

**Ryan Barbaro, MD, MS**  
**Clinical Assistant Professor**  
University of Michigan, Department of Pediatrics  
UH-South, F6908  
Phone: 734-764-5302  
Email: barbaror@med.umich.edu

## **Education and Training**

### **Education**

08/2000-05/2004	BS, Biology and Psychology, University of North Carolina, Chapel Hill, NC
08/2004-05/2008	MD, University of North Carolina School of Medicine, Chapel Hill, NC
07/2013-08/2014	MS, Health and Healthcare Research, University of Michigan Rackham Graduate School, Ann Arbor, MI

### **PostDoctoral Training**

06/2008-06/2011	Residency, Pediatrics, University of North Carolina, Chapel Hill, NC
07/2011-06/2014	Fellowship, Peds Critical Care, University of Michigan, Ann Arbor, MI
07/2013-06/2015	Fellowship, Pediatric Health Services Research, University of Michigan, Ann Arbor, MI

## **Certification And Licensure**

### **Certification**

07/2008-07/2015	American Heart Association - Pediatric Advanced Life Support
07/2011-07/2014	American Heart Association - Pediatric Advanced Life Support Instructor
07/2011-07/2014	American Heart Association - Advanced Cardiovascular Life Support
10/2011-12/2020	American Board of Pediatrics - General Pediatrics
11/2014-11/2024	American Board of Pediatrics - Pediatric Critical Care Medicine #2146

### **Licensure**

04/2011-present	State of Michigan, Controlled Substance
04/2011-present	State of Michigan, Medical License
05/2011-present	DEA Registration

## **Academic, Administrative, Clinical, Research and Military Appointments**

### **Academic Appointments**

07/2014-10/2017	Clinical Lecturer in Pediatrics - Intensive Care, University of Michigan, Ann Arbor, Michigan
10/2017-present	Clinical Assistant Professor in Pediatrics - Intensive Care, University of Michigan, Ann Arbor, Michigan

### **Administrative Appointments**

08/2014-02/2018	Pediatric ECMO Co-Director, University of Michigan, Ann Arbor, Michigan
07/2015-present	Core Faculty, Child Health Education and Research (CHEAR), Ann Arbor
05/2016-present	Member, Institute for Healthcare Policy and Innovation, Ann Arbor, Michigan
05/2016-present	Member, Michigan Center for Integrative Research in Critical Care (MCIRCC), Ann Arbor, Michigan
03/2018-present	Pediatric ECMO Director, University of Michigan, Ann Arbor, Michigan

### **Clinical Appointments**

07/2014-present	Attending Staff Physician, University of Michigan Health System, Ann Arbor, Michigan
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## **Clinical Interests**

- Extracorporeal Membrane Oxygenation (ECMO) Support for Respiratory Failure; Pediatric Acute Respiratory Distress Syndrome; Long-Term Neurodevelopment and Quality of Life Outcomes after Critical Illness and ECMO Support

## Research Interests

- My research has focused on improving ECMO support in children by analyzing how hospital structure and processes of care influence patient outcomes and seeking to better understand and improve the neurodevelopmental outcomes for children receiving ECMO support.

## Grants

### Current Grants

*5 R01 HL153519-05: ASCEND (ARDS in Children and ECMO initiation strategies impact on Neuro-Development)*  
NIH-DHHS-US- 20-PAF01099

Barbaro, Ryan, PI  
09/2020-06/2025. \$3,152,600

*FOCI: Following Outcomes after Critical Illness* CHEAR  
Co-I without Effort (Principal Investigator: Joseph Kohne)  
09/2020-08/2021. \$25,000

*Socioeconomic Status as a Predictor of Pediatric Sepsis Morbidity and Mortality* Department of Pediatrics, DEI  
Committee  
Co-I without Effort (Principal Investigator: Kayla Phelps)  
09/2020-08/2021. \$5,000

*K12 HL138039: Training to Advance Care Through Implementation Science in Cardiac and Lung Illnesses (TACTICAL)* NHLBI, NIH- 17-PAF01154  
Other (Principal Investigator: Theodore Iwashyna)  
07/2018-06/2021. \$300,000

