

## The Futility Dilemma: Successful VV ECMO in a Young Male With No Recrutable Lung

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## Critical Care

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### The Futility Dilemma: Successful VV ECMO in a Young Male With No Recrutable Lung

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**INTRODUCTION:** Extra corporeal membrane oxygenation (ECMO) is considered salvage therapy in patients with severe acute respiratory distress syndrome (ARDS). There are still many questions unanswered and ethical dilemmas in the utilization of this tool. For many, a limit of duration of ECMO support should be established at the beginning of treatment; some advocate for two weeks maximum. We present a 25-year-old male who was on ECMO for 60 days and was successfully decannulated.

**CASE PRESENTATION:** A 25-year-old male with a history of IVDU presents with shortness of breath and cough. His oxygen saturation was 87% and chest X-ray showed left multilobar pneumonia. He was placed on high flow oxygen and started on antibiotics. Sputum and blood cultures revealed *Streptococcus Pneumonia*. During the first 48 hrs he developed severe ARDS and required intubation. He received standard of care but oxygenation and ventilation worsened so the decision to proceed with VV-ECMO was made. Despite lung protective ventilation, on day 17 on ECMO a CT scan of the chest showed almost complete consolidation of both lungs and a pressure-volume (PV) tool revealed no hysteresis, demonstrating no significant recruitable lung. He was dependant on 100% DO<sub>2</sub> and significant sweep to maintain oxygenation/ventilation. We considered lung transplant evaluation but his history prevented transplant centers from evaluating him. Because of persistent dense consolidation of both lungs, empiric treatment with steroids for presumed post infectious organizing pneumonia was started on ECMO day 45. He slowly improved and was successfully decannulated 60 days after initiation of ECMO. He was discharged from the hospital and is currently off oxygen and has minimal pulmonary fibrosis on CT scan of the chest.

**DISCUSSION:** Most of the studies pertaining to ECMO in severe ARDS have a median duration of treatment of 7-10 days. The concern is for the efficacy of prolonged ECMO support in patients with little or no likelihood of native lung recovery. As per the ELSO guidelines there should be a consideration of futility at 2 weeks of ECMO if there is no native lung function present, like in our patient. However, the literature also shows multiple cases of ECMO support for several weeks with good outcomes.

**CONCLUSIONS:** Futility of care in prolonged ECMO is not a well-established entity. The lack of data on this topic leads to medical and ethical dilemmas for both the family and the providers. More studies are needed regarding duration of ECMO specifically in patients with no native lung function after 2 weeks to guide patient care and help families and intensivists make an educated decision in terms of when to withdraw ECMO.

**Reference #1:** Rosenberg, Andrew A., et al. "Prolonged duration ECMO for ARDS: futility, native lung recovery, or transplantation?." *ASAIO Journal* 59.6 (2013): 642-650.

**Reference #2:** Wiktor, Arek J., et al. "Prolonged VV ECMO (265 Days) for ARDS without technical complications." *ASAIO Journal* 61.2 (2015): 205-206.

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