2026 California Thoracic Society Annual Educational Conference

& Chronic Obstructive Pulmonary Disease Symposium

Thursday March 12, 2026-Sunday March 15, 2026

Earn up to 19 CME/CEU/MOC Credits

Jointly Provided by AKH Inc., Advancing Knowledge in Healthcare and the California Thoracic Society

PORTOLA HOTEL & SPA
AT MONTEREY BAY

Thursday March 12, 2026 (6 CME/CEU/MOC Credits)
COPD Symposium
Friday March 13, 2026 (6.5 CME/CEU/MOC Credits):
Advances in Interventional Pulmonary, Remote Monitoring in Pulmonary and Sleep Medicine, Approach to Symptom Management in Chronic Lung Disease and Critical Care
Saturday March 14, 2026 (6.5 CME/CEU/MOC Credits)
Sepsis and Shock, Extracorporeal Membrane Oxygenation, Inpatient Pulmonary Complications of Cancer Care
Sunday March 15, 2026
Fellow and Resident Track Symposium

California Thoracic Society
ATS Chapter Serving California and Arizona

AKH INC.
ADVANCING KNOWLEDGE IN HEALTHCARE

California Thoracic Society
Annual Conference
March 12-15, 2026
Portola Hotel and Spa, Monterey, CA

Saturday March 14, 2026

Advances in Management of the Patient with Sepsis

8:00 am – 8:10 am: Welcome and Introduction

8:10 am – 8:55 am: Keynote Address – Phenotyping and Personalized Medicine in Sepsis

- **Angela Rogers, MD (Stanford)** - This speaker will discuss phenotyping in the patient with sepsis and septic shock and how close we are to precision medicine in managing sepsis.

8:55 am – 9:20 am: Incorporating Artificial Intelligence Decision Making in Identifying Sepsis

- **Gabriel Wardi, MD (UC San Diego)** - This speaker will describe how artificial intelligence can be used to identify the septic patient before they present with end stage symptoms to impact care earlier in the course of illness.

9:20 pm – 9:35 pm: Pro: The Severe Sepsis and Septic Shock Early Management Bundle (SEP-1) Bundle Saves Lives

- **Sean Townsend, MD (CPMC-Sutter)**- This speaker will argue the benefits of the SEP-1 Bundle/how it saves lives.

9:35 pm – 9:50 pm: Con: : The Severe Sepsis and Septic Shock Early Management Bundle (SEP-1) Bundle Does Not Save Lives

- **Natalie Achamallah, MD, MS (Cottage Health)** - This speaker will argue the against the SEP-1 Bundle/highlight its limitations.

9:50-10:00 am Question and Answer

10:00 am – 10:30 am: Break

Extracorporeal Membrane Oxygenation

10:30 am – 10:55 am: When to refer to an ECMO center and when to deploy ECMO

- **Nida Qadir, MD (UC Los Angeles)** - This speaker will discuss the evidence behind the use of ECMO in patients with respiratory failure and when providers should consider referral to an ECMO center and when centers should use ECMO.

10:55 am – 11:20 am: What about ECMO to go?

- **Mazen Odish, MD (UC San Diego)** - This speaker will discuss the advent of mobile ECMO services, how they can help improve patient care, and the use of extracorporeal cardiopulmonary resuscitation.

11:20 am – 11:45 pm: Ventilator Strategies for the patient on ECMO

- **Abirami Kumaresan, MD (Cedars-Sinai)** - This speaker will discuss the how ventilator strategies may differ in the patient on ECMO and how different ECMO configurations impact which ventilator strategy to use.

11:45 pm – 12:10 pm: What you need to know about pediatric ECMO

- **Kathleen Ryan, MD (Stanford)** - This speaker will discuss the utility of ECMO in neonates and children, and the complexities of management in children who needs mechanical support.

12:10 pm – 12:20 pm: Question and Answer

12:20 pm – 1:20 pm: Lunch

Hands-On Session:

1:20 pm – 2:20 pm: Non-Invasive Cardiac Output Monitors **Speaker Abirami Kumaresan, MD (Cedars-Sinai)** ECMO Machines **Mazen Odish, MD (UC San Diego)** ECMO Placement **David Gordon, DNP (UC San Francisco) & Brianna Zuckerman, NP (UC San Francisco)** Ventilator Settings and Portable ventilators **Joe Van Vleet, RT (UC Los Angeles) & Theresa Cantu, RT (Valley Children's)**

2:20 pm – 2:45 pm: Break

Inpatient and Pulmonary Complications of Cancer Care

2:45 pm – 3:10 pm: Pulmonary Complications of Hematopoietic Stem Cell Transplantation

- **Husham Sharifi, MD (Stanford)** - This speaker will discuss the pulmonary complications that arise after HCT, in particular the development of bronchiolitis obliterans syndrome and approaches to management.