*5 R01 HD015434-38: Pediatric Implantable Artificial Lung* NIH-DHHS-US- 17-PAF02268  
Co-I with Effort (Principal Investigator: Ronald Bruce Hirschl)  
09/2017-05/2022. \$2,983,538 (\$641,313)

### Past Grants

*Supporting PARDS with Restricted versus Unrestricted Candidacy for ECMO (SPRUCE)* Charles Woodson Pilot  
Research Award  
Ryan Barbaro, PI  
12/2018-12/2019. \$35,000

*Automated Diagnosis of Pediatric Acute Respiratory Distress better than Clinical Recognition?* Charles Woodson  
Pilot Research Award  
Ryan Barbaro, PI  
07/2017-07/2018. \$15,000

*Standardized Mortality Ratio for Children Requiring Extracorporeal Membrane Oxygenation* Extracorporeal Life  
Support Organization Research Grant- 16-PAF03455  
Ryan Barbaro, PI  
02/2016-12/2017. \$10,000 (\$10,000)

*Predictors of Extracorporeal Life Support Outcomes in Infant Pertussis* Extracorporeal Life Support Organization  
Research Grant  
Co-I (Principal Investigator: Michele Domico)  
12/2014-12/2016. \$5,000

*ELSO Research Grant Agreement: Developing and Applying an Extracorporeal Membrane Oxygenation Severity of Illness Index Score* Extracorporeal Life Support Organization Research Grant- 14-PAF01745  
Barbaro, Ryan, Non-Faculty PI  
01/2014-12/2015. \$4,700 (\$4,700)

*T32 F025206-064171: Training Grant for Pediatric Health Services Research* NICHD, NIH- 09-PAF03051  
Other (Principal Investigator: Matthew M Davis)  
07/2013-06/2015

## Honors and Awards

### International

2014 Young Investigator Award, Euro Extracorporeal Life Support Organization

### National

2014 Travel Award Program for Young Investigators, Pediatric Academic Society

2017 Star Research Achievement Award, Society of Critical Care Medicine

2019 Presidential Citation, Society of Critical Care Medicine

### Regional

2008 David A Mayberry Award. Awarded for compassion and clinical scholarship in the care of children with cancer

2011 Evening of Scholarship Merit Award

### Institutional

2012 Making a Difference Award

## Memberships in Professional Societies

2008-present Fellow, American Academy of Pediatrics

2011-present Member, Society of Critical Care Medicine

2012-present Member, Society of Pediatric Research

2016-present Member, Extracorporeal Life Support Organization

## Editorial Positions, Boards, and Peer-Review Service

### Journal Reviewer

2013-present Reviewer, Perfusion Journal (Ad Hoc)

2015-present Reviewer, Pediatric Critical Care Medicine (Ad Hoc)

2017-present Reviewer, ASAIO (Ad Hoc)

2017-present Reviewer, Critical Care Medicine (Ad Hoc)

2019-present Reviewer, Circulation (Ad Hoc)

2019-present Reviewer, New England Journal of Medicine Catalyst (Ad Hoc)

2020-present Reviewer, American Thoracic Society

2020-present Reviewer, Critical Care (Ad Hoc)

2020-present Reviewer, Intensive Care Medicine (Ad Hoc)

## Teaching

### Faculty Member

07/2018-present Erin Carlton, MD, MSc, University of Michigan, pediatric critical care medicine faculty. With my mentorship, Dr. Carlton completed the health and healthcare masters program, authored manuscript #32 and submitted a career development award to the National Institute of Child Health and Human Development (NICHD) for which I am a co-mentor.

- 07/2019-present Joseph Kohne, MD, University of Michigan, pediatric critical care medicine faculty. With my mentorship, Dr. Kohne completed the health and healthcare masters program and was awarded a CHEAR Center Program Grant for which I am the senior investigator and mentor.
- 07/2019-present Stephen Gorga, MD, University of Michigan, pediatric critical care medicine faculty. I am Dr. Gorga's primary mentor for the health and healthcare masters program and I have mentored his authorship of a submitted manuscript.

