

Catalog of UMass Pediatric Department Research Opportunities for Residents and Medical Students

Local Principal Investigators are often approached by pediatric residents or medical students to learn about ongoing research opportunities. The Department of Pediatrics has many ongoing research studies both prospective and retrospective as well as quality improvement initiatives. This catalog is meant to be a resource to residents and students to help them find research opportunities of relevance to them.

This catalog is updated twice per calendar year with new and ongoing projects that need support. We invite faculty, residents, fellows, and research staff to submit new projects to be added to the list. We also encourage all faculty, residents, fellows, and research staff to share any recent publications, awards, or presentations to be highlighted.

Please send all project submissions and publication updates to Heather White (Heather.White@umassmed.edu).

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Developmental Pediatrics Research Studies: Facts for Residents and Students

If interested in assisting in any of the following projects, please send your CV to Roula Choueiri (Roula.Choueiri@umassmemorial.org)

Study	Purpose of Study	General Responsibilities	Time Commitment	Primary Staff
Autism Tool Development and Validation	<p>1- We are currently doing clinical validation of the RITA-T (Rapid Interactive Screening Test for Autism in Toddlers) that I have developed, in those ages 12 months-18 months</p> <p>2-We are developing a telehealth version of the RITA-T in toddlers 18 months to 36 months</p> <p>3-Collecting further data on the RITA-T in the DBP-NIUC follow-up clinic</p>	TBD	Flexible	Roula Choueiri, MD
QI Projects with Early Intervention Programs and Pediatric Practices in Worcester	<p>We are studying the RITA-T as a level 2 screener to triage more effectively young children for possible Autism and referral to fast track evaluation.</p> <p>https://www.umassmed.edu/AutismRITA-T/about-the-test/</p>	TBD	Flexible	Roula Choueiri, MD
Community Outreach and Education	<p>Project ANCHOR (Autism Network: Culture, Healthy Outcomes and Resilience) on the training of Family Navigators embedded in community early childhood.</p>	TBD	Flexible	Roula Choueiri, MD
Collecting Prospective Data	<p>Ongoing collection of prospective data on referrals from DPB with ASD to other divisions specifically to genetics and findings</p>	TBD	Flexible	Roula Choueiri, MD
Other Opportunities	<p>Other opportunities can be discussed based on student/residents' interests</p>	TBD	Flexible	Roula Choueiri, MD

Cardiology Research Studies: Facts for Residents and Students

*If interested in assisting in any of the following projects, please send your CV Michael Fahey
(MichaelC.Fahey@umassmemorial.org)*

Study	Purpose of Study	General Responsibilities	Time Commitment	Primary Staff
Tachycardia in boys with Duchenne Muscular Dystrophy	boys with DMD in general appear to have higher average heart rates compared to age-matched boys without DMD, even in the absence of cardiac dysfunction. This project would investigate multiple aspects of this phenomenon, try to better characterize average HR distribution in this population, and attempt to determine any clinical significance to boys with elevated average HR which might affect their clinical management.	TBD	TBD	Michael Fahey, MD
Diastolic ventricular function in boys with Duchenne Muscular Dystrophy	The relationship between diastolic ventricular function, myocardial fibrosis, and systolic ventricular function in boys with DMD is poorly understood. This project aims to improve our understanding of left ventricular diastolic function in this population of patients with DMD, and seek out potential correlations with clinical significance that might affect their management	TBD	TBD	Michael Fahey, MD
Defining Postural Orthostatic Tachycardia Syndrome	Postural Orthostatic Tachycardia Syndrome (POTS) is a poorly understood form of dysautonomia characterized by inappropriately elevated heart rates in response to maintenance of upright position. The diagnostic criteria for this condition are extremely non-specific and non-sensitive. The clinical characteristics of the disorder can be quite varied from patient to patient, making diagnosis that much more challenging. This study would design a questionnaire and rating system that would be used in the clinical setting to better define signs and symptoms associated with this type of dysautonomia. Future studies would then determine if particular patient characteristics predict a response (or lack thereof) to standard medical therapies, which are currently varied.	Background research, development of questionnaires and scoring system, developing appropriate data collection system and collating data.	Negotiable	Michael Fahey, MD

NICU Research Studies: Facts for Residents and Students

If interested in assisting in any of the following projects, please send your CV to Heather White at Heather.White@umassmed.edu.