3:10 pm – 3:35 pm: Pulmonary Vascular Complications of Malignancy

- **Naomi Habib, MD (Norton Thoracic Institute)**- This speaker will discuss the Pulmonary Vascular Disease complications of malignancy including PA sarcoma, pulmonary tumor thrombotic microangiopathy, and medications that can cause PAH.

3:35 pm – 4:00 pm: Drug induced Interstitial Lung Disease and Pneumonitis During Cancer Therapy

- **Weijia Chua, MD (Stanford)** - This speaker will discuss the pulmonary complications of interstitial lung disease and pneumonitis that develop after chemotherapy and targeted immunotherapy

4:00 pm – 4:25 pm: Respiratory Complications of Acute Leukemia

- **Hugh Davis, MD (City of Hope)** - The speaker will discuss various oncologic emergencies, how they are recognized, and how they are managed in the acute setting.

4:25 pm – 4:35 pm: Question and Answer

5:30 pm – 7:30 pm: Trainee Poster Competition (NON-CME) – Food and beverages will be served

Abi Kumaresan MD is an Assistant Professor and Vice Chair of Anesthesiology at Cedars-Sinai Medical Center in Los Angeles. Her areas of expertise include cardiac anesthesiology and critical care medicine. Dr. Kumaresan's research interests include the physiological impact of critical illness and its impact on outcomes for ICU survivors.

Ventilator Strategies On ECMO

Evidence Based Strategies on VV and VA ECMO

Abi Kumaresan MD, MSc
Vice Chair of Academic Development
Department of Anesthesiology
Cedars-Sinai Medical Center