### **Resident/House Officer**

- 07/2014-06/2017 Asaad Beshish, MD, University of Michigan, pediatric critical care fellow. Dr. Beshish authored manuscript #20, and abstract #11 was awarded Best Abstract at ECMO and the Advanced Therapies for Cardiovascular and Respiratory Failure Conference 2020. Currently, he is faculty at the Children's Hospital of Atlanta as a pediatric cardiac intensivist.
- 07/2014-06/2017 Lauren Yagiela, MD, MSc, University of Michigan, pediatric critical care fellow. With my mentorship, Dr. Yagiela completed the University of Michigan health and healthcare masters program and authored manuscript #25. Currently, she is faculty at Detroit Medical Center.
- 07/2015-06/2018 Erin Carlton, MD, MSc, University of Michigan, pediatric critical care fellow. During fellowship, Dr. Carlton published manuscript #40. Currently, she is faculty at the University of Michigan, Pediatric Critical Care Division.
- 07/2016-06/2019 Stephen Gorga, MD, University of Michigan, pediatric critical care fellow. During fellowship, Dr. Gorga published manuscript #40. Currently, he is faculty at the University of Michigan, Pediatric Critical Care Division.
- 07/2016-06/2019 Joseph Kohne, MD, University of Michigan, pediatric critical care fellow. During fellowship, Dr. Kohne completed a research project currently under review. Currently, he is faculty at the University of Michigan, Pediatric Critical Care Division.
- 07/2018-present Rachel Clarke, MD, University of Michigan, pediatric critical care fellow. Dr. Clarke has obtained IRB approval and is making progress on a prospective study evaluating children receiving ECMO support.
- 07/2019-present Kayla Phelps, MD, MPH, University of Michigan, pediatric critical care fellow. Dr. Phelps was awarded a department of pediatrics intramural Diversity Equity and Inclusion (DEI) Trainee Grant to study disparities in health care among critically ill children.

### **Teaching Activity**

#### **Institutional**

- 01/2012-present The Department of Pediatrics, University of Michigan: Pediatric Critical Care Medicine Didactic Lecture Series, given to residents and fellows. Titles of lectures include: Bronchiolitis and the mechanical Ventilator: Lessons in Physiology, Evidence for the Oscillator, Lactic Acidosis, ECMO Physiology, Statistics
- 03/2012 The Department of Pediatrics, University of Michigan: Joint Critical Care Lecture Series, "Postoperative Management in Liver Transplant Patients"
- 07/2012-06/2017 The Department of Pediatrics, University of Michigan: Lectures given monthly to resident and fellow trainees during their rotation through the PICU. Titles of lectures include: Extracorporeal Membrane Oxygenation; Rescue Therapies in Acute Respiratory Distress Syndrome; and Sedation and Neuromuscular Blockade.
- 07/2013-06/2016 The Department of Pediatrics, University of Michigan: Simulate mock codes, twice monthly, with pediatric resident trainees and medical students
- 07/2014-present The Department of Pediatrics, University of Michigan: As an attending physician, I supervise and actively teach during clinical rounds in the PICU for a week every month. Learners include medical students, nurse practitioner students, nurses, residents and fellows.
- 01/2015 The Department of Pediatrics, University of Michigan: Child and Health Evaluation and Research (CHEAR) Unit Health Services Research Seminar Series, "The Best Path Forward to Pediatric ECMO"
- 03/2015 The Department of Pediatrics, The University of Michigan: Pediatric Grand Rounds, "A Path Forward in Pediatric ECMO"

## Clinical Track Scholarly Contribution

### Clinician-Research Scholar (translational science, clinical research, health services research)

My scholarly contributions have focused on improving ECMO support in children. ECMO is a form of advanced life support that can be used in children with refractory or cardiac failure. Within ECMO, my research has focused on three broad categories: developing risk adjustment models for ECMO-supported patients, analyzing how hospital structure and processes of care influence patient outcomes and studying the neurodevelopmental outcomes of ECMO survivors.

