

**Ryan Barbaro**  
**Clinical Associate Professor in Pediatrics**  
**barbaror@umich.edu**

**Education and Training**

**Education**

08/2000-05/2004      BS, 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, 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      Clinical Fellow, Peds Critical Care, University of Michigan, Ann Arbor, MI  
07/2013-06/2015      Research Fellow, Pediatric Health Services Research, University of Michigan, Ann Arbor, Michigan

**Certification And Licensure**

**Certification**

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

**Licensure**

04/2011-Present      Michigan, Medical License  
04/2011-Present      Michigan, Controlled Substance  
05/2011-Present      Michigan, DEA Registration

**Work Experience**

**Academic Appointment**

07/2014-10/2017      Clinical Lecturer in Pediatrics - Intensive Care, University of Michigan, Ann Arbor  
10/2017-09/2021      Clinical Assistant Professor in Pediatrics - Intensive Care, University of Michigan, Ann Arbor  
09/2021-Present      Clinical Associate Professor in Pediatrics - Intensive Care, University of Michigan, Ann Arbor

**Administrative Appointment**

08/2014-02/2018      Pediatric ECMO Co-Director, Department of Pediatrics, University of Michigan, Ann Arbor  
03/2018-Present      Pediatric ECMO Director, Department of Pediatrics, University of Michigan, Ann Arbor  
09/2021-Present      Service Chief, Pediatric Critical Care, University of Michigan, Ann Arbor

### **Academic Center/Institute Appointment**

07/2015-Present	Core Faculty, Department of General Pediatrics, Child Health Education and Research (CHEAR), Ann Arbor
05/2016-Present	Member, Institute for Healthcare Policy and Innovation, Ann Arbor
05/2016-Present	Member, Michigan Center for Integrative Research in Critical Care (MCIRCC), Ann Arbor

### **Clinical Appointments**

07/2014-Present	Attending Staff Physician, University of Michigan Health System, Ann Arbor
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### **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.

### **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

### **Clinical Track Scholarly Contribution**

#### **Clinician-Research Scholar**

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.

### **Grants**

#### **Current Grants**

R01HL153519: *ASCEND (ARDS in Children and ECMO initiation strategies impact on Neuro-Development)*:  
PI  
NIH-DHHS-US  
09/2020 - 06/2025  
\$3,152,600

K12HL138039: *Training to Advance Care Through Implementation Science in Cardiac And Lung Illnesses (TACTICAL)*:  
Co-I  
NIH-DHHS-US  
09/2017 - 06/2023  
\$3,111,296

R01HD015434: *Pediatric Implantable Artificial Lung*:  
Co-I (Principal Investigator: Ronald Hirschl)  
NIH-DHHS-US  
09/2017 - 05/2023  
\$2,972,255

**Submitted - Open**

R01HL153519:*Factors Important to Clinician Decision-Making in the Initiation and Discontinuation of Extracorporeal Membrane Oxygenation:*

PI  
NIH-DHHS-US  
09/2023 - 08/2024  
\$271,202

R01:*Predicting ECMO NeuroLogIcal Injuries using mAchiNe Learning (PELICAN):*

PI  
SubK-NIH-DHHS-US sourced funding through The University of Texas Southw  
07/2023 - 06/2028  
\$50,000

R01:*Electronic Health Record-informed, Artificial Intelligence-enabled, and Community-executed Standardized Clinical Assessment and Management Plans (SCAMPs) for Extracorporeal Membrane Oxygenation (ECMO):*

PI  
SubK-NIH-DHHS-US sourced funding through Children's Hospital Corporatio  
07/2023 - 06/2028  
\$45,256

**Submitted - Not Funded**

R01:*Predicting ECMO NeuroLogIcal Injuries using mAchiNe Learning (PELICAN):*

PI  
SubK-NIH-DHHS-US sourced funding through The University of Texas Southw  
09/2022 - 08/2027  
\$125,000

R01:*Predicting ECMO NeuroLogIcal Injuries using mAchiNe Learning (PELICAN):*

PI  
SubK-NIH-DHHS-US sourced funding through The University of Texas Southw  
04/2022 - 03/2027  
\$125,000

