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

Dr. Ryan received her medical degree from the University of Massachusetts Medical School. She completed residency in pediatrics at Boston Children's Hospital and subsequently completed fellowships there in Pediatric Intensive Care and Pediatric Cardiac Critical Care. Dr. Ryan serves as Professor of Pediatrics at Lucile Packard Children's Hospital Stanford where she has been a pediatric cardiac intensivist for more than a decade. She is the hospital-wide ECMO Medical Director overseeing ECMO in the CVICU, PICU, and NICU, and much of her work focuses on novel support strategies for pediatric patients receiving ECMO.

What You Need to Know About Pediatric ECMO

Kathleen Ryan, MD

ECMO Director

Lucile Packard Children's Hospital

Disclosures

- I have the following relationships with ACCME defined ineligible companies:

  None

- I **WILL NOT** discuss off-label use and/or investigational use of any drugs or devices.

Outline

- Indications for Pediatric ECMO
- Outcomes of Pediatric ECMO
- Complications Associated with Pediatric ECMO
- Neonatal and Pediatric Anticoagulation on ECMO
- Cannulation Considerations in the Pediatric Patient
- Novel Support Strategies
- VADMO?/vessel reconstruction/retrograde trail off

Pediatric Indications for VA ECMO

- Cardiogenic shock
- Fulminant myocarditis
- Pulmonary hypertension and right heart failure
- Pulmonary embolus with hemodynamic compromise
- Cardiac arrest
- Non ischemic cardiomyopathy including sepsis induced cardiomyopathy
- Bridge to decision for transplant or VAD (LVAD/BiVAD)
- Support post cardiac surgery

Pediatric Indications for VV ECMO

Neonatal ECMO Experience

- ELSO data reports Neonatal survival to discharge:
  - Respiratory failure: 68%
  - Cardiac failure: 45%
- 3% of neonates had ischemic stroke
- Intracranial hemorrhage occurred in more than 10% of neonates
- Both bleeding and thrombotic complications are common

R.R. Thiagarajan, R.P. Barbaro, P.T. Rycus, *et al.* **Extracorporeal Life Support Organization Registry International Report 2016** ASAIO J, 63 (1) (2017), pp. 60-67

R.P. Barbaro, M. Guner, Y. Raman, *et al.* **Pediatric Extracorporeal Life Support Organization Registry International Report 2016** ASAIO Journal, 63 (2017), pp. 456-463

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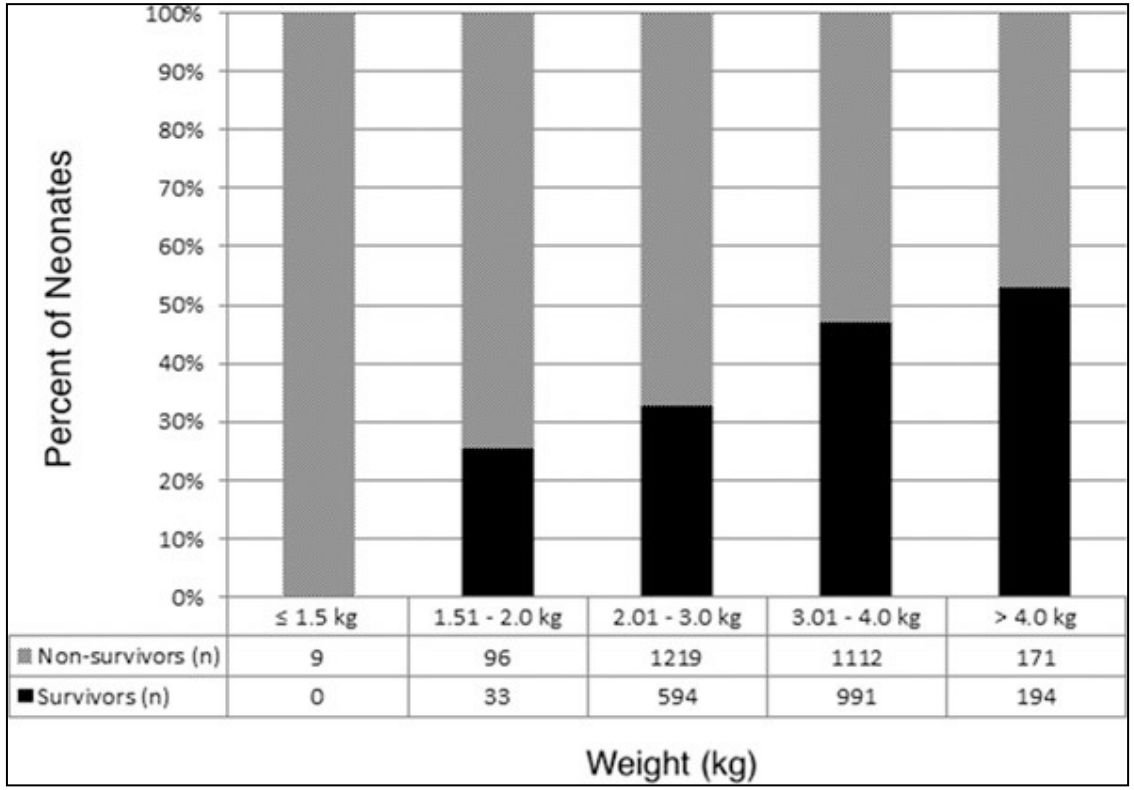
Neonatal Survival on ECMO for Cardiac Indications



	≤ 1.5 kg	1.51 - 2.0 kg	2.01 - 3.0 kg	3.01 - 4.0 kg	> 4.0 kg
Non-survivors (n)	9	96	1219	1112	171
Survivors (n)	0	33	594	991	194

Figure 1 . Proportion of extracorporeal membrane oxygenation survivors and non-survivors based on body weight. Survivors represented by black bars and non-survivors by grey bars. Fifty-two patients had missing data for weight.

