because of this, patients who have a low likelihood of a good outcome, and little chance of recovery should be considered poor candidates for this technology, further highlighting the importance of accurate prognostic information as part of ECMO candidate selection processes.

Published data on pre ECMO risk factors has aided in the creation of Survival After Veno-Arterial ECMO (SAVE), a risk prediction model of mortality for patients requiring ECMO.[9] This clinical tool is limited to the specific risk factors included in the study and shows association of these variables with mortality. Specifically, history of smoking, dialysis status, BMI, atrial fibrillation, hypertension, diabetes mellitus, and COPD were not explored in the study; factors we believe are necessary for additional cohort prognostication. Studies allude to the SAVE score underestimating the probability of survival, while showing no clear trend of survival between the different risk groups classified within SAVE.[19] Thus, further research is needed to discern additional demographics to provide better prognosis of ECMO patients. SAVE has identified both protective prognostic factors (e.g. Younger age, lower weight, acute myocarditis, heart transplant, refractory ventricular tachycardia or fibrillation, higher diastolic blood pressure, and lower peak inspiratory pressure) and prognostic factors associated with poor outcomes (Chronic renal failure, longer duration of ventilation prior to ECMO initiation, pre-ECMO organ failures, pre-ECMO cardiac arrest, congenital heart disease, lower pulse pressure, and lower serum bicarbonate (HCO_3)) that are associated with mortality post ECMO explantation.[9]

This study shows age of less than 55, no history of smoking, no history of dialysis, and no history of cardiac arrest as protective prognostic factors leading to discharge from the hospital. In comparison, age greater than 55, history of smoking, history of dialysis, and history of cardiac arrest were identified as harmful prognostic factors **(Table 1).** While smoking was not associated with survival to explant, its consistent, strong trend across both survival to ICU discharge, and survival to hospital discharge suggests that this is a true association.

Differences between central and peripheral ECMO are surprising. These differences may be due to the selection of candidates for cardiac surgery prior to initiation of ECMO, or may be due to differences in artery and vein selection. It is possible that that central ECMO offers reduced rates of complications that have been shown to increase mortality, as lack of differential in ventilator support, and duration of ECMO support suggest that this difference in mortality is not secondary to variance in underlying disease severity, but this is in contrast with prior research that showed increased rates of limb ischemia in central VA-ECMO.[20] This difference may be due to differences in fluid dynamics, leading to improved coronary perfusion,[21] or higher rates of post-transplant ECMO support but the small patient population in this cohort receiving a heart transplant (n = 19) and durable mechanical support (n = 7) suggests that a different mechanism underlies this difference in survival. Additionally, the difference in rates of cardiomyotomy are understandable, due to the nature of central ECMO, but due to the lack of association with survival, this difference alone does not explain the difference in survival to hospital discharge between central and peripheral ECMO support. Further research is necessary to elucidate the mechanism of this differential.

Although providers may be hesitant to initiate ECMO on obese patients due to difficulty in cannulation, and high rates of comorbidities,[22] prior studies on VV-ECMO have showed no difference in survival to discharge based on BMI classification.[22, 23] This study further adds to that body of evidence, evaluating the role of VA-ECMO, and showed no significance in outcome prediction on BMI. **(Table 2)** This is important as it rejects the stigma associated with obese patients, allowing for optimum care. Further research also needs to be done to support this finding within additional patient cohorts. In this study, sex did not show a significant prediction in outcome. Such findings are consistent with other ECMO predictor models, ENCOURAGE, where they found no difference in survival between sexes.[24]

This study adds to the ability of providers to make evidence based decisions during candidate selection for VA-ECMO cannulation, and supports the idea that BMI may not be an independent factor associated with outcome prognosis, while other pertinent medical history, smoking history, and dialysis history may be important in selecting patients who will have favorable outcomes after VA-ECMO support.

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SUMMARY - ACCELERATING TRANSLATION

Title: Prognostic Factors of Survival in Veno-Arterial ECMO Patients: A Multivariable Logistic Regression Analysis

Problem to Solve

Extracorporeal membranous oxygenation (ECMO) is a method of providing support to a patient in heart failure, who's heart has a weakened ability to circulate blood. This support, however, is invasive, risky, and is associated with a high rate of mortality. Additionally, due to the complexity of ECMO, it requires higher than normal levels of staffing, and training. Due to the resource limitations on the medical system, identifying patients who will benefit from ECMO support, and are most likely to survive is of critical importance.

Aim of Study

This study seeks to use demographic and medical history to identify patients who are most likely to survive and benefit most from ECMO support. The importance of creating a model that is based on readily available patient information prior to ECMO initiation rather than variables that present during the duration of the support is central to the aims of this research.

Methodology

All patients who received ECMO support between 2016 and 2020 at a single large center were retrospectively included in this study. A model to isolate the effect of each variable on patient survival was generated, allowing the researchers to identify the impact of each variable individually on the outcome.

Results

There was an increase in odds of survival to hospital discharge in patients who were less than 55 years old. There was a decrease in odds of survival to hospital discharge in patients who had a prior cardiac arrest. Of patients who survived to hospital discharge, their average age was 51.4+/-14.0 compared to those who expired, with an average age of 57.3+/-16.5, a statistically significant difference. Patients who survived to hospital discharge were less likely to have smoked. Patients who survived to hospital discharge had lower likelihood of a prior cardiac arrest (13.0% vs 29.2%, respectively; $p = 0.0002$). No other associations were noted.

Conclusion

This study shows age of less than 55 years, no history of smoking, no history of dialysis, and no history of cardiac arrest as protective prognostic factors leading to discharge from the hospital. In comparison, age greater than 55, history of smoking, history of dialysis, and history of cardiac arrest were identified as harmful prognostic factors. While smoking was not associated with survival to ECMO discontinuation, its consistent, strong trend across both survival to ICU discharge, and survival to hospital discharge suggests that this is a true association.