*Monitoring of respiratory disease progression in children using vibrational signature of cardiopulmonary activity and a privileged machine learning approach:*

PI  
NSF-US sourced funding through CardioSounds, LLC  
02/2022 - 01/2023  
\$80,226

K23HD102590:*Measuring the long-term consequence of pediatric severe sepsis:*

Consultant on (Principal Investigator:Erin Carlton)  
NIH-DHHS-US  
04/2021 - 03/2026  
\$837,000

K23HD102590: *Measuring the long-term consequence of pediatric severe sepsis:*  
Consultant on (Principal Investigator: Erin Carlton)  
NIH-DHHS-US  
07/2020 - 06/2025  
\$837,000

K12: *Measuring the long-term consequence of pediatric severe sepsis:*  
Consultant on (Principal Investigator: Erin Carlton)  
SubK-NIH-DHHS-US sourced funding through University of Utah  
01/2020 - 12/2021  
\$248,760

### **Past Grants**

N/A: *FOCI: Following Outcomes after Critical Illness:*  
Co-I  
CHEAR  
09/2020 - 08/2021  
\$25,000

N/A: *Socioeconomic Status as a Predictor of Pediatric Sepsis Morbidity and Mortality:*  
Co-I  
DEI, Department of Pediatrics  
09/2020 - 08/2021  
\$5,000

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

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

*Development of a Case-Mix Adjustment Index to Compare Standardized Mortality Rate for Children Requiring Extracorporeal Membrane Oxygenation:*  
PI  
Extracorporeal Life Support Or  
02/2016 - 07/2019  
\$10,000

N/A: *Predictors of Extracorporeal Life Support Outcomes in Infant Pertussis:*  
Co-I  
Extracorporeal Life Support Organization Research Grant  
12/2014 - 12/2016  
\$5,000

*Developing and Applying an Extracorporeal Membrane Oxygenation Severity of Illness Index Score:*  
PI  
Extracorporeal Life Support Or  
01/2014 - 12/2015  
\$4,700

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

T32 F025206-064171, NIH-09-PAF03051:*Training Grant for Pediatric Health Services Research:*  
Funded by  
National Institute of Child Health and Human Development  
07/2013 - 12/2015  
\$0

## **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

2022 - present Fellowship, Extracorporeal Life Support Organization

### **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

## **Study Sections, Editorial Boards, Journal & Abstract Review**

### **Study Sections**

#### **National**

2020 National Institutes of Health Surgery, Anesthesiology and Trauma, (Ad Hoc)

2021 - present Chair, Data Safety Monitoring Board for the NICHD funded randomized clinical trial Catheter-Related Early Thromboprophylaxis with Enoxaparin (CRETE) Studies, (Ad Hoc)

2021 Reviewer, National Institutes of Health Surgery, Anesthesiology and Trauma Study Section, (Ad Hoc)

2022 Reviewer, National Institutes of Health, Clinical Trials Review Study Section, (Ad Hoc)

## **Institutional**

2021 - present Member, Data Safety and Monitoring Board, Fetal Endoscopic Tracheal Occlusion (FETO) Trial for Congenital Diaphragmatic Hernia (CDH), (Ad Hoc)

## **Editorial Boards / Journal & Abstract Reviews**

### **Editorial Boards**

2023 - present Member, Editorial Board, Pediatric Critical Care Medicine

### **Journal Review**

2013 - present Reviewer, Perfusion Journal (Ad Hoc)

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

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

2017 - present Reviewer, ASAIO (Ad Hoc)

2019 - present Reviewer, Circulation (Ad Hoc)

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

2020 - present Intensive Care Medicine (Ad Hoc)

2020 - present Reviewer, Critical Care (Ad Hoc)

2020 - present Reviewer, American Thoracic Society

## **Teaching**

### **Mentorship**

#### **Resident**

07/2014-06/2017 Lauren Yagiela, University of Michigan, Pediatric Critical Care Medicine 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, Career Mentorship

07/2014-06/2017 Asaad Beshish, University of Michigan, Pediatric Critical Care Medicine 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, Career Mentorship