Factors Associated With Mortality in Neonates Requiring Extracorporeal Membrane Oxygenation for Cardiac Indications: Analysis of the Extracorporeal Life Support Organization Registry Data*.
Ford, Mackenzie; Gauvreau, Kimberlee; McMullan, D; Almodovar, Melvin; Cooper, David; MD, MPH; Rycus, Peter; Thiagarajan, Ravi; MBBS, MPH

Pediatric Critical Care Medicine. 17(9):860-870, September 2016.
DOI: 10.1097/PCC.0000000000000842

Pediatric ECMO Outcomes

- VA
- VV
- ECPR

Intracranial Hemorrhage

- Neonatal respiratory: 9-15%
- Neonatal cardiac: 9.8-17.8%
- Peds respiratory: 3.6-10.6%
- Peds cardiac: 5.2-8.8%

- Increased risk with lower GA and BW, sepsis, DIC, pre-ECMO hypoxia/hypercarbia/acidosis/cardiac arrest, ECPR

Anticoagulation

- The developing coagulation profile of the infant on ECMO can make anticoagulation difficult given the risks of both bleeding and thrombotic complications
- Neurologic complications are an even more imperative concern in this age group
- This 1.85 kg patient needed several circuit changes, and did have one bleeding complication, though no neurologic complications
- Bivalirudin may be a viable option for anticoagulation even in the smallest patients cannulated to ECMO
- More data is needed on the use of bivalirudin in this vulnerable population

Pediatric Anticoagulation on ECMO

- Anticoagulation is necessary during pediatric ECMO to prevent potential catastrophic clotting of the ECMO circuit because of smaller cannula and circuits and decreased flow rates compared with adult ECMO patients.
- However, there are several disadvantages to UFH including laboratory monitoring, need for antithrombin for maximal effect, and variable dosing in pediatrics.
- Bivalirudin, a bivalent DTI, binds to both clot-bound and unbound thrombin and is the most common alternative to UFH for pediatric ECMO.
- Bivalirudin is an attractive anticoagulant because of its lack of immunogenicity, direct inhibition of thrombin without need of a cofactor, and more predictable pharmacokinetics because of lack of binding to other plasma proteins.

Pediatric Anticoagulation on ECMO

- Bivalirudin ‘resistance’ may occur because of the inadequacy of aPTT as an anticoagulation monitoring variable.
- High levels of factor VIII, an acute phase reactant commonly elevated in pediatric ECMO patients, and fibrinogen shorten aPTT and can lead to a plateauof aPTT despite escalating doses of bivalirudin [9].
- Clinicians can consider sending factor VIII levels and monitoring fibrinogen if aPTT is stagnant.
- Other laboratory monitoring tests may be necessary in this case to demonstrate effective bivalirudin anticoagulation.

Pediatric Anticoagulation on ECMO

- Bivalirudin has a linear dose–response relationship over the standard dos-ing range in patients with normal renal function
- At higher doses, bivalirudin, like all DTIs, exhibits a nonlinear dose–response relationship where aPTT underestimates the anticoagulation activity, which may put patients at risk of bleeding [2–4]
- Bivalirudin is an attractive DTI as it is cleared primarily by intravascular proteolytic degradation and only about 20% by the kidneys [1].
- It has a short half-life of 25–35 min, which is even shorter in children

Developmental hemostasis

- Neonates
  - Lower levels of pro-coagulant factors (including X and VII)
  - Decreased anticoagulant proteins C and S
  - Decreased levels of Antithrombin (can lead to heparin resistance)
  - Reduced thrombin generation and reduced clot lysis
  - Further dilution of factors with cannulation

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Urlesberger, J Pediatr, 1996
Peek, ASAIO, 1999

Direct Thrombin Inhibitors

Off-label but growing popularity

Binds directly to circulating and clot-bound thrombin

Exhibits predictable and dose-dependent anticoagulant effect

Ideal for Heparin induced thrombocytopenia (HIT) or some form of heparin resistance

Being used by more centers as first line for ECLS

Direct Thrombin Inhibitors

- Mechanism:
  - ATIII independent thrombin inhibition
- Advantages
  - Inhibit both free and bound thrombin
  - More predictable dose effect
  - May attenuate thrombin mediated coagulation activation
- Disadvantage
  - No reversal agent

Weitz, Thromb Res, 2002

Bivalirudin

- ATIII independent thrombin inhibition
- Binds both circulating and clot bound thrombin
- Estimate average half-life in pediatric population is 15-18 min (adults ~25 minutes)
- Age dependent clearance (80% proteolytic, 20% renal clearance)
- Dose range reported 0.05 mg/kg/h to 1.6 mg/kg/h
- Non-linear relationship to aPTT at high doses

Sniderman J, Monagle P, Annich GM, MacLaren G. Hematologic concerns in extra-corporeal membrane oxygenation. *Res Pract Thromb Haemost*. 2020;4:455-468.