This study, evaluating the role of VA-ECMO, showed no significance in outcome prediction on BMI. This is important as it rejects the stigma associated with obese patients, allowing for optimum care. In this study, sex did not show a significant prediction in outcome. Such findings are consistent with other ECMO predictor models, such as ENCOURAGE, where they found no difference in survival between sexes.

Differences between central ECMO placed in the chest and peripheral ECMO placed in limbs and neck are surprising. These differences may be due to the patients with central access for ECMO placement, or differences in the anatomy of the blood vessels. It is possible that that central ECMO offers reduced rates of complications that have been shown to increase mortality, as lack of differential in ventilator support, and duration of ECMO support suggest that this difference in mortality is not secondary to variance in underlying disease severity, but this is in contrast with prior research that showed increased rates of limb ischemia in central VA-ECMO.

This study supports existing predictors of survival in patients receiving ECMO, and importantly notes poorer survival in patients with age greater than 55, history of smoking, history of dialysis, and history of cardiac arrest. These factors can potentially help guide selection of patients for ECMO in the current resource limited ICU setting.

FIGURES AND TABLES.

Figure 1. Protective Prognostic Factors vs. Harmful Prognostic Factors in Discharge from Hospital

Protective Factors	Harmful Factors
• Age less than 55 • No history of smoking • No history of dialysis • No history of cardiac arrest	• Age greater than 55 • History of smoking • History of dialysis • History of cardiac arrest

Table 1. **Demographics and Descriptive Characteristics of Patient Cohort**

	All Patients (n=410)	**Survived to Hospital Discharge** (n = 146)	**Expired in Hospital** (n = 264)	**p-Value** * Indicates statistical significance
Age at Hospitalization (Mean; Years Old) +/- std dev	55.2 +/- 15.93	51.4 +/- 14.03	57.3 +/- 16.54	**p = 0.0002***
Female (%)	31.7	30.1	32.6	p = 0.61
BMI (kg/m^2)	30.9 +/- 7.25	30.6 +/- 6.74	31.0 +/- 7.53	p = 0.60
Atrial Fibrillation (%)	26.1	24.0	27.3	p = 0.53
Hypertension (%)	63.4	62.3	64.0	p = 0.73
Diabetes Mellitus (%)	32.7	31.5	33.3	p = 0.71
COPD (%)	15.1	11.6	17.1	p = 0.14
Smoking (%)	60.2	51.4	65.2	**p = 0.006***
Dialysis (%)	5.9	3.4	7.2	p = 0.12
Cardiac Arrest (%)	23.4	13.0	29.2	**p = 0.0002***

Table 2. Multivariable Logistic Regressions of Survival to Various Endpoints

	ECMO Explant		ICU Discharge		Hospital Discharge	
	OR (95 CI)	p value	OR (95 CI)	p value	OR (95 CI)	p value
Age <55	**3.05 (1.87-4.98)**	**<0.0001**	**3.89 (2.35-6.45)**	**<0.0001**	**3.91 (2.35-6.49)**	**<0.0001**
Female	0.67 (0.42-1.07)	0.09	0.72 (0.44-1.17)	0.19	0.73 (0.45-1.20)	0.22
BMI	0.98 (0.95-1.01)	0.26	0.98 (0.95-1.02)	0.35	0.99 (0.95-1.02)	0.38
Atrial Fibrillation	0.95 (0.58-1.57)	0.84	1.19 (0.71-2.01)	0.51	1.05 (0.62-1.78)	0.86
Hypertension	**1.67 (1.01-2.76)**	**0.05**	1.57 (0.93-2.64)	0.09	1.68 (0.99-2.85)	0.06
Diabetes Mellitus	1.32 (0.82-2.14)	0.25	1.25 (0.76-2.05)	0.38	1.05 (0.64-1.74)	0.85
COPD	0.77 (0.41-1.42)	0.40	0.80 (0.42-1.55)	0.52	0.81 (0.41-1.58)	0.53
Smoking	0.89 (0.58-1.38)	0.61	0.68 (0.44-1.07)	0.09	0.66 (0.42-1.03)	0.07
Dialysis	0.74 (0.30-1.80)	0.51	0.42 (0.15-1.15)	0.09	0.36 (0.12-1.03)	0.06
Cardiac Arrest	**0.29 (0.17-0.51)**	**<0.0001**	**0.35 (0.20-0.62)**	**0.0004**	**0.35 (0.20-0.63)**	**0.0005**

Bold indicates significance
OR = Odds Ratio
95 CI = 95% Confidence Interval

Table 3. Summary Statistics by Outcome Point

	Survived to Explant			Survived to ICU Discharge			Survived to Hospital Discharge		
	Survived	Expired	p	Survived	Expired	p	Survived	Expired	p
Age Mean years +/- std dev	53.3 +/- 14.8	56.8 +/- 16.6	**0.030**	51.6 +/- 14.2	57.4 +/- 16.5	**0.0002**	51.4 +/- 14.0	57.3 +/- 16.5	**0.0002**
Hypertension	65%	62%	0.65	63%	64%	0.77	62%	64%	0.73
Smoking	56%	63%	0.15	52%	65%	**0.008**	51%	65%	**0.006**
Dialysis	6%	6%	0.80	4%	7%	0.21	3%	7%	0.12
Cardiac Arrest	13%	32%	**<0.0001**	13%	29%	**<0.0001**	13%	29%	**0.0002**
Time on ECMO mean hours +/- std dev	205 +/- 157	174 +/- 220	0.09	191 +/- 164	185 +/- 212	0.77	182 +/- 130	191 +/- 224	0.65