Study	Purpose of Study	General Responsibilities	Time Commitment	Primary Staff
NICU Repository Study	Collects normally discarded samples during NICU admission to store for utilization in future research questions related to infant health, prematurity and development.	Individuals can utilize repository samples for their own project ideas. Preterm infant samples will be able to utilize urine, stool, saliva, infant feeds, infant blood (plasma and protein saver cards), recorded inpatient oximetry and cord blood. Individuals are responsible for study design, and all subsequent data collection, and manuscript development.	4-5 hours/week	Lawrence Rhein, Heather White, Stephanie Philip, Crystal Vasquez
CHILD Clinic Repository Study	To collect normally discarded samples in outpatient clinic to store for utilization in future research questions related to infant health, prematurity and development.	Individuals would help collect chart review data on currently enrolled patients. We are also looking for individuals to process samples on Tuesday evening/Wednesday mornings.	4-5 hours/week	Lawrence Rhein, Heather White, Crystal Vasquez
BPD Collaborative Database	Multicenter study creating a database to analyze information on established severe BPD and determine the natural history of the disease. The data gathered includes therapeutic interventions offered and center variability in providing these interventions.	Individuals will help consent patients diagnosed with severe BPD. Individuals helping with the database will then upload the patient's data into the BPD collaboratives database.	1-3 hours/week	Lawrence Rhein, Heather White, Lindsey Simoncini
Safe Sleep Quality Improvement	Hospital wide safe sleep initiative promoted at increasing education of 10 safe sleep primary objective to new parents/guardians of infants in newborn nursery and NICU with hopes of increased retention throughout prenatal and postnatal care.	Responsibilities could include: - Assisting in the development of new educational safe sleep materials for parents - Educating moms in the prenatal and/or and post-natal settings - Surveying soon-to-be discharge parents on safe sleep objectives	6-8 hours/week	Sherman Chu, Stephanie Philip
COVID Registry	Multicenter registry of COVID-19 positive mothers and pertinent maternal and infant outcomes Impact of telemedicine use for parents in the NICU and during NICU follow-up	TBD	TBD	Kate Sullivan, Heather White, Archana Kalyanasundaram

Pediatric Department Research Opportunities

Infant Nutrition Improvement	Development and improvement of nutrition protocols Quality improvement and randomized control trials utilized to improve current nutrition protocols and trial new methods	Individuals will gain a sense of how to complete Plan-Do-Study-Act cycles as well as the framework to produce a successful project. Individuals will assist in data collection and development of nutritional randomized control trials for new nutritional protocols.	1-3 hours/week	Sherman Chu, Larry Rhein, Heather White
Quality Improvement Initiatives Around the Unit	<ol style="list-style-type: none"> 1. Improving perioperative handoff 2. Improving pilot metabolic screening rates for NICU patients. 3. Improving parent participation in inpatient rounding 4. Improving resident/student education and preparation for NICU rotation 	Individuals will help with different aspects of quality improvement. Individuals will gain a sense of how to complete Plan-Do-Study-Act cycles as well as the framework to produce a successful project.	1-3 hours/week	Sherman Chu, Larry Rhein, Kirsti Martin, Heather White
Other Opportunities Given Interests	Open to proposals for quality improvement, retrospective, or prospective studies based off students/residents' topics of interest.	TBD	Flexible	NICU Attendings, Heather White

Recent Publications in the Division of Neonatology

Rodriguez, N., Vining, M. and Bloch-Salisbury, E., 2020. Salivary cortisol levels as a biomarker for severity of withdrawal in opioid-exposed newborns. *Pediatric Research*, 87(6), pp.1033-1038.

Rhein, L., White, H., Simoneau, T., Traeger, N., Lahiri, T., Kremer, T., Sheils, C., Meyer, K., Rosenkrantz, T., Krishnan, S. and Hartman, T., 2020. Transmitted Home Oximetry and Duration of Home Oxygen in Premature Infants. *Pediatrics*, 146(2).

White, H., Berenson, A., Mannan, J., Feldman, H.A., Rhein, L. and RHO Study Group, 2020. Utilization trends of respiratory medication in premature infants discharged on home oxygen therapy. *Pediatric Pulmonology*, 55(6), pp.1359-1365.

Chu, S., White, H., Rindone, S., Tripp, S., Rhein, L. A quality improvement to reduce pre-discharge growth failure among preterm infants through time specific feeding volume increase. *Pediatric Quality and Safety*. In print.

McLoughlin, R.J., Dacier, B.M., Hazeltine, M.D., Hirsh, M.P., Sullivan, K.P., Cleary, M.A. and Aidlen, J.T., 2020. Intraventricular Hemorrhage and Patent Ductus Arteriosus Ligation Association with Infant Mortality. *Journal of Surgical Research*, 252, pp.192-199.