Pediatric Bivalirudin ECLS Experience

- Ryerson et al report data on 20 ECMO (18 VA) runs in 18 patients
- Majority had been switched to Bivalirudin from UFH due to ongoing circuit thrombosis despite therapeutic anti-Xa levels
- Bivalirudin was significantly associated with less circuit intervention than UFH
- Significant increase in bleeding though two of the four events occurred when the patient was not on bivalirudin
- Significant inter-patient variability in dosing with infants requiring higher doses than older children

Ryerson L, Balutis K, Granoski D et al. Prospective exploratory experience with bivalirudin anticoagulation in pediatric extracorporeal membrane oxygenation. *Pediatr Crit Care Med* 2020; 21:975-985.

Pediatric Bival ECLS Experience

- Similarly, Schill et al report data on 56 runs (22 on bivalirudin) with freedom to first circuit intervention being longer in the bival group compared to UFH group
- Lower incidence of circuit interventions with bivalirudin
- No neonates on roller head pumps included in this study
- No change in survival to decannulation or survival to discharge

Schill MR, Douds MT, Burns E et al. Is anticoagulation with bivalirudin comparable to heparin for pediatric extracorporeal life support? Results from a high-volume center. *Artif Organs*. 2021;45:15-21.

Heparin

- Most commonly used anticoagulant drug
- Forms a complex with antithrombin → inhibition of factor Xa and factor Iia
- Also inhibits the extrinsic coagulation pathway via release of tissue factor inhibitor
- Limitations:

--HIT

--binding to other plasma proteins (often acute phase reactants that may account for some of the variability in response)

--highly variable half-life

--varies widely between individuals

Newell F et al. In vivo age dependency of unfractionated heparin in infants and children. Thromb. Res., 123 (5) (2009),710-714

Stansfield BK et al. Outcomes following routine antithrombin III replacement during neonatal extracorporeal membrane oxygenation. J Pediatr Surg. 2017 Apr;52(4):609-613.

Allistrop et al. **Antithrombin III for critically ill patients: a systematic review with meta-analysis and trial sequential analysis. Intensive Cre Med.** 2016; 42(4): 505–520.

Unfractionated heparin

Advantages

- Widely used anticoagulant in ECLS
- Titration
- Reversibility

Disadvantages

- Indirect mechanism
- Imprecise
- Poor correlation with laboratory parameters

Pediatric ECMO as Bridge to Lung Transplant

- VV ECMO via right internal jugular vein with a bicaval dual-lumen catheter is the typically preferred approach that allows for maximal rehabilitation and ambulation as an awake ECM)O modality.9,12,36 Impaired functional status or increased length of immobilization even on ECMO has clearly shown to lead to poorer post- transplant outcomes.1,8,37 A strategy for awake ECMO is to enable liberation from mechanical ventilation and to facilitate weaning from sedation leading to early mobilization and rehabilita- ion.37– 39 If patients cannot be liberated from mechanical ventila- tion while on VV ECMO, early tracheostomy should be performed to maximize the benefits of awake EMCO.38– 40 Evidence for ben- efits of awake ECMO on post- transplant survival and outcomes has been mounting in both adult and pediatric patients.12,20,21,23,37 In our center alone, awake VV ECMO has been utilized in 4 pa- tients under the age of 12 years in the past 2 years. Two patients with progression of underlying ILD were successfully bridged with VV ECMO (10 month- old requiring a 4- month run and 16 year- old requiring a 1- month run). The other two patients were bridged to native lung recovery with liberation from paralytics and seda tion and optimization of rehabilitation nutrition after 2 months of VV ECMO. ECMO use in this type of setting involves extensive collaboration among multi- disciplinary teams to optimize its suc- cess while also meticulously selecting patients suitable for ECMO bridge to LTx or recovery for that matter. During the study period, we identified that 49 children on ECMO in the UNOS registry did not undergo LTx while 40 children on ECMO had LTx (45% of chil- dren on ECMO). More than half of those patients who did not receive LTx died or were removed from the waitlist due to worsening status while about 10% achieved lung recovery.

Koh W, Zang H, Ollberding NJ, Ziady A, Hayes D Jr. Extracorporeal membrane oxygenation bridge to pediatric lung transplantation: Modern era analysis. Pediatric Transplantation. 2023;27:e14570. doi:10.1111/petr.14570

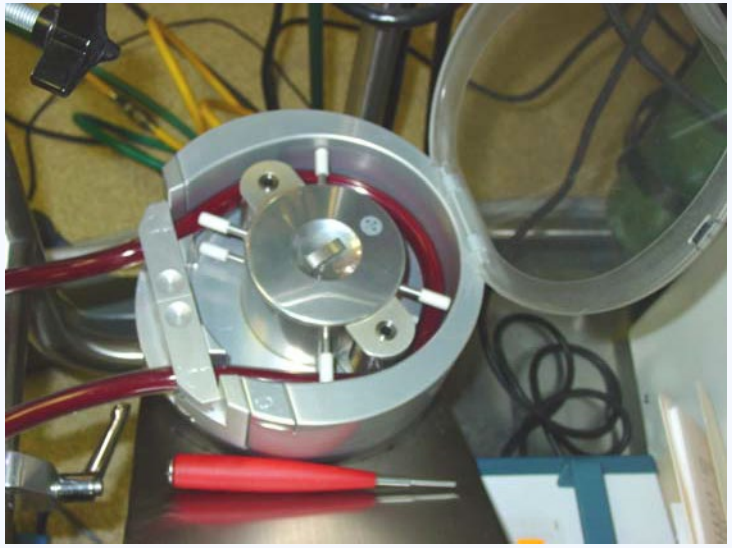
Bivalirudin

- FDA approved for:
  - adults with acute coronary syndrome undergoing percutaneous coronary angioplasty
  - adults undergoing percutaneous coronary intervention
  - adults with HIT

