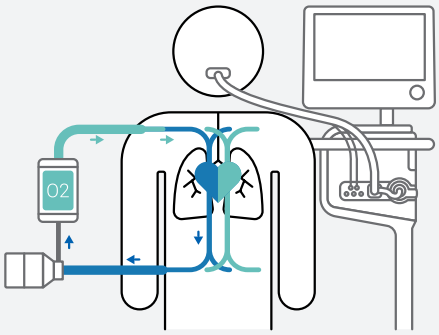
Transpulmonary-pressure guided strategy in severe ARDS treated with VV-ECMO

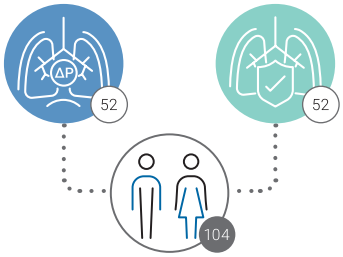


Background

Previous studies suggest that adjusting ventilator settings based on Ptp measurements may minimze VILI. However, the effect of a **Ptp-guided ventilation strategy** in **severe ARDS treated with VV-ECMO** has never been investigated.
This study aimed to compare the effect of a Ptp-guided ventilation strategy with the **lung-rest strategy (LRS)** recommended by ELSO guidelines when weaning patients with severe ARDS from ECMO.

Method

A single-center, prospective, randomized controlled trial was conducted in a sixteen-bed respiratory ICU at a tertiary academic medical center.
Patients meeting the diagnostic criteria of Berlin definition for **ARDS with a PaO2/FiO2 ratio ≤80** were eligible. A total of **104 patients** were randomized to the Ptp-guided ventilation group or LRS group (52 each).



Primary outcome

The **proportion of patients successfully weaned** from VV-ECMOin the Ptp-guided group was **significantly higher** than that in the LRS group (71.2% vs 48.0%; p = 0.017).

Secondary outcomes

The 60-day and 6-month **mortality rates** in the Ptp-guided group were **significantly lower** than in the LRS group (32.6% vs 54%; p = 0.030 and (36.5% vs 56%; p = 0.049), respectively.

- ✓ ECMO duration was **significantly shorter** in the Ptp-guided group (p = 0.004)
- ✓ Driving pressure, tidal volumes, and mechanical power were **significantly lower** in the Ptp-guided group
- ✓ PEEP was **significantly higher** in the Ptp-guided group during VV-ECMO
- ✓ Ventilator free days at day 60, length of ICU and hospital stays, and combined renal replacement therapy and tracheostomy were similar between both groups

Conclusion

A Ptp-guided ventilation strategy could increase the proportion of patients with severe ARDS successfully weaned from venovenous ECMO. However, due to the study's limitations, multicenter randomized trials should be conducted.

These findings suggest that **Ptp-guided ventilation may reduce VILI and improve patient outcomes** in severe ARDS supported with VV-ECMO.

Wang R, Sun B, Li X, et al. Mechanical Ventilation Strategy Guided by Transpulmonary Pressure in SevereAcute Respiratory Distress Syndrome Treated With Venovenous Extracorporeal Membrane Oxygenation. CritCare Med. 2020;48(9):1280-1288. doi:10.1097/CCM.0000000000004445

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