Disclosures

- None

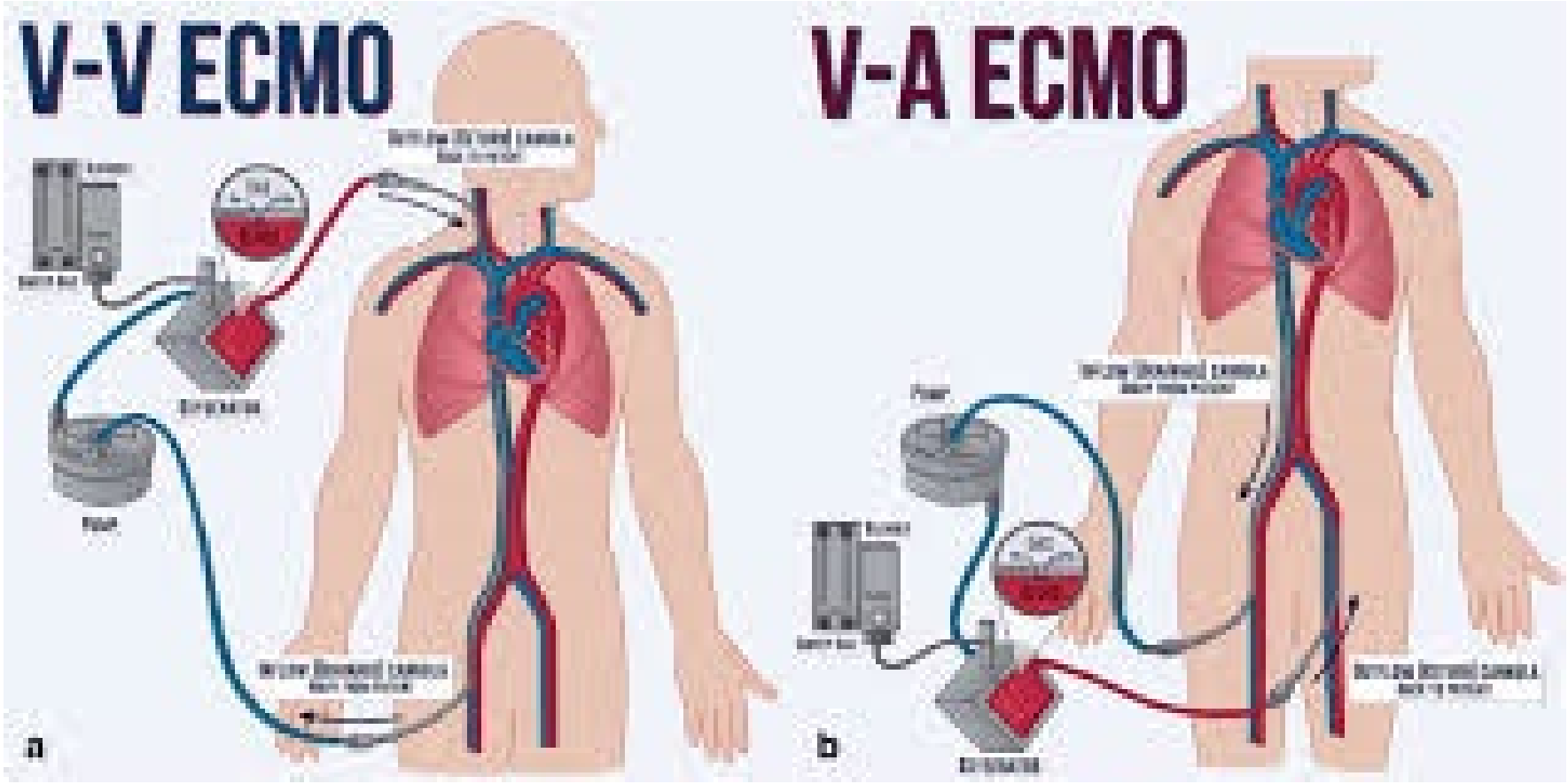
Objectives

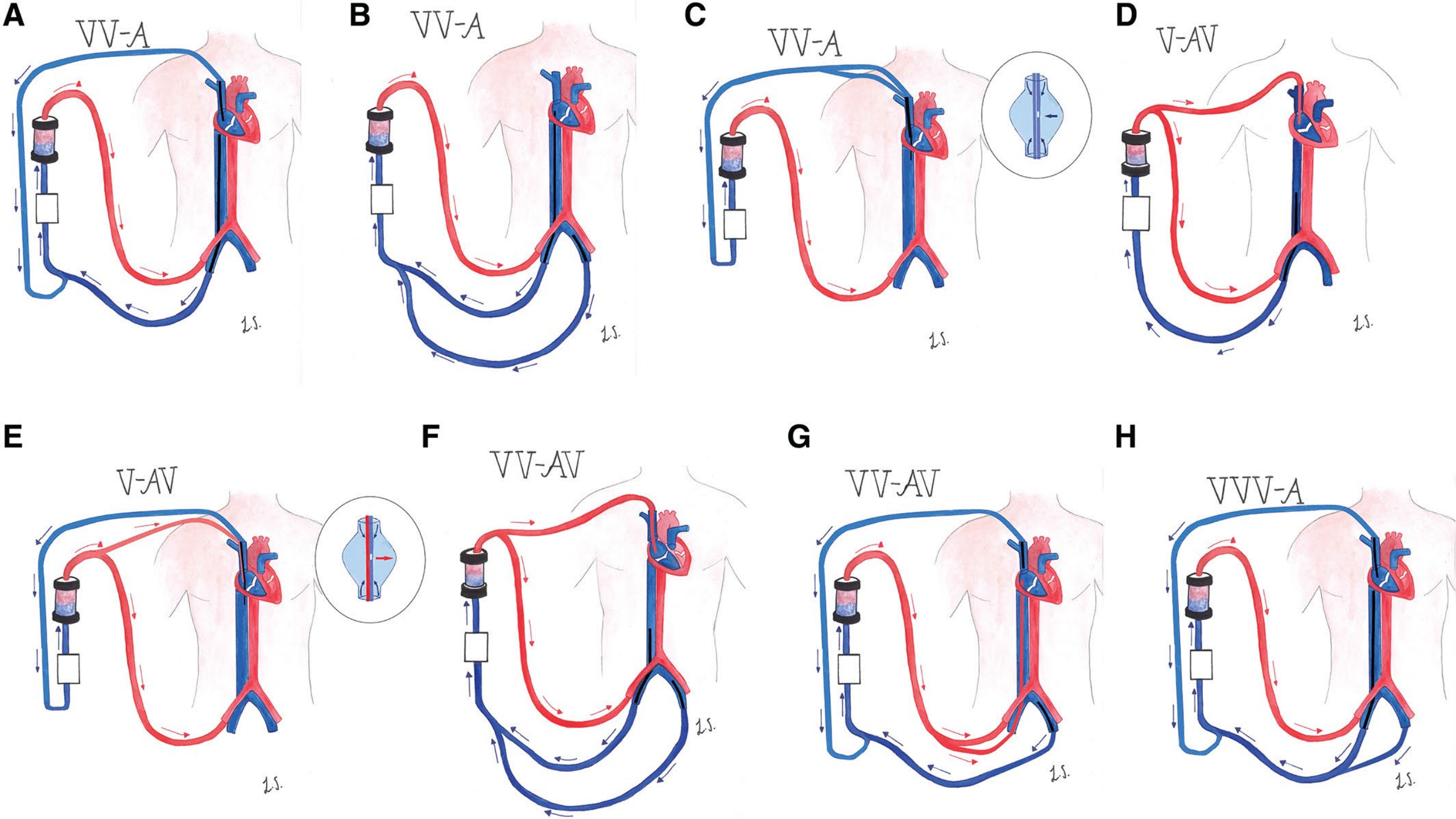
- Understand the differences between ventilator strategies on VV and VA ECMO
- Describe the advantages and disadvantages of each of the strategies
- Understand the current evidence and gaps in the literature