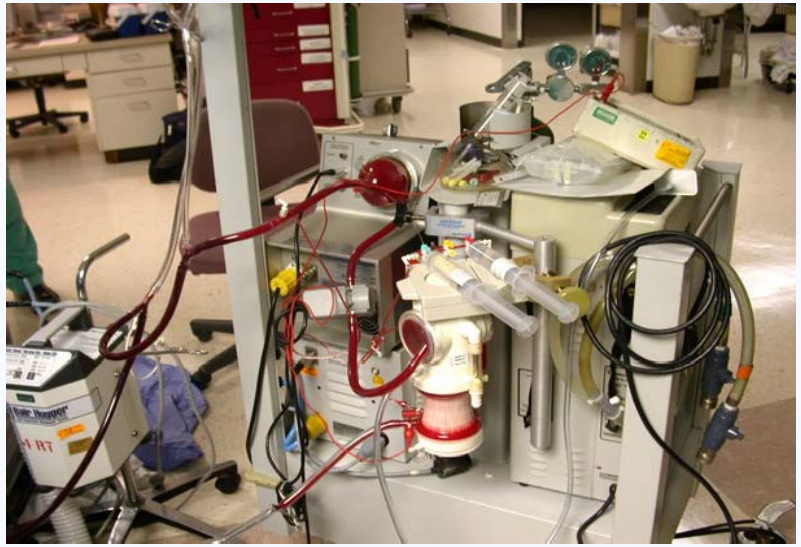
- Data supporting use of Bivalirudin in pediatric VAD population—Action Learning Network instituted its use as quality metric in patients supported with Berlins
  - Associated with decreased risk of stroke and pump thrombosis

Bates A, Buchholz H, Freed D et al. Bivalirudin experience in a heterogeneous ventricular assist device population. ASAIO J. 2020;66(6):677-82.
VanderPluym CJ, Cantor RS, Machado D et al. Utilization and outcomes of children treated with direct thrombin inhibitors on paracorporeal ventricular device support. ASAIO J. 2019;1(1):1-7.
Lorts A, Zafar F, VanderPluym C et al. Contemporary berlin heart EXCOR outcomes in North America: report from the ACTION registry. J Hear Lung Transplant. 2020;39(4 Suppl):S131.

ECMO Pumps



Roller
(Occlusive)



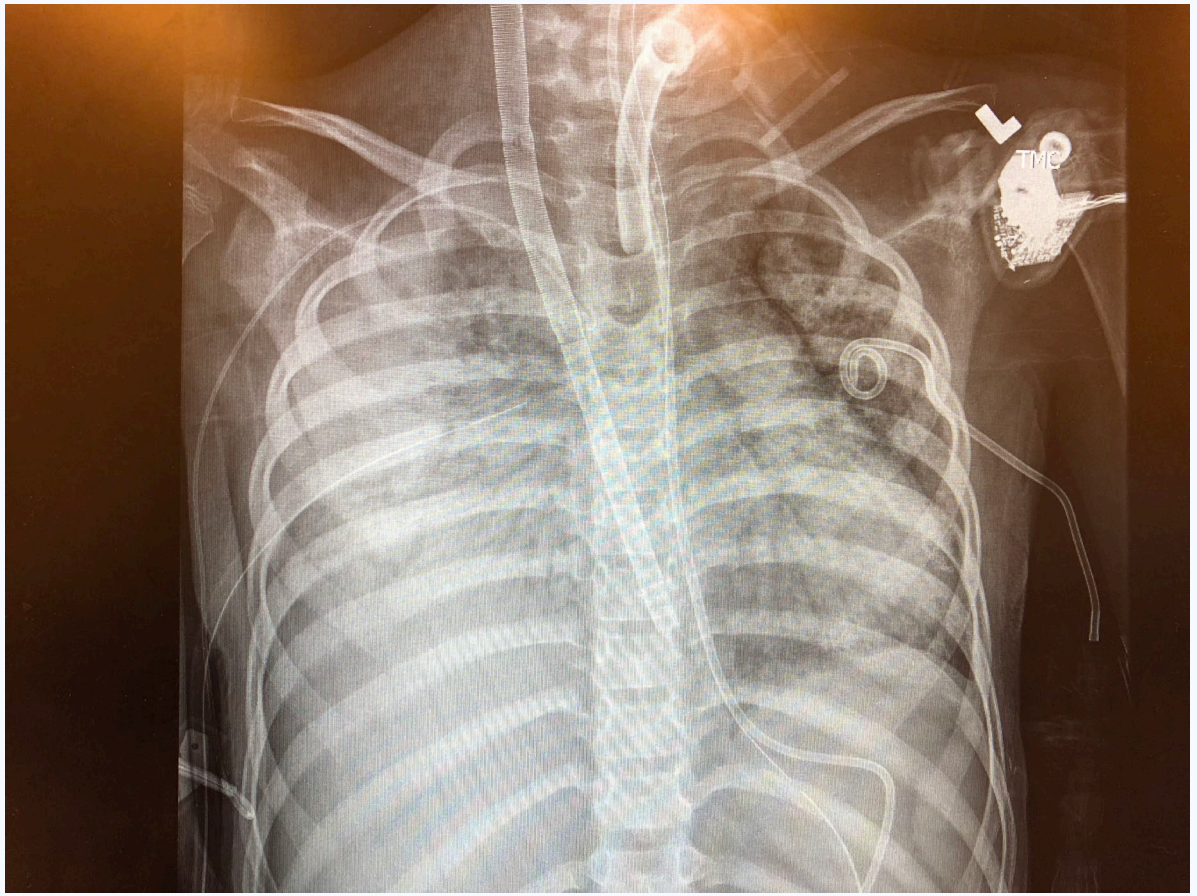
Centrifugal
(Non-occlusive)