## Committee and Administrative Services

### Committee Services

#### International

2015-present	Extracorporeal Life Support Organization Research Grants Committee, Member
2016-present	Registry Committee for Extracorporeal Life Support Organization, Chair
2020-present	Pediatric Acute Lung Injury Consensus Conference (PALICC2), an international committee aimed at updating the definition of pediatric acute respiratory distress syndrome and identifying consensus statements on best care, Member

#### National

2017-2020	Society of Critical Care Medicine and Extracorporeal Life Support Organization White Paper Task Force, Chair
2019-present	Pediatric ECMO Anticoagulation Collaborative (PEACE), Executive Committee Member

#### Institutional

2013-2014	C.S. Mott Children's & Women's Hospital Quality & Safety Committee, Department of Pediatrics, University of Michigan, Pediatric Critical Care Medicine Representative for EPIC/MiChart Implementation
2014-present	Clinical ECMO Management Committee, Department of Nursing ECMO Overhead, University of Michigan, Pediatric Critical Care Medicine Representative
2014-present	Fellowship Oversight Committee, Department of Pediatrics, University of Michigan, Member
2016-present	Clinical Competency Committee, Department of Pediatrics, University of Michigan, Member
2016-present	ECMO, Pediatric Medical Director
2020-present	PICeW Committee, Department of Pediatrics, University of Michigan, Director

## Visiting Professorships and Extramural Invited Presentations

### Extramural Invited Presentations

1. Intersections of Extracorporeal Membrane Oxygenation (ECMO) and Hematopoietic Stem Cell Transplant, Pediatric Acute Lung Injury and Sepsis Investigators (PALISI), March 2014, San Diego, CA
2. Hospital ECMO Volume and ECMO Mortality Rates: Analysis of the ELSO Registry, 25th Anniversary ELSO Conference, September 2014, San Diego, CA
3. Outcome in Extracorporeal Membrane Oxygenation, 31st Annual Children's National Symposium: ECMO and the Advanced Therapies for Respiratory Failure, February 2015, San Diego, CA
4. When is Lung Injury Unrecoverable?, 31st Annual Children's National Symposium: ECMO and the Advanced Therapies for Respiratory Failure, February 2015, San Diego, CA
5. ECMO Dilemmas, 32nd Annual Children's National Symposium: ECMO and the Advanced Therapies for Respiratory Failure, February 2016, San Deigo, CA
6. ECMO Outcomes, 27th Annual ELSO Conference, September 2016, San Diego, CA