07/2015-06/2018 Erin Carlton, University of Michigan, Pediatric Critical Care Medicine fellow. During fellowship, Dr. Carlton published manuscript #40. Currently, she is faculty at the University of Michigan, Pediatric Critical Care Division, Career Mentorship

07/2016-06/2019 Stephen Gorga, University of Michigan, Pediatric Critical Care Medicine fellow. During fellowship, Dr. Gorga published manuscript #40. Currently, he is faculty at the University of Michigan, Pediatric Critical Care Division, Career Mentorship

07/2016-06/2019 Joseph Kohne, University of Michigan, Pediatric Critical Care Medicine 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, Career Mentorship

07/2017-07/2021 Sarah Harding, University of Michigan, Pediatric Critical Care Medicine fellow. Dr. Harding is a faculty member at Upstate Golisano Children's Hospital, Career Mentorship

07/2018-07/2021 Rachel Clarke, University of Michigan, Pediatric Critical Care Medicine fellow. Dr. Clarke has obtained IRB approval and is making progress on a prospective study evaluating children receiving ECMO support and is a faculty member at Upstate Golisano Children's Hospital, Career Mentorship

07/2019-08/2022 Kayla Phelps, University of Michigan, Pediatric Critical Care Medicine 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 and is currently faculty at Children's Hospital New Orleans, Career Mentorship

07/2020-Present Michael Stevens, University of Michigan, Pediatric Critical Care Medicine fellow. Dr. Stevens has focused on implementation of a pediatric sepsis alert system, Career Mentorship

**Faculty Member**

07/2018-Present Erin Carlton, University of Michigan, Pediatric Critical Care Medicine faculty. With my mentorship, Dr. Carlton completed the health and healthcare masters program, authored manuscript #32, #40, #48, #60 and #66 and I am a co-mentor for Dr. Carlton's implementation science career development award funded by National Institute of Heart, Blood, and Lung Institute (NHLBI), Career Mentorship

07/2019-Present Stephen Gorga, University of Michigan, Pediatric Critical Care Medicine faculty. With my mentorship, Dr. Gorga primary completed the health and healthcare masters program and I have mentored his authorship of manuscripts #55 and #65, Career Mentorship

07/2019-Present Joseph Kohne, 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. I have also mentored manuscripts #71 and #73, Career Mentorship

**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, University of Michigan

03/2012-03/2012 The Department of Pediatrics, University of Michigan: Joint Critical Care Lecture Series, "Postoperative Management in Liver Transplant Patients", University of Michigan

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., University of Michigan

07/2013-06/2016 The Department of Pediatrics, University of Michigan: Simulate mock codes, twice monthly, with pediatric resident trainees and medical students, University of Michigan

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., University of Michigan

01/2015-01/2015 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", University of Michigan

03/2015-03/2015 The Department of Pediatrics, The University of Michigan: Pediatric Grand Rounds, "A Path Forward in Pediatric ECMO", University of Michigan

07/2015-06/2018 The Department of Pediatrics, University of Michigan: Quarterly interdepartmental conferences involving pediatric surgery, pediatric critical care medicine and other invitees to discuss best practice in pediatric ECMO care., University of Michigan

### **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  
2021 - Present Member, American Heart Associate Cardiogenic Shock Registry

### **Committee/Service**

#### **International**

2015 - present Research Grants Committee, Extracorporeal Life Support Organization, Member  
2016 - present Registry Committee for Extracorporeal Life Support Organization, ELSO, 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, Pediatric Acute Lung Injury Consensus Conference, Member  
2021 ELSO Conference Committee for ELSO's 32nd Annual Conference, ELSO Conference Committee, Member  
2022 - present PediECMO, Pediatric Acute Lung Injury and Sepsis Investigator, Co-Chair

#### **National**

2017 - 2020 White Paper Task Force, Society of Critical Care Medicine and Extracorporeal Life Support Organization, Chair  
2019 - present Anticoagulation Collaborative (PEACE), Pediatric ECMO, Advisory Board  
2021 - present Cardiogenic Shock Registry, American Heart Association, Member  
2021 National Heart, Lung, and Blood Institute (NHLBI): Implementation Science Capacity Building Workshop, NHLBI, Member