Case 1

- Previously healthy 9 year old boy with idiopathic fibrosing pneumonitis

- Initially cannulated to VV ECMO via the right neck, but had inadequate support due to recirculation and very high sedation needs making rehabilitation prohibitive

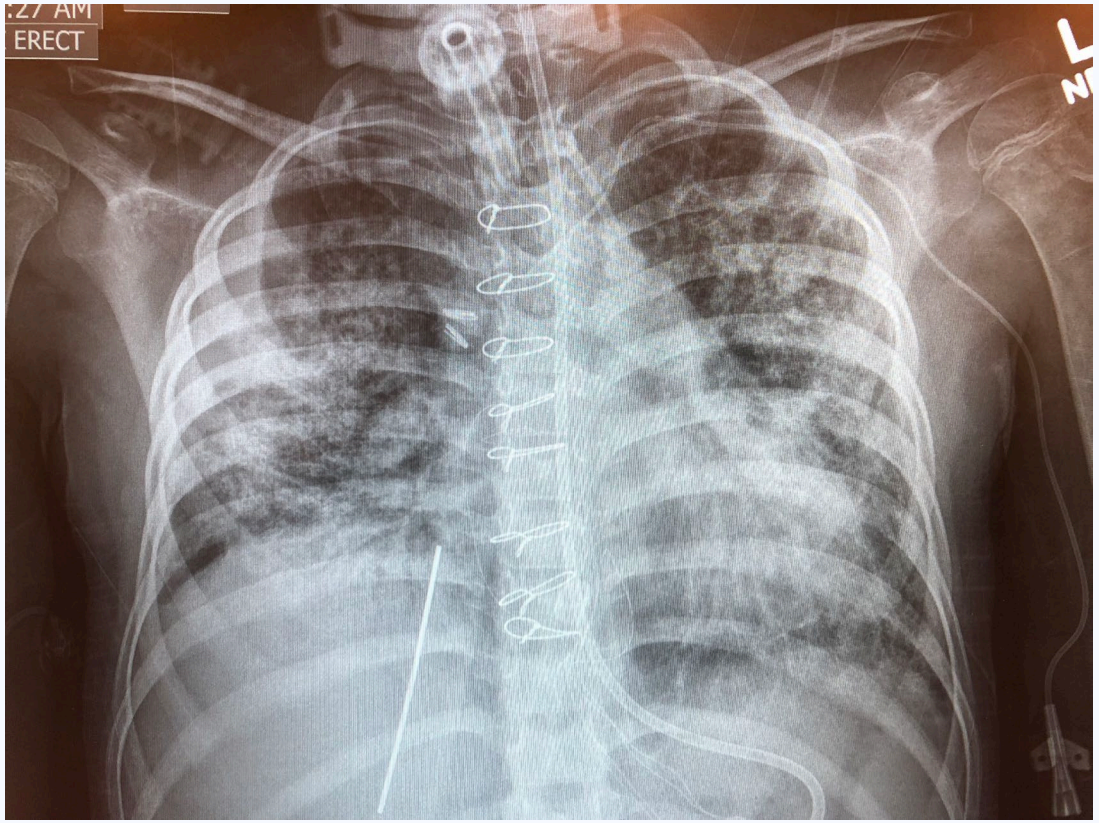
Case 1



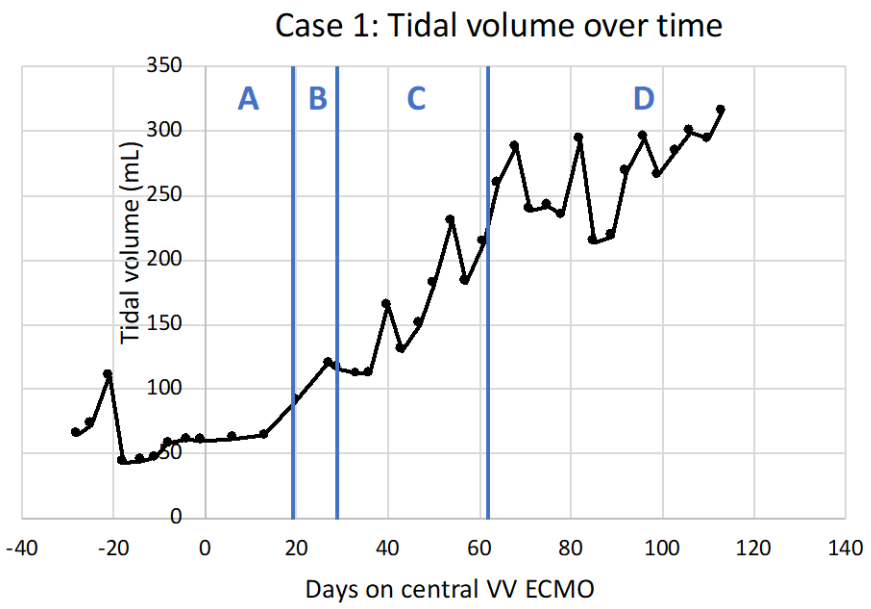
Case 1

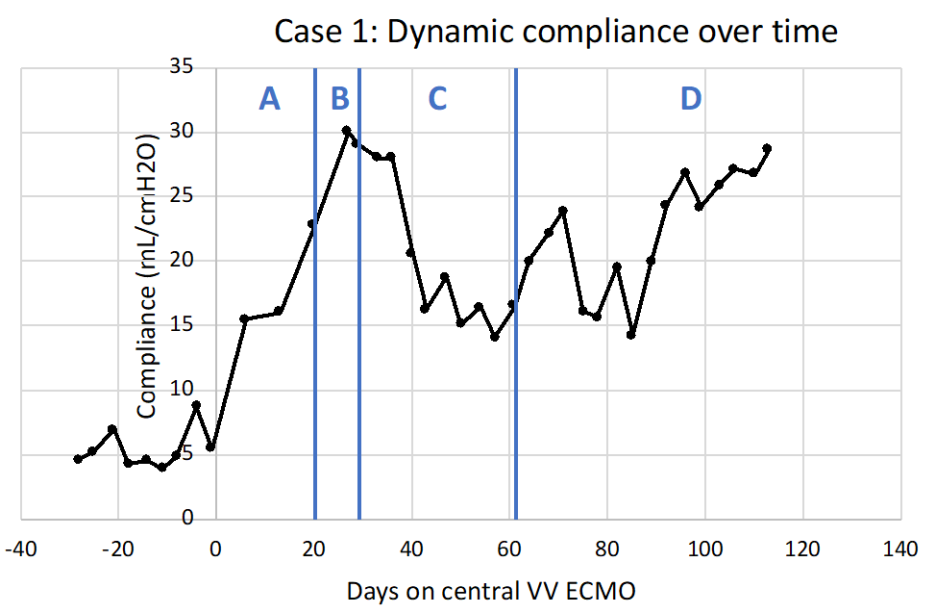
- After 43 days of traditional VV ECMO he was transitioned to central RA-RV VV ECMO
- Over the following 116 days:
  - Marked reduction in sedation needs
  - Gradually able to ambulate
  - Improved lung compliance
- Participated in physical therapy which included 50 to 100 meters of daily ambulation
- Decannulated on ECMO day 159