Why Ventilator Strategies Matter

- As mechanical circulatory support advances, how we support and protect the lungs should advance as well
- MCS – offload gas exchange allowing us the chance to minimize VILI
- As MCS devices, indications and accessibility change our understanding of lung protection and management of the ventilator needs to grow

ECMO Physiology –Brief Overview

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Foundational Concepts – VV ECMO

- Key VILI mechanisms to address: barotrauma, volutrama, atelectrauma, biotrauma
- Driving Pressure - strongly associated with mortality in ARDS, with reductions due to lung protection association with increased survival
- Lung rest – no consensus on optimal strategy, but the overall goal is to minimize injury and allow the lungs to heal

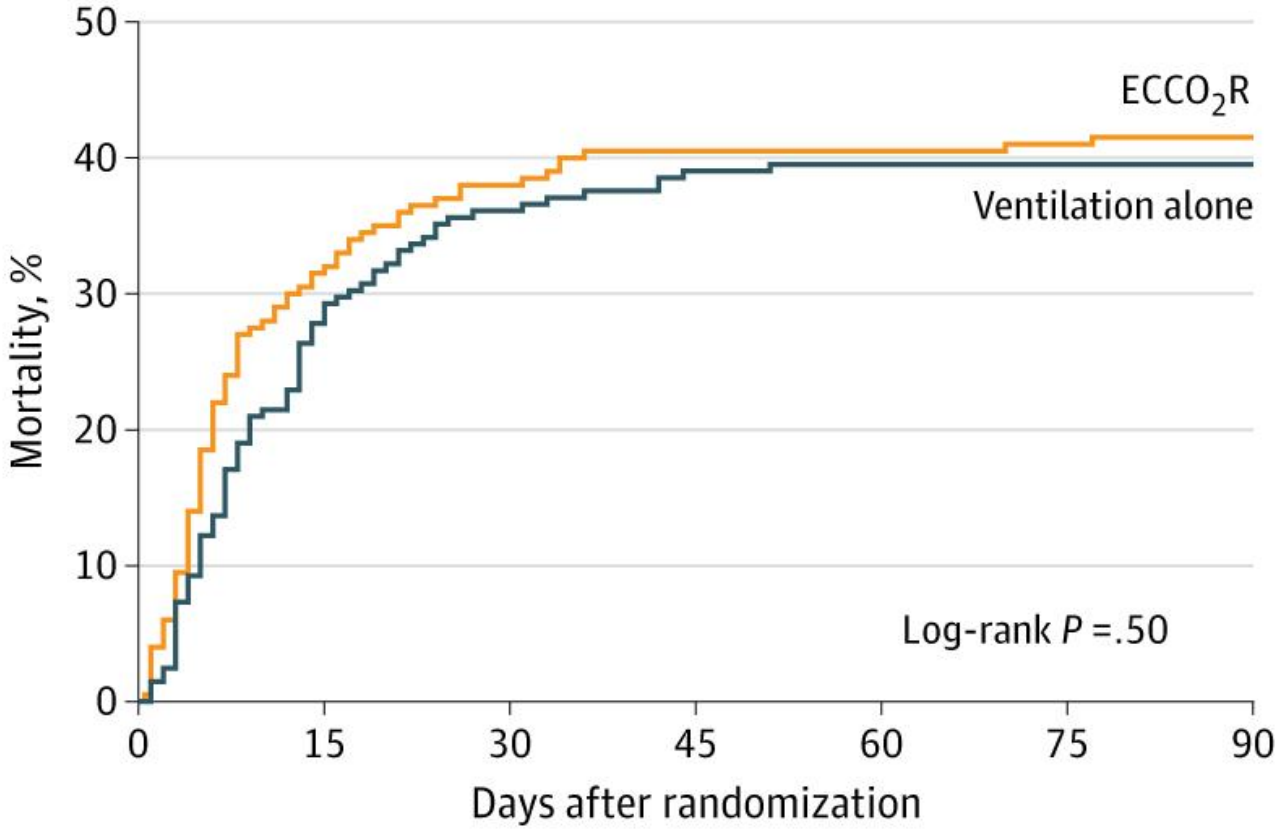
VV ECMO – “Consensus”