Sullivan, K., White, H., Grover, L., Negron, J., Lee A.F., Rhein, L. Transcutaneous carbon dioxide pattern and trend over time in preterm infants. *Pediatric Research*. In print.

Hematology/Oncology Research Studies: Facts for Residents and Students

If interested in assisting in any of the following projects, please send your CV to Jason Shohet (Jason.Shohet@umassmemorial.org) or Joae Wu (joae.wu@umassmed.edu)

Study	Purpose of Study	General Responsibilities	Time Commitment	Primary Staff
Nuclear Dysfunction in Cancer	The hallmarks of cancer include changes in the cell nucleus including alterations in nuclear shape, size, and internal organization. These changes are used in pathology for cancer diagnosis and staging. This project studies the mechanisms for these nuclear changes and the consequences of them on malignant progression as part of the NCI Physical Sciences in Oncology Network.	The approaches we are taking range from genetic engineering of cells to three-dimensional tissue culture models of normal tissue and tumors to bioinformatic analysis of existing data sets. The approach used in this research opportunity would be chosen to fit the background, interests, and time available of the applicant.	TBD	Jeffery Nickerson, PhD

Pediatric Division of Genes and Development Studies: Facts for Residents and Students

If interested in assisting in any of the following projects, please send your CV to Hong Zhang, Ph.D (hong.zhang@umassmed.edu)

Study	Purpose of Study	General Responsibilities	Time Commitment	Primary Staff
Impact of aging on the pathogenesis of Alzheimer's Disease	Project investigates how aging pathways affects the development of AD pathologies using patient-derived iPSC and mouse model	TBD	TBD	Hong Zhang, Ph.D.

Public and Global Health Research Studies: Facts for Residents and Students

If interested in assisting in any of the following projects, please send your CV to Mathew Masiello (Mathew.Masiello@umassmemorial.org)

Study	Purpose of Study	General Responsibilities	Time Commitment	Primary Staff
Climate change	Assist in the development of a logic model to address the need to further educate health care professionals on climate change with a particular emphasis on the Dept of Pediatrics. Public health models and evaluation processes will be highlighted	Understanding the benefit of using accepted public health tools, such as the logic model, to evaluate health promotion and disease prevention initiatives. Literature review and the development of professional relationships and participation with identified Climate Change organizations.	3 hours/week	Mathew Masiello, MD, MPH
Pediatric providers for social responsibility (https://pp4ss.org)	This social media project will emphasize the issue of the relevancy of pediatric medicine at this critical period of time when climate change, firearm violence, war, poverty, etc. are affecting our children at the national and international level.	Review of social media health related literature and participation in writing and/or identifying writers to comment on topics relevant to children and their families.	3 hours/week	Mathew Masiello, MD, MPH
Determining Etiologies of Febrile Illness in Liberian Children aged 6 mos – 5 years Identification of Risk Factors for SBI in Liberian Children	Microbiological profiling of different types of febrile illness in children in a resource limited setting Identifying markers such as CRP, ANC, which can help to identify SBI in resource limited setting	Assist in data collection, data analysis	One elective month in 2 nd or 3 rd year Travel preparation	Patricia McQuilkin, MD *Contact Patricia McQuilkin Patricia.McQuilkin@umassmemorial.org
Helping Babies Breathe	Neonatal resuscitation training for pediatric providers in Liberia	Learning the AAP's training program: Helping Babies Breathe Travel to Liberia to implement Neonatal Resuscitation Training	One elective month in 2 nd or 3 rd year Travel preparation	Kristen Richards, MD Celia Sobelman, MD Trish McQuilkin, MD

Pulmonary Research Studies: Facts for Residents and Students

If interested in assisting in any of the following projects, please send your CV to Michelle Trivedi (Michelle.Trivedi@umassmemorial.org)

Study	Purpose of Study	General Responsibilities	Time Commitment	Primary Staff
Development of a text message intervention to improve daily medication adherence for children with poorly controlled asthma		Development of text messaging intervention, data collection and management, analysis and synthesis of data	2-4 hours/week	Michelle Trivedi, MD
Refinement of the Asthma Link (a real-world school-supervised asthma therapy program)	Protocol using qualitative interview data with high level stakeholders (health insurance/DPH officials, school superintendents, pediatric practice managers, pharmacists, school nurses, medical providers, children and parents)	Development of protocol toolkits for schools