Case 1



Tidal Volume and Compliance



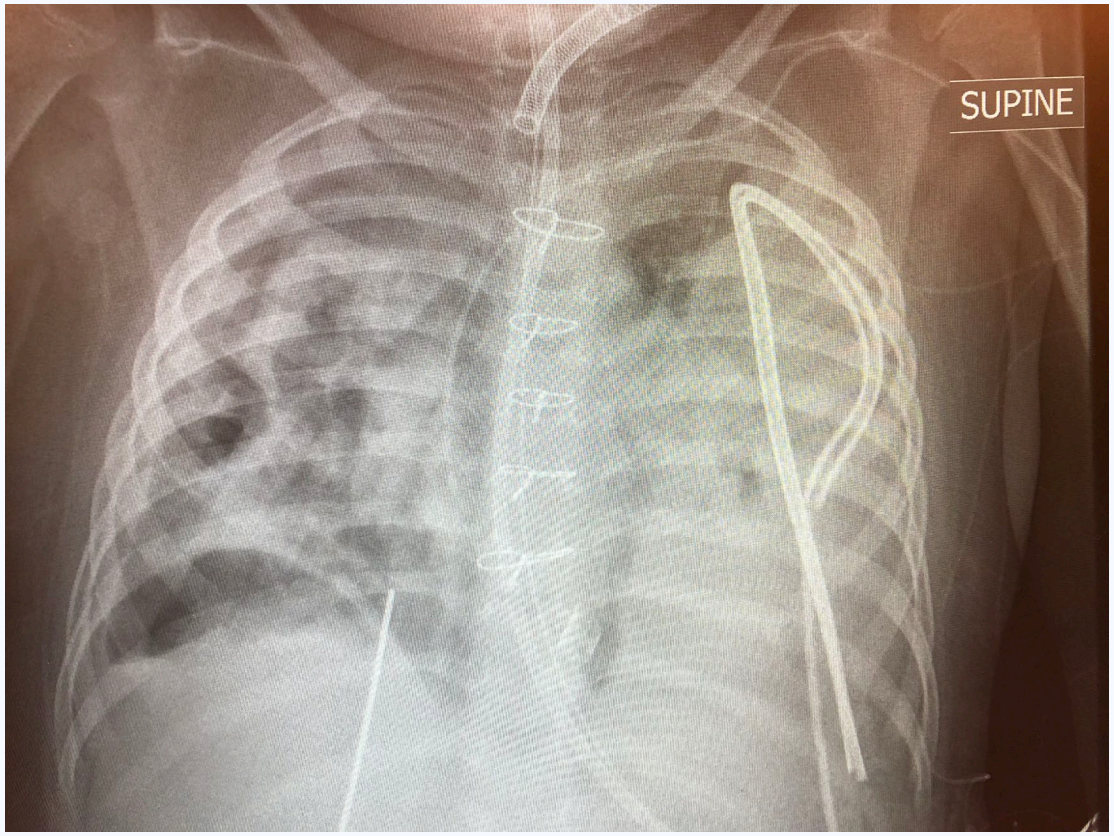


Case 1

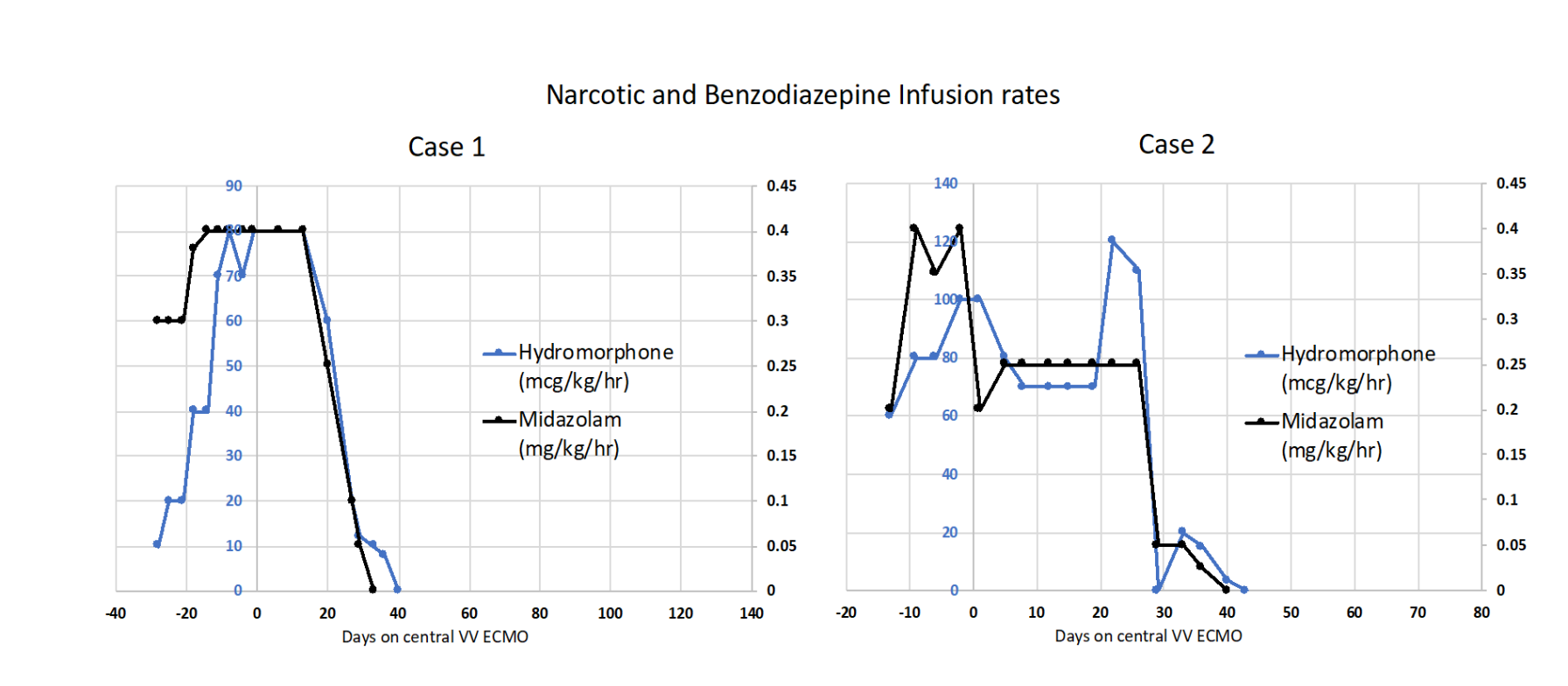
Case 2

- Previously healthy 5 y/o girl with acute severe necrotizing pneumonia requiring VV ECMO
- Course complicated by recirculation, and agitation caused unpredictable hemodynamics requiring large dose sedative infusions and paralytics
- After 14 days she was transitioned to central RA-RV VV ECMO
- She gradually began ambulating and her lung compliance improved
- Decannulated on ECMO day 88

Case 2



Sedation Requirements



Outcomes of Pediatric Venovenous Extracorporeal Membrane Oxygenation Using Dual-Lumen or Multisite Cannulation: Extracorporeal Life Support Database Study, 2000–2019

- Our current report extends the prior ELSO database (1998–2011) observation that assignment to DL cannulation was associated with younger age (12), which is likely related to the technical difficulties and concern for neurovascular compromise associated with cannulating small femoral vessels in nonambulatory children. In a 2018 survey of 11 U.K. pediatric ECMO centers, only one center considered a multisite venovenous ECMO cannulation strategy (accessing the jugular vein and returning to the femoral vein) to be feasible in patients weighing less than 10 kg (17).

