

# Descriptive Analysis of Extracorporeal Support and Renal Replacement Therapy at a Tertiary Hospital during the SARS-CoV-2 Pandemic



Cheng, CY<sup>1</sup>; Stello, ZD<sup>1</sup>; Subramanyam, S<sup>1</sup>; Wille, K<sup>1</sup>; Marshall, T<sup>1</sup>; Gongora, E<sup>2</sup>; Tolwani, A<sup>1</sup>  
 1: Department of Medicine, University of Alabama at Birmingham, Birmingham, AL, USA  
 2: Department of Cardiothoracic Surgery, University of Alabama at Birmingham, Birmingham, AL, USA

## Abstract

- Extracorporeal Membrane Oxygenation (ECMO) has been more so utilized for respiratory support in the era of SARS-CoV-2.
- Acute Kidney Injury (AKI) is common in patients in the ICU needing ECMO and many need Continuous Renal Replacement Therapy (CRRT).
- Here, given the extent of utilization of both modalities at our center, we aimed to assess demographics of patients needing them and found that Caucasian patients comprised the majority, with the mean age of all patient being 49.8 years with the etiology of AKI being Acute Tubular Necrosis from Septic Shock.

## Introduction

- Acute kidney injury (AKI) is common in patients receiving ECMO, often necessitating use of continuous renal replacement therapy (CRRT) to optimize fluid balance and correct electrolyte abnormalities.
- There are few studies characterizing patients on both ECMO and CRRT.
- **Objective:** The principal aim of this analysis is to describe demographic and qualitative trends observed in patients receiving both ECMO and CRRT.

## Methods and Materials

- We performed a retrospective analysis of 99 patients receiving ECMO and CRRT simultaneously at a tertiary care hospital from 2019-2021.
- All patients requiring CRRT underwent continuous venous-venous hemodiafiltration (CVVHDF).
- We analyzed age, race, ECMO and CRRT durations of therapy, etiology of AKI, hospital length of stay (LOS), and mortality to evaluate trends in this cohort.
- Statistical analyses were performed using JMP 16.0 (Cary, NC) and Excel 2018 (Redmond, WA).

## Results

PATIENT CHARACTERISTICS	
Average age	49.8 +/- 14.4 years
Average hospital length of stay	65.7 +/- 56.4 days
Average days on ECMO	34.6 +/- 35.5 days
Average days on CRRT	30.6 +/- 25.8 days
Mortality rate	68 patients (69%)
Patients achieving full renal recovery by discharge	9 patients (9%)

Table 1. Patient demographics and hospital characteristics.

## Results, continued

Racial Composition of Patients

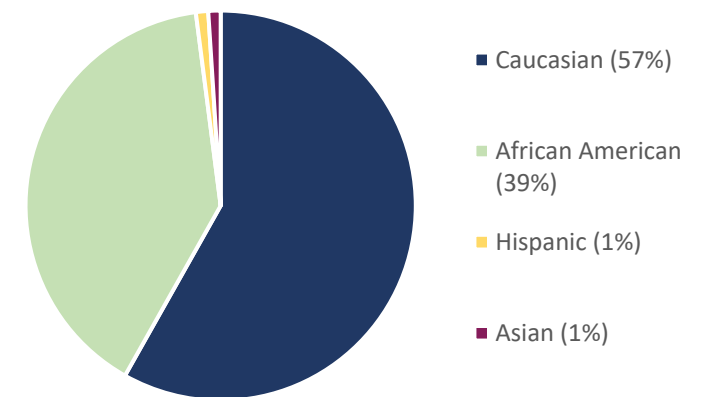


Figure 1. Racial Composition of Patients Requiring CRRT and ECMO.

Etiology of AKI

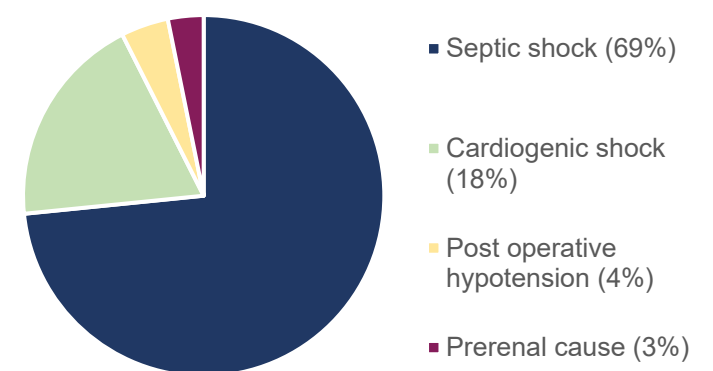


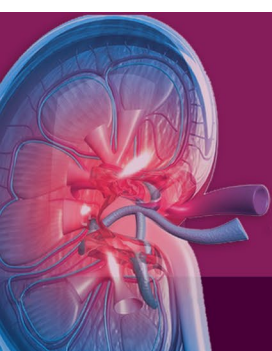
Figure 2. Etiology of AKI Necessitating CRRT.

## Discussion

- Our study is one of the largest studies conducted on patients receiving simultaneous CRRT and ECMO.
- Patients receiving CRRT and ECMO from our institution have a diverse background, etiology of hospitalization, and high mortality rate.
- A large number of patients in our cohort had prolonged hospital stays with very few ultimately able to attain full recovery of renal function.

## Conclusions

- The complexity of patients receiving both CRRT and ECMO warrants further investigation in the critical care setting.
- Further studies identifying factors that influence survival and enhance renal recovery are warranted to improve clinical outcomes in this setting.



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