7. Long Term ECMO – How Long is Too Long?, 33rd Annual Children's National Symposium: ECMO and the Advanced Therapies for Respiratory Failure, March 2017, San Diego, CA
8. Extracorporeal Resuscitation Consortium Registry, ECPR Research Meeting, April 2017, Ottawa, Canada
9. ELSO Registry: What's New?, 6th Annual International EuroELSO Congress, May 2017, Maastricht, Netherlands
10. ELCS and Big Data: Driving Innovation and Outcome, 63rd Annual ASAIO Conference, June 2017, Chicago, Illinois
11. Success: Negotiating What You Need, Setting a Realistic Timeline, Competing Priorities (How and When to Say "no"), PALISI Faculty Course: Building your clinical research career, September 2017, San Diego, CA
12. Let's Measure the Quality of Your ECMO, 28th Annual ELSO Conference, September 2017, Baltimore, MD
13. Data Governance, Oversight and Uses – What are the Challenges, Requirements and Important Next Steps, Federal Drug Administration Cardiac Device Coordinated Research Network Kick-off Event, November 2017, Silver Spring, MD
14. ELSO Registry for the New Era, 34th Annual Children's National Symposium: ECMO and the Advanced Therapies for Respiratory Failure, February 2018, Keystone, CO
15. Hospital Variation in Pediatric In-patient ECMO Cost, 7th Annual International EuroELSO Congress, May 2018, Prague, Czech Republic
16. ELSO as Research Infrastructure, 9th Annual World Congress on Pediatric Intensive and Critical Care, June 2018, Singapore
17. What's New in The ELSO Registry, 29th Annual ELSO Conference, September 2018, Scottsdale, AZ
18. Papers from The ELSO Registry, 29th Annual ELSO Conference, September 2018, Scottsdale, AZ
19. ECMO Volume and Outcome, 6th Annual ELSO Conference, November 2018, Santiago, Chile
20. Implementing Improvement with the ELSO Registry, 6th Annual ELSO Conference, November 2018, Santiago, Chile
21. Realizing the Value of the ELSO Registry, 6th Annual ELSO Conference, November 2018, Santiago, Chile
22. Risk Stratification and Outcomes in ECMO: Can We Identify High Risk Cardiac Patients?, 14th Annual Pediatric Cardiac Intensive Care Society, December 2018, Miami, FL
23. ELSO Registry Update, 30th Bi-Annual ELSO Steering Committee Meeting, February 2019, Denver, CO
24. ARDS in Children and ECMO initiation strategies' impact on Neuro-Development (ASCEND): a research proposal, Pediatric Acute Lung Injury and Sepsis Investigators Meeting, March 2019, Snowbird, UT
25. ELSO Registry Update, 30th Annual ELSO Conference, September 2019, Austin, TX
26. Early Venovenous ECMO Cannulation for Severe Pediatric ARDS, Society of Critical Care Medicine, February 2020, Orlando, FL
27. Advancing Pragmatic Priorities & Pathways in Shock Research, Cardiac Safety Research Consortium, Cardiac Safety Research Consortium, February 2020, National Harbor, MD
28. ARDS in Children and ECMO initiation strategies' impact on Neuro-Development (ASCEND), Pediatric Acute Lung Injury and Sepsis Investigators, March 2020, New Orleans, LA
29. Data Matters: The ELSO Registry, ELSO COVID-19, ELSO, June 2020, Virtual Webinar
30. ELSO Registry Update, 31st Annual ELSO Meeting, ELSO, September 2020, Virtual Meeting
31. ECMO in COVID-19: An International Cohort Study of the ELSO Registry, 31st Annual ELSO Meeting, ELSO, September 2020, Virtual Meeting
32. Using the ELSO Registry to Improve Local Practice, 31st Annual ELSO Meeting, ELSO, September 2020, Virtual Meeting
33. ECMO in COVID-19, Jefferson Health COVID-19 and ECMO Webinar Series, October 2020, Virtual Presentation
34. Looking Forward: ECMO Support in COVID-19, Texas Children's Mechanical Support Meeting, January 2021, Virtual Presentation
35. ECMO in COVID-19, Canadian Cardiovascular Critical Care Society (CANCARE), February 2021, Virtual Presentation

36. COVID in Adult and Pediatric ECMO per the Registry, The 37th Annual Children's National Symposium: ECMO & Advanced Therapies for Cardiac & Respiratory Failure, February 2021, Virtual Presentation
37. Session Moderator: ECMO and Anticoagulation, BloodNet and PALISI Sponsored Debates, March 2021, Virtual
38. Observational Registries: Successes, Pitfalls, What Can Be Fixed Now, and Future Collaborations, Cardiac Safety Research Consortium, March 2021, Virtual
39. Investigator Update ASCEND, PALISI, March 2021, Virtual Presentation
40. ECMO in COVID-19: The World Experience, ECMO-day for the International Symposium on Intensive Care and Emergency Medicine, April 2021, Virtual
41. Benchmarking Paediatric ECMO in the Face of Private Variations, EUROELSO Virtual Congress 2021, May 2021, Virtual