TABLE 3.
Extracorporeal Membrane Oxygenation Complications by Cannulation Strategy

Variable	Overall ($n = 2034$)	Dual-Lumen ($n = 1441$)	Multisite ($n = 593$)	p
Mechanical complications[a]	500 (25%)	379 (26%)	121 (20%)	0.13
Thrombosis	463 (23%)	338 (23%)	125 (21%)	1
Disseminated intravascular coagulation	76 (4%)	59 (4%)	17 (3%)	1
Hemolysis	210 (10%)	159 (11%)	51 (9%)	1
Seizures	44 (2%)	35 (2%)	9 (2%)	1
Brain death[b]	49 (2%)	24 (2%)	25 (4%)	0.02
CNS hemorrhage	104 (5%)	76 (5%)	28 (5%)	1
CNS infarction	33 (2%)	19 (1%)	14 (2%)	1
Surgical hemorrhage	150 (7%)	97 (7%)	53 (9%)	1
Gastrointestinal hemorrhage	77 (4%)	46 (3%)	31 (5%)	0.83
Pulmonary hemorrhage	138 (7%)	88 (6%)	50 (8%)	1
Cannula hemorrhage	397 (20%)	263 (18%)	134 (23%)	0.61
Infections	89 (4%)	62 (4%)	27 (5%)	1
Pneumothorax	182 (9%)	115 (8%)	67 (11%)	0.45
Arrhythmias	86 (4%)	60 (4%)	26 (4%)	1
Use of inotropic infusions	641 (32%)	445 (31%)	196 (33%)	1
Cardiopulmonary resuscitation during extracorporeal membrane oxygenation run	104 (5%)	85 (6%)	19 (3%)	0.36
Tamponade	47 (2%)	38 (3%)	9 (2%)	1

[a]Defined by the Extracorporeal Life Support Organization (ELSO) registry as those requiring a change of equipment or circuit components.
[b]Defined by the ELSO registry as neurologic determination of death.

Post Cardiotomy ECMO

- Cerebral insults:
  - E- CPR group (67%, 14 patients)
  - LCOS (33%, 8 patients)
  - NW- CPB (16%, 8 patients).
- The incidence of brain injury was statistically significant when comparing the E- CPR group with the LCOS (p=0.026) and NW- CPB (p=0.001) groups.
- Importantly, none of the three groups emerged as risk factors for mortality.

Varrica A, Cotza M, Rito ML, Satriano A, Carboni G, Saracino A, et al. Post cardiotomy extracorporeal membrane oxygenation in pediatric patients: Results and neurodevelopmental outcomes. Artif Organs. 2024;48:1525–1535. https://doi.org/10.1111/aor.14842

Outcomes of Pediatric Venovenous Extracorporeal Membrane Oxygenation Using Dual-Lumen or Multisite Cannulation: Extracorporeal Life Support Database Study, 2000–2019

- Secondary endpoint evaluated brain injury incidence during ECMO and its progression.
- ECMO implantation in the operating room (NW- CPB) served as a protective factor against cerebral lesions, whereas E- CPR presented significant risk
- ECMO implantation during CPR maneuvers elevates the risk of cerebral insults due to low flow rates and hypoxia, whereas operating room implantation minimizes these risks
- Brain injury incidence was notably high (33%), with 40% of affected patients recovering by discharge, while 19% sustained lesions at discharge.
- Follow- up indicated significant neurological recovery, corroborated by improvements on the PCPC scale, aligning with Chrysostomou et al.'s findings that identified cerebral hemorrhage as a risk factor for neurological recovery failure.

Pediatric Considerations

- Central shunt/single ventricle circulation
- Previous cannulations? Carotid vessel reconstructions or not?
- ACHD small femoral vessels and cannulation feasiblity

Pump Controlled Retrograde Trial Off

- The pump controlled retrograde flow trial off (PCRTO) is a novel technique for evaluating ability to wean off VA ECMO With PCRTO, blood flow through the ECMO circuit flows retrograde creating a controlled arterio-venous shunt. Similar to a clamp trial, the PCRTO aims to eliminate the cardiopulmonary support provided by the ECMO circuit thereby allowing for an assessment of the patient's heart and lung function, but without the risk profile for complications associated with a clamp trial.
- Definition: Reducing pump speed (RPM) to allow patient's heart and systemic blood pressure to support their own circulation in addition to drivin as minimal an amount of blood as possible through the arterial limb of the ECMO circuit towards venous limb of the ECMO circuit, ultimately returning blood to the right side of the heart. (Controlled Left-Right Shunt)

Pump Controlled Retrograde Trial Off

- PCRTO should be considered for patients who would benefit from a full trial off ECMO support i.e., a traditional clamp trial. Examples of patients who may meet criteria include those with profound cardiac dysfunction (systolic or diastolic), or those who have significant lung disease. It is important to remember PCRTO is both a slight volume and pressure load on the heart.
- Considerations:
- Clinical::
  - Significant residual systolic/diastolic dysfunction
  - Significant lung disease
  - Residual lesions following cardiac surgery that would prompt need for full clamp trial
  - Degree of VENOUS clot burden and potential for right-to-left embolus

Conclusion