

Post-ICU Syndrome in Extracorporeal Membrane Oxygenation Survivors Treated at a Long-Term Acute Care Hospital

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BACKGROUND

- Extracorporeal membrane oxygen (ECMO) is used as a temporary modality to support those with cardiopulmonary failure or arrest and carries a mortality rate of nearly 50%.
- ECMO survivors may recover to near independence as community-dwellers, but experience post-intensive care unit (ICU) syndrome manifested by physical and cognitive impairments and decreased quality of life.
- We describe a subset of ECMO survivors who require continued care at a long-term acute care hospital (LTACH) and the characteristics of their various dispositions (i.e., home, skilled nursing facilities, acute rehabilitation, acute care hospital setting).

METHODS

- We performed a retrospective cohort study of ECMO survivors treated at an LTACH from July 2015 to June 2022.
- We included those who were discharged to an LTACH after their treatment with ECMO.
- We excluded those who had ECMO after their LTACH admission. Data were obtained from electronic medical records including demographics, days on ECMO, ICU length of stay (LOS), LTACH LOS, and disposition outcomes.
- Indices of severity of illness were also calculated (APACHE II, SOFA, NUTRIC and Charlson Comorbidity Index).

RESULTS

782 patients admitted to LTACH
(2015-2022)

30 patients received ECMO
prior to LTACH admission

- Charlson Comorbidity Index predicts one-year mortality in patients with comorbid conditions, with a higher score representing a greater comorbidity burden.
- SOFA scores have been found to be good indicators of prognosis and help predict patient outcomes.
- APACHE II predicts hospital mortality using logistic regression, with higher APACHE scores implying a higher risk of death.
- The NUTRIC score is a validated nutritional risk assessment tool used in the ICU to identify which ICU patients are more likely to benefit from aggressive nutrition therapy, in addition to predicting 28-day mortality.

Table 1. Baseline Demographics

Age, years	49 ± 13.6
Gender	
Male	14 (47%)
Female	16 (53%)
Race	
White	11 (37%)
Black	13 (43%)
Other	6 (20%)

Table 2. Primary Diagnosis requiring VV-ECMO

Respiratory Failure	21 (70%)
Cardiac	2 (7%)
Neurologic	1 (3%)
Other	6 (20%)

Data represented as mean ± SD or n (%)

Table 3. Severity of Illness Scores Upon LTACH Admission

Charlson Comorbidity Index	3.5 ± 2.5
SOFA	3.0 ± 1.8
APACHE II	12.9 ± 5.0
NUTRIC	2.6 ± 1.4

Table 4. Disposition

Home	8 (27%)
Skilled Nursing Facility	6 (20%)
Acute Rehabilitation Facility	9 (30%)
Acute Care Hospital	7 (23%)

DISCUSSION

- Survivors of ECMO suffer from multiple comorbidities and endure multiple organ failures as reflected by high severity of illness.
- The majority of our patient cohort had respiratory failure requiring VV-ECMO.
- Despite this, approximately 27% of these patients are able to regain independence and go home after recovering at an LTACH.

CONCLUSION

- These scores are valuable as they have prognostic value and may assist care providers in formulating management plans with respect to rehabilitation and nutritional strategies, in addition to determining which patients should receive more aggressive care at the LTACH in order to achieve optimal outcomes, i.e., successful discharge home.
- Further investigation regarding the factors that contribute to the recovery of ECMO patients in the post-acute setting is needed to optimize their outcomes.

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CONFLICT OF INTEREST

- The authors declare no conflicts of interest.