### Seminars

1. Anticoagulation and Pharmacologic Management, CME, ECMO Specialist Training Course, The University of Michigan; these were for non-UofM affiliates, October 2017, Ann Arbor, MI
2. ECMO for Respiratory Failure and VV ECMO, CME, ECMO Specialist Training Course, The University of Michigan; these were for non-UofM affiliates, October 2017, Ann Arbor, MI
3. Anticoagulation and Pharmacologic Management, CME, ECMO Specialist Training Course, The University of Michigan; these were for non-UofM affiliates, November 2017, Ann Arbor, MI
4. Anticoagulation and Pharmacologic Management, CME, ECMO Specialist Training Course, The University of Michigan; these were for non-UofM affiliates, April 2018, Ann Arbor, MI

### **Bibliography**

#### **Peer-Reviewed Journals and Publications**

1. Nadler JJ, Moy SS, Dold G, Trang D, Simmons N, Perez A, Young NB, **Barbaro RP**, Piven J, Magnuson TR, Crawley JN: Automated Apparatus for Quantitation of Social Approach Behaviors in Mice *Genes Brain Behav.* 3(5): 303-314, 2004. PM15344923.
2. Moy SS, Nadler JJ, Perez A, **Barbaro RP**, Johns JM, Magnuson TR, Piven J, Crawley JN: Sociability and Preference for Social Novelty in Five Inbred Strains: An Approach to Assess Autistic-like Behavior in Mice *Genes Brain Behav.* 3(5): 287-302, 2004. PM15344922.
3. Moy SS, Nadler JJ, Young NB, Perez A, Holloway LP, **Barbaro RP**, Barbaro JR, Wilson LM, Threadgill DW, Lauder JM, Magnuson TR, Crawley JN: Mouse Behavioral Tasks Relevant to Autism: Phenotypes of 10 Inbred Strains *Behav Brain Res.* 176(1): 4-20, 2007. PM16971002; PMC1857288.
4. **Barbaro RP**, Odetola FO, Kidwell KM, Paden ML, Bartlett RH, Davis MM, Annich GM: Association of Hospital-Level Volume of Extracorporeal Membrane Oxygenation Cases and Mortality. Analysis of the Extracorporeal Life Support Organization Registry. *Am J Respir Crit Care Med.* 191(8): 894-901, 2015. PM25695688; PMC4435456.
5. **Barbaro RP**, Bartlett RH, Chapman RL, Paden ML, Roberts LA, Gebremariam A, Annich GM, Davis MM: Development and Validation of the Neonatal Risk Estimate Score for Children Using Extracorporeal Respiratory Support *J Pediatr.* 173: 56-61, 2016. PM27004674; PMC4884525.
6. **Barbaro RP**, Boonstra PS, Paden ML, Roberts LA, Annich GM, Bartlett RH, Moler FW, Davis MM: Development and Validation of the Pediatric Risk Estimate Score for Children Using Extracorporeal Respiratory Support (Ped-RESCUERS) *Intensive Care Med.* 42(5): 879-888, 2016. PM27007109; PMC6379065.
7. Kuo KW, **Barbaro RP**, Gadepalli SK, Davis MM, Bartlett RH, Odetola FO: Should Extracorporeal Membrane Oxygenation be Offered? An International Survey *J Pediatr.* 182: 107-113, 2017. PM28041665.
8. Thiagarajan RR, **Barbaro RP**, Rycus PT, McMullan DM, Conrad SA, Fortenberry JD, Paden ML: Extracorporeal Life Support Organization Registry International Report 2016 *ASAIO J.* 63(1): 60-67, 2017. PM27984321.
9. **Barbaro RP**, Boonstra PS, Moler FW, Davis MM, Prosser LA: Hospital-Level Variation in Inpatient Costs Among Children Receiving Extracorporeal Membrane Oxygenation Perfusion. *ASAIO J.* 32(7): 538-546, 2017. PM28466677.