- **Tidal volumes of 3-6 mL/kg ideal body weight** (often reduced by approximately 2 mL/kg from pre-ECMO settings)
- **Respiratory rates of 5-15 breaths/min** (commonly decreased from 22 to 15 bpm)
- **PEEP maintained around 10-15 cmH2O** (often 12-13 cmH2O)
- **Plateau pressure <25 cmH2O**
- **FiO2 reduction** (commonly from 0.9 to 0.4-0.7)

Ultra-Protection Ventilation: Promise vs Reality

- **Ultra-protective ventilation reduces biotrauma markers but has not demonstrated clear mortality benefits**
- **Biomarker reduction has not consistently translated into improved clinical outcomes**
- Concerning **trend toward higher 60-day mortality in the ultra-protective group (45% vs 17%, p=0.06)**
- Quasi-apneic ventilation (tidal volume 1 mL/kg, respiratory rate 5/min) vs driving pressure 8 cmH_2O and respiratory rate 10/min found **no significant difference in 90-day survival** (30% vs 42%, p=0.19) or time to ECMO weaning

REST trial: CO_2 Removal



No. at risk							
$ECCO_2R$	200	137	124	119	119	118	117
Ventilation alone	205	148	131	125	124	124	124

Effect of Lower Tidal Volume Ventilation Facilitated by Extracorporeal Carbon Dioxide Removal vs Standard Care Ventilation on 90-Day Mortality in Patients With Acute Hypoxemic Respiratory Failure: The REST Randomized Clinical Trial. The Journal of the American Medical Association. 2021. McNamee JJ, Gillies MA, Barrett NA, et al.

PEEP and Open Lung Strategy

- **Transpulmonary pressure-guided ventilation significantly improved ECMO weaning rates** in one randomized trial
- 1.2% **successful weaning rate** vs 48.0% in the lung rest group (p=0.017)
- Lower driving pressure, lower inflammatory markers (IL-1β, IL-6, IL-8), and reduced lung density on imaging

Dp and Tidal Volumes

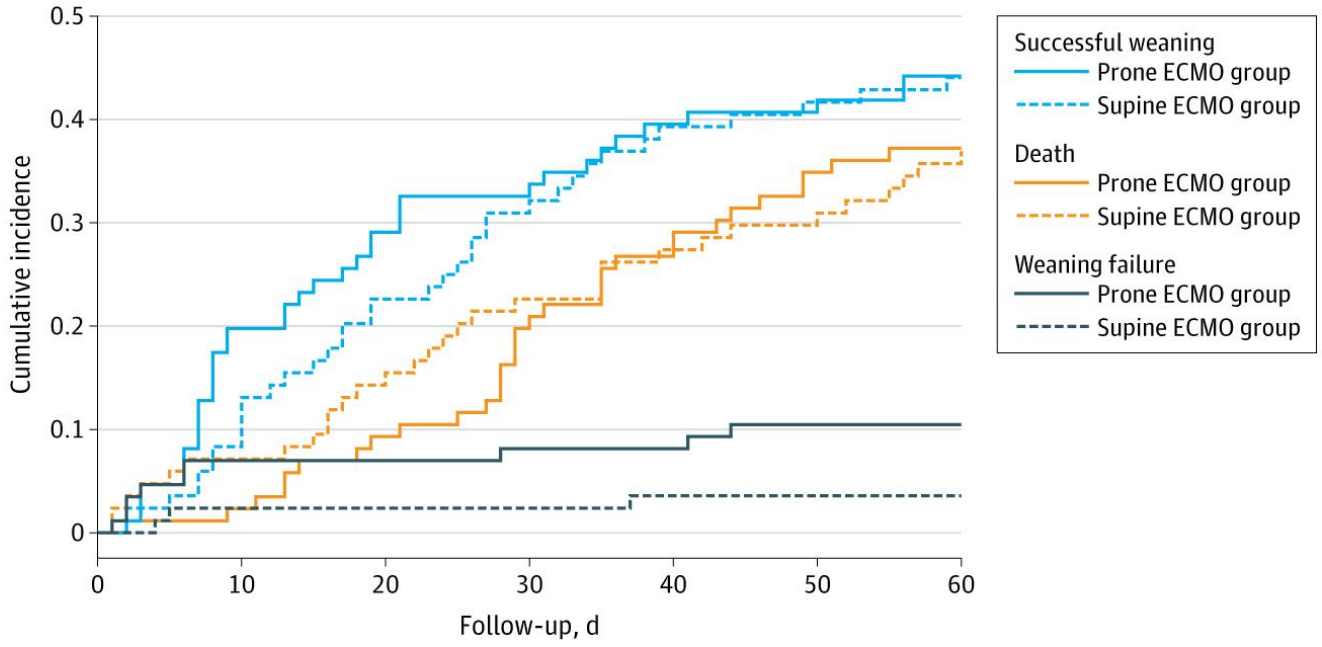
- **Driving pressure during ECMO is consistently associated with mortality** across multiple studies
- A pooled analysis of 545 patients found that **driving pressure was the only ventilator parameter independently associated with in-hospital mortality** (adjusted HR 1.06 per cmH_2O increase, 95% CI 1.03-1.10)
- A crossover physiologic study demonstrated a **linear relationship between driving pressure** changes and **plasma biomarkers of lung injury** (IL-6, sRAGE, TNF-α)
- **Higher PEEP during the first 3 days of ECMO was independently associated with lower mortality** (OR 0.75 per cmH_2O, 95% CI 0.64-0.88) in one retrospective multicenter study. (Not in pediatric patients)