#### **Institutional**

2013 - 2014 Quality & Safety Committee, Department of Pediatrics, University of Michigan, C.S. Mott Children's & Women's Hospital, Advisor  
2014 - present Clinical ECMO Management Committee, Department of Nursing ECMO Overhead, University of Michigan, ECMO, Advisor  
2014 - 2016 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, University of Michigan, Director  
2020 - present PICeW Committee, Department of Pediatrics, University of Michigan, Founder  
2021 - present Committee on Pediatric Trauma, Department of Pediatrics, University of Michigan, Board Liaison  
2021 - present Pediatric Critical Care Medicine Faculty Recruitment Committee, University of Michigan, Chair



2022 - present	Intramural Grants Program, Department of Pediatrics, University of Michigan, Member
2022 - present	Kahn Pediatric Critical Care Grand Challenge, Oversight Committee, Weil Institute, Member
2022 - present	Internal Advisory Board, The Max Harry Weil Institute for Critical Care Research and Innovation, Member

## Scholarly Activities

### Presentations

#### Extramural Invited Presentation

##### Speaker

1. "Molecular epidemiology for the practicing physician", **Barbaro RP**, Boonstra PS, Paden ML, Roberts LA, Annich GM, Bartlett RH, Moler FW, Davis MM, 25th Annual Advances in the Management of Infectious Diseases. University of Michigan, 07/2000, Mackinac Island, MI
2. "Infection control in cystic fibrosis.", **Barbaro RP**, Boonstra PS, Kuo KW, Selewski DT, Bailly DK, Stone CL, Chow CY, Annich GM, Moler FW, Paden ML, Annual Meeting, Ohio Cystic Fibrosis Consortium, 10/2001, Toledo, OH
3. "Infection control in cystic fibrosis", 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, THAPCA Trial Investigators, Midwest Cystic Fibrosis Consortium, Inaugural Meeting, 04/2002, St. Louis, MO
4. Extracorporeal Life Support, Cardiopulmonary Bypass Support Course, 06/2007, University of Iowa Hospitals
5. Intersections of Extracorporeal Membrane Oxygenation (ECMO) and Hematopoietic Stem Cell Transplant, Pediatric Acute Lung Injury and Sepsis Investigators (PALISI), 03/2014, San Diego, CA
6. Hospital ECMO Volume and ECMO Mortality Rates: Analysis of the ELSO Registry, 25th Anniversary ELSO Conference, 09/2014, San Diego, CA
7. Outcome in Extracorporeal Membrane Oxygenation, 31st Annual Children's National Symposium: ECMO and the Advanced Therapies for Respiratory Failure, 02/2015, San Diego, CA
8. When is Lung Injury Unrecoverable?, 31st Annual Children's National Symposium: ECMO and the Advanced Therapies for Respiratory Failure, 02/2015, San Diego, CA
9. ECMO Dilemmas, 32nd Annual Children's National Symposium: ECMO and the Advanced Therapies for Respiratory Failure, 02/2016, San Diego, CA
10. ECMO Outcomes, 27th Annual ELSO Conference, 09/2016, San Diego, CA
11. Long Term ECMO – How Long is Too Long?, 33rd Annual Children's National Symposium: ECMO and the Advanced Therapies for Respiratory Failure, 03/2017, San Diego, CA
12. Extracorporeal Resuscitation Consortium Registry, ECPR Research Meeting, 04/2017, Ottawa, Canada
13. ELSO Registry: What's New?, 6th Annual International EuroELSO Congress, 05/2017, Maastricht, Netherlands
14. ELCS and Big Data: Driving Innovation and Outcome, 63rd Annual ASAIO Conference, 06/2017, Chicago, Illinois
15. Let's Measure the Quality of Your ECMO, 28th Annual ELSO Conference, 09/2017, Baltimore, MD
16. 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, 09/2017, San Diego, CA
17. 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, 11/2017, Silver Spring, MD