10. **Barbaro RP**, Paden ML, Guner YS, Raman, L, Ryerson LM, Alexander P, Nasr VG, Bembea MM, Rycus PT, Thiagarajan RR: Pediatric Extracorporeal Life Support Organization Registry International Report 2016 ASAIO J. 63(4): 456-463, 2017. PM28557863; PMC5626007.
11. Yu JS, **Barbaro RP**, Granoski DA, Mauman ME, MassiscotteMP, Lequier LL, Annich GM, Ryerson LM: Prospective Side by Side Comparison of Outcomes and Complications With a Simple Versus Intensive Anticoagulation Monitoring Strategy in Pediatric Extracorporeal Life Support Patients *Pediatr Crit Care Med*. 18(11): 1055-1062, 2017. PM28922263.
12. Guner YS, Nguyen DV, Zhang L, Chen Y, Harting MT, Rycus P, **Barbaro RP**, Di Nardo M, Brogan TV, Cleary J, Yu PT: Development and Validation of ECMO Mortality-Risk Models for Congenital Diaphragmatic Hernia *ASAIO J*. 64(6): 785-794, 2018. PM29117038; PMC5938163.
13. Domico M, Ridout D, MacLaren G, **Barbaro R**, Annich G, Schlapbach LJ, Brown KL: Extracorporeal Membrane Oxygenation for Pertussis: Predictors of Outcome Including Pulmonary Hypertension and Leukodepletion *Pediatr Crit Care Med*. 19(3): 243-261, 2018. PM29319632.
14. **Barbaro RP**, Gaies M: Aligning Interests in Critical Care Trial Design *Pediatr Crit Care Med* 19(2): 176-177, 2018. PM29394232.
15. **Barbaro RP**, Xu Y, Borasino S, Truemper EJ, Watson RS, Thiagarajan RR, Wypij D, Curley MAQ, for the RESTORE Study Investigators: Does Extracorporeal Membrane Oxygenation Improve Survival in Pediatric Acute Respiratory Failure? *Am J Respir Crit Care Med*. 197(9): 1177-1186, 2018. PM29373797; PMC6019927.
16. Johnson K, Jarboe MD, Mychaliska GB, **Barbaro RP**, Rycus P, Hirschl RB, Gadepalli SK: Is There a Best Approach for Extracorporeal Life Support Cannulation: A Review of the Extracorporeal Life Support Organization *J Pediatr Surg*. 53(7): 1301-1304, 2018. PM29459043.
17. Swol J, Brodie D, Napolitano L, Park PK, Thiagarajan R, **Barbaro RP**, Lorusso R, McMullan D, Cavarocchi N, Hssain AA, Rycus P, Zonies D.: Indications and Outcomes of Extracorporeal Life Support in Trauma Patients *J Trauma Acute Care Surg*. 84(6): 831-837, 2018. PM29538235.
18. Conrad SA, Broman LM, Fabio ST, Lorusso R, Malfertheiner MV, Pappalardo F, Di Nardo, M Belliato M, Grazioli L, **Barbaro RP**, McMullan DM, Pellegrin V, Brodie D, Bembea MM, Fan E, Mendonca M, Diaz R, Bartlett RH: The Extracorporeal Life Support Organization Maastricht Treaty for Nomenclature in Extracorporeal Life Support: A Position Paper of the Extracorporeal Life Support Organization *Am J Respir Crit Care Med*. 198(4): 447-451, 2018. PM29614239; PMC6118026.
19. **Barbaro RP**, Thiagarajan RR, Wypij D, Curley MAQ: Reply to: Do We Really Doubt ECMO Efficacy in Pediatric ARDS? *Am J Respir Crit Care Med*. 198(3): 409-410, 2018. PM29617573; PMC6835063.
20. Beshish AG, Baginski MR, Johnson TJ, Deatrick BK, **Barbaro RP**, Owens GE: Functional Status Change Among Children with Extracorporeal Membrane Oxygenation to Support Cardiopulmonary Resuscitation in a Pediatric Cardiac ICU: A Single Institution Report *Pediatr Crit Care Med*. 19: 665-671, 2018. PMID: 29659415.
21. Criss CN, **Barbaro RP**, Bauman KA, Fofafoluwa O, Vellody R, Jarboe MD: Selective Management of Multiple Bronchopleural Fistulae in a Pediatric Patient on Extracorporeal Membrane Oxygenation: A Multidisciplinary Approach *J Laparoendosc Adv Surg Tech*. 28(10): 1271-1274, 2018. PM29920152.
22. **Barbaro RP**, Boonstra PS, Kuo KW, Selewski DT, Bailly DK, Stone CL, Chow CY, Annich GM, Moler FW, Paden ML: Evaluating Mortality Risk Adjustment Among Children Receiving Extracorporeal Support for Respiratory Failure *ASAIO J*. 65(3): 277-284, 2019. PM29746311.
23. **Barbaro R**, Fan E: In Critically Ill Children, Fluid Overload is Consistently Associated with Worse Outcomes *BMJ Evid Based Med*. 24(1): 41-42, 2019. PM30065112.
24. Nasr VG, Raman L, **Barbaro RP**, Guner Y, Tonna J, Ramanathan K, Pappalardo F, Thiagarajan RR, Alexander PMA: Highlights from the Extracorporeal Life Support Organization Registry: 2006-2017 *ASAIO J*. 65(6): 537-544, 2019. PM30074497.
25. Yagiela LM, **Barbaro RP**, Quasney MW, Pfarr AM, Ursu DC, Prosser LA, Odetola FO: Outcomes and Patterns of Health Care Utilization After Hospitalization for Pediatric Critical Illness Due to Respiratory Failure *Pediatr Crit Care Med*. 20(2): 120-127, 2019. PM30418338.
26. Meert KL, Guerguerian AM, **Barbaro R**, Slomine BS, Christensen JR, Berger J, Topjian A, Bembea M, Tabbutt S, Fink EL, Schwartz SM, Nadkarni VM, Telford R, Dean JM, Moler FW, Therapeutic Hypothermia After Pediatric Cardiac Arrest (THAPCA) Trial Investigators: Extracorporeal Cardiopulmonary Resuscitation: One-Year Survival and Functional Outcome Among Infants and Children with Refractory In-Hospital Cardiac Arrest *Crit Care Med*. 47(3): 393-402, 2019. PM30422861; PMC7027956.