Spontaneous Breathing & Awake

- Awake ECMO appears feasible and potentially beneficial in selected patients.
- **85.5% survival to hospital discharge** with awake ECMO, with median time from cannulation to extubation of 6 days
- A multicenter international study found **higher 6-month survival in the awake group (75% vs 49%, p=0.02)** and fewer infectious complications, though after adjustment for confounders this association was attenuated
- Awake ECMO presents significant challenges including risk of self-inflicted lung injury, cannula displacement, and difficulty managing respiratory drive
- **63% of patient require intubation eventually**

Prone Positioning and ECMO

- **PRONECMO randomized trial found no benefit** from prone positioning during ECMO
- **44% in both groups achieved successful ECMO weaning within 60 days**
- No difference in 90-day mortality (51% vs 48%, p=0.62). [19]
- Contradicts observational studies:
  - **90-day probability of being weaned and alive (0.75 vs 0.54, p=0.03) and lower 90-day mortality (20% vs 42%, p<0.01)**
  - Meta-analyses of observational studies showed **improved survival with prone positioning (RR 1.31, 95% CI 1.21-1.41)**



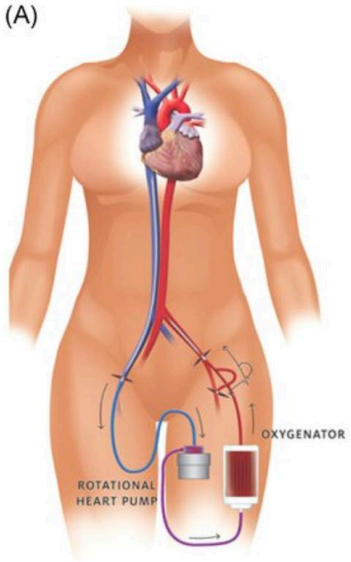
Prone ECMO group							
No. at risk	86	61	47	34	22	12	7
No. of events[a]	0	25	39	54	66	75	79
Supine ECMO group							
No. at risk	84	69	51	37	25	21	14
No. of events[a]	0	19	34	48	59	64	71

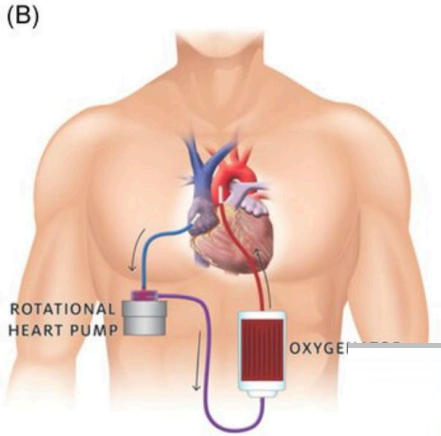
Prone Positioning During Extracorporeal Membrane Oxygenation in Patients With Severe ARDS: The PRONECMO Randomized Clinical Trial. The Journal of the American Medical Association. 2023. Schmidt M, Hajage D, Lebreton G, et al.