18. ELSO Registry for the New Era, 34th Annual Children's National Symposium: ECMO and the Advanced Therapies for Respiratory Failure, 02/2018, Keystone, CO
19. Hospital Variation in Pediatric In-patient ECMO Cost, 7th Annual International EuroELSO Congress, 05/2018, Prague, Czech Republic
20. ELSO as Research Infrastructure, 9th Annual World Congress on Pediatric Intensive and Critical Care, 06/2018, Singapore
21. What's New in The ELSO Registry, 29th Annual ELSO Conference, 09/2018, Scottsdale, AZ
22. Papers from The ELSO Registry, 29th Annual ELSO Conference, 09/2018, Scottsdale, AZ
23. Realizing the Value of the ELSO Registry, 6th Annual ELSO Conference, 11/2018, Santiago, Chile
24. Implementing Improvement with the ELSO Registry, 6th Annual ELSO Conference, 11/2018, Santiago, Chile
25. ECMO Volume and Outcome, 6th Annual ELSO Conference, 11/2018, Santiago, Chile
26. Risk Stratification and Outcomes in ECMO: Can We Identify High Risk Cardiac Patients?, 14th Annual Pediatric Cardiac Intensive Care Society, 12/2018, Miami, FL
27. ELSO Registry Update, 30th Bi-Annual ELSO Steering Committee Meeting, 02/2019, Denver, CO
28. ARDS in Children and ECMO initiation strategies' impact on Neuro-Development (ASCEND): a research proposal, Pediatric Acute Lung Injury and Sepsis Investigators Meeting, 03/2019, Snowbird, UT
29. ELSO Registry Update, 30th Annual ELSO Conference, 09/2019, Austin, TX
30. Early Venovenous ECMO Cannulation for Severe Pediatric ARDS, Society of Critical Care Medicine, 02/2020, Orlando, FL
31. Advancing Pragmatic Priorities & Pathways in Shock Research, Cardiac Safety Research Consortium, Cardiac Safety Research Consortium, 02/2020, National Harbor, MD
32. ARDS in Children and ECMO initiation strategies' impact on Neuro-Development (ASCEND), Pediatric Acute Lung Injury and Sepsis Investigators, 03/2020, New Orleans, LA
33. Data Matters: The ELSO Registry, ELSO COVID-19, ELSO, 06/2020, Virtual Webinar
34. Using the ELSO Registry to Improve Local Practice, 31st Annual ELSO Meeting, ELSO, 09/2020, Virtual Meeting
35. ECMO in COVID-19: An International Cohort Study of the ELSO Registry, 31st Annual ELSO Meeting, ELSO, 09/2020, Virtual Meeting
36. ELSO Registry Update, 31st Annual ELSO Meeting, ELSO, 09/2020, Virtual Meeting
37. ECMO in COVID-19, Jefferson Health COVID-19 and ECMO Webinar Series, 10/2020, Virtual Presentation
38. COVID in Adult and Pediatric ECMO per the Registry, The 37th Annual Children's National Symposium: ECMO & Advanced Therapies for Cardiac & Respiratory Failure, 02/2021, Virtual Presentation
39. ECMO in COVID-19, Canadian Cardiovascular Critical Care Society (CANCARE), 02/2021, Virtual Presentation
40. Investigator Update ASCEND, PALISI, 03/2021, Virtual Presentation
41. Observational Registries: Successes, Pitfalls, What Can Be Fixed Now, and Future Collaborations, Cardiac Safety Research Consortium, 03/2021, Virtual
42. ECMO in COVID-19: The World Experience, ECMO-day for the International Symposium on Intensive Care and Emergency Medicine, 04/2021, Virtual
43. Benchmarking Paediatric ECMO in the Face of Practice Variations, American Society of Extracorporeal Technology (AmSECT) 59th International Conference (Virtual), 05/2021, Virtual
44. Late-Breaking Research from The Lancet: ECMO for COVID-19: Evolving Outcomes from the International ELSO Registry, Plenary Session, ELSO's 32nd Annual Conference, 09/2021, Virtual