27. Boonstra PS, **Barbaro RP**, Sen A: Default Priors for the Intercept Parameter in Logistic Regressions *Comput Stat Data Anal.* 133: 245-256, 2019. PM31530966; PMC6748335.
28. Bailly DK, DO, Reeder RW, Winder M, **Barbaro RP**, Pollack MM, Moler FW, Meert KL, Berg RA, Carcillo J, Zuppa AF, Newth C, Berger J, Bell MJ, Dean MJ, Nicholson C, Garcia-Filion P, Wessel D, Heidemann S, Doctor A, Harrison R, Bratton SL, Dalton H, for the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) Collaborative Pediatric Critical Care Research Network (CPCCRN): Development and Validation of the Pediatric Extracorporeal Membrane Oxygenation Prediction (PEP) Tool for Risk Adjusting Mortality *Pediatr Crit Care Med.* 20(5): 426-434, 2019. PM30664590; PMC6502677.
29. Broman LM, Taccone FS, Lorusso R, Malfertheiner MV, Pappalardo F, Di Nardo M, Belliato M, Bembea MM, **Barbaro RP**, Diaz R, Grazioli L, Pellegrino V, Mendonca MH, Brodie D, Fan E, Bartlett RH, McMullan MM, and Conrad SA: The ELSO Maastricht Treaty for ECLS Nomenclature: Abbreviations for Cannulation Configuration in Extracorporeal Life Support - A Position Paper of the Extracorporeal Life Support Organization *Crit Care.* 23(1): 36, 2019. PM30736845; PMC6367794.
30. Lorusso R, Alexander P, Rycus P, **Barbaro R**: The Extracorporeal Life Support Organization Registry: Update and Perspectives *Ann Cardiothorac Surg.* 8(1): 93-98, 2019. PM30854317; PMC6379190.
31. **Barbaro RP**, MacLaren G: Improving Pediatric Extracorporeal Cardiopulmonary Resuscitation Means Delivering Best Care and Measuring Impact Beyond Survival *Crit Care Med.* 47(4): 613-615, 2019. PMID: 30882435 PMC6424120.
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