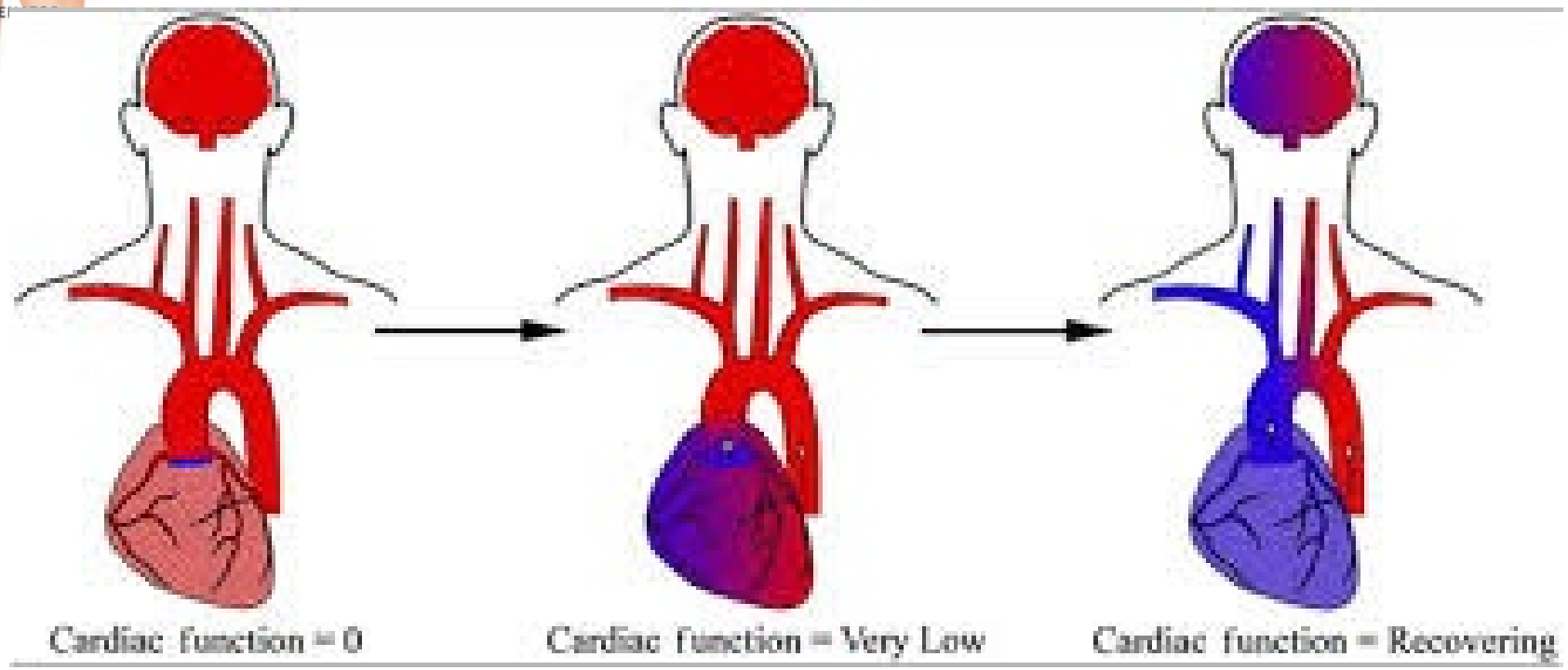
VA ECMO – Ventilator Strategy

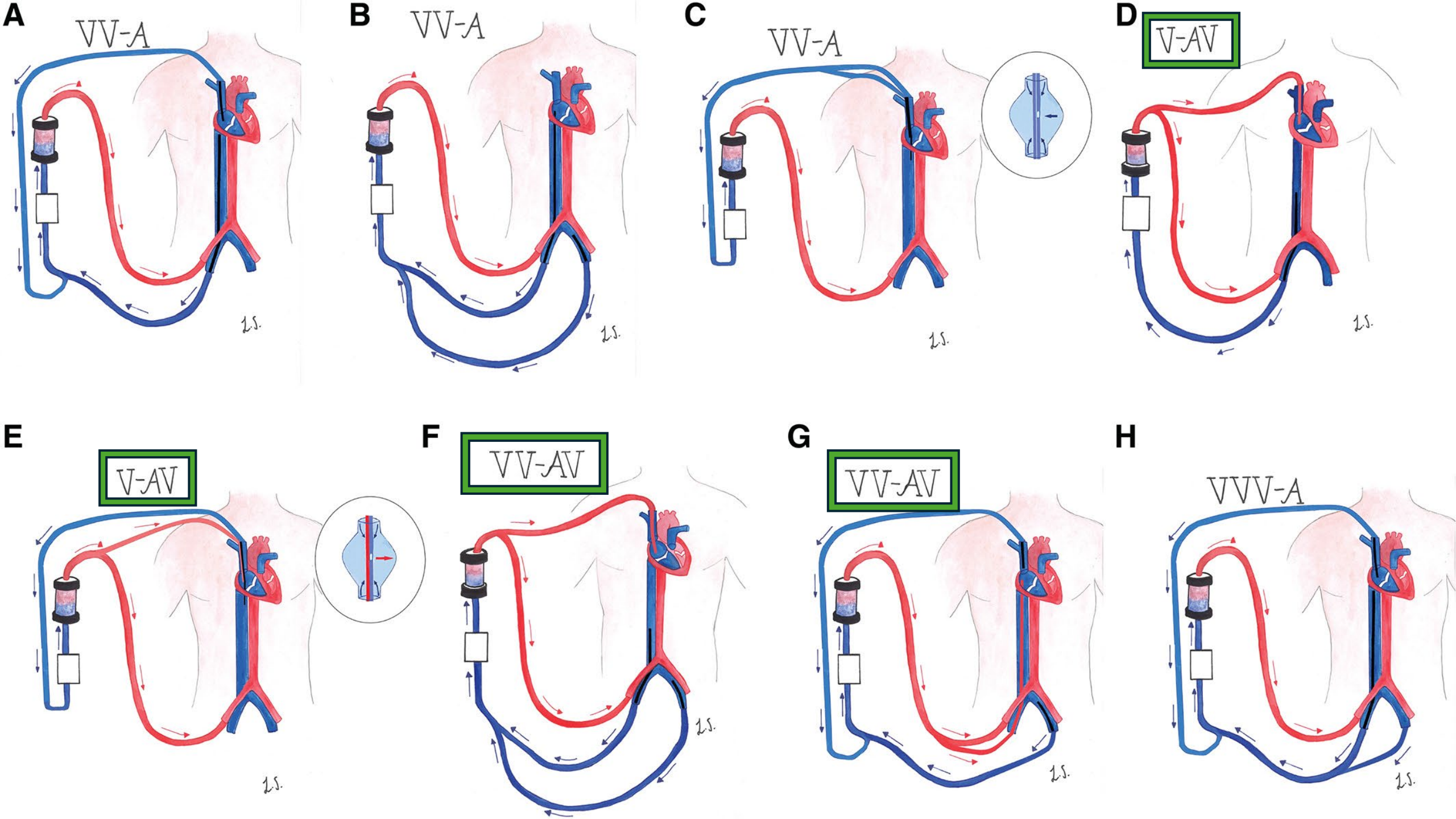
- VA-ECMO ventilation strategies **focus less on lung-protective goals** compared to VV-ECMO, as the primary indication is cardiac support
- Focus on how much we are supporting the lungs and how we optimize that
- **VA-ECMO can provide complete gas exchange support**, conscious patients in cardiogenic shock can breathe spontaneously regardless of respiratory function ***

Cannulation and Intrinsic Function





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Spontaneous Breathing & Awake

- Centers typically transition to spontaneous ventilation earlier in VA-ECMO compared to VV-ECMO
- **25% of extubated VA-ECMO patients require emergency reintubation** for respiratory, neurologic, or hemodynamic reasons

Patients more likely to be successfully extubated include those:

- **Cannulated in cardiac surgery ICU** (OR 3.14, 95% CI 1.21-8.14)
- With **lower illness severity** at admission
- Without extensive extrapulmonary organ dysfunction
- Who can maintain adequate gas exchange with minimal ventilatory support

Summary

No single ventilation strategy has demonstrated consistent mortality benefit in randomized trials. The most robust associations are:

- **Driving pressure** - remains the most consistent predictor of mortality during ECMO
- **Transpulmonary pressure-guided ventilation** - improved weaning rates
- **Prone positioning during ECMO** - Jury is still out!
- **Ultra-protective ventilation** - Had promise ☹
- **Awake ECMO** appears feasible but requires careful patient selection

Optimal ventilation strategy during ECMO remains an important area requiring further research, as current practice shows wide variation and limited clinical guideline support

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