45. Using Real-World Data for ECMO Regulatory Reports: Challenges and Potential Solutions, ELSO's 32nd Annual Conference, 09/2021, Virtual
46. ECLS strategies for lung failure in COVID-19, 35th Annual European Association for Cardio-Thoracic Surgery (EACTS), 10/2021, Barcelona
47. ECMO support in PARDS and COVID-19, Stanford Pediatric Critical Care Fellows Conference, 11/2021, Palo Alto, CA (Virtual)
48. Respiratory ECMO Support in Children, Children's Healthcare of Atlanta, Critical Care Medicine Seminar Respiratory ECMO Support in Children, 02/2022, Atlanta, Georgia
49. Will the Next Decade Bring Accelerating ECMO Utilization (as after 2009 H1N1 pandemic)?, 8th Annual SWAAC ELSO Conference 2022, 02/2022, Riyadh, Kingdom of Saudi Arabia
50. Utilizing ELSO Registry to Improve Patient Outcomes and Update, 8th Annual SWAAC ELSO Conference 2022, 02/2022, Riyadh, Kingdom of Saudi Arabia
51. ECMO in PARDS- Is it worth it?, UK's Paediatric Critical Care Society (PCCS) Webinar, 03/2022, London, UK (Virtual)
52. ELSO Registry Update, **Barbaro R**, 33rd Annual ELSO Conference, 09/2022, Boston, MA
53. Real World Data for Regulatory Evaluation of ECMO: FDA, Device Developers and Registry, **Barbaro R**, 33rd Annual ELSO Conference, 09/2022, Boston, MA
54. Common Implementation Research Study Designs, **Barbaro R**, PALISI, 09/2022, Indianapolis, IN
55. How to Measure Comparative Outcomes Using ELSO Data, **Barbaro R**, ECMO and Advanced Therapies for Respiratory Failure Symposium, 02/2023, Keystone, CO
56. ECMO-CENTRAL: Adverse Events for Clinical Trials, **Barbaro R**, PALISI, 03/2023, Lake Tahoe, CA

#### **Moderator**

1. ECMO and Anticoagulation, BloodNet and PALISI Sponsored Debates, 03/2021, Virtual
2. Making the Most of the ELSO Registry, ELSO's 32nd Annual Conference, 09/2021, Virtual

#### **Intramural Invited Presentation**

##### **Speaker**

1. Anticoagulation and Pharmacologic Management, CME, ECMO Specialist Training Course, The University of Michigan; these were for non-UofM affiliates, 10/2017, 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, 10/2017, Ann Arbor, MI
3. Anticoagulation and Pharmacologic Management, CME, ECMO Specialist Training Course, The University of Michigan; these were for non-UofM affiliates, 11/2017, Ann Arbor, MI
4. Anticoagulation and Pharmacologic Management, CME, ECMO Specialist Training Course, The University of Michigan; these were for non-UofM affiliates, 04/2018, Ann Arbor, MI

#### **Publications/Scholarship**

(Co-First Author \*; Corresponding author \*\*; Co-Last author \*\*\*)

#### **Peer-Reviewed**

##### **Journal Article**

1. Kohne JG\*\*, Carlton EF, Gorga SM, Gebremariam A, Quasney MW, Zimmerman J, Reeves SL, **Barbaro RP**: Oxygenation Severity Categories and Long-Term Quality of Life among Children who Survive Septic Shock. *Journal of Pediatric Intensive Care*
2. Gorga SM\*\*, Sliwicky AL, Sturza J, Carlton EF, **Barbaro RP**, Basu RK: Variability in Clinician Awareness of Intravenous Fluid Administration in Critical Illness: A Prospective Cohort Study. *Journal of Pediatric Intensive Care*

3. 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 and Behavior*.3(5): 303-314, 10/2004. PM15344923
4. 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 and Behavior*.3(5): 287-302, 10/2004. PM15344922
5. 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. *Behavioural Brain Research*.176(1): 4-20, 01/2007. PM16971002
6. **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, 04/2015. PM25695688
7. **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, 01/2016. PM27004674
8. **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, 05/2016. PM27007109
9. **Barbaro RP**, Boonstra PS, Moler FW, Davis MM, Prosser LA: Hospital-Level Variation in Inpatient Costs Among Children Receiving Extracorporeal Membrane Oxygenation. *Perfusion*.32(7): 538-546, 01/2017. 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, 01/2017. PM28557863
11. 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, 01/2017. PM27984321
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## Chapters

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## Non-Peer Reviewed

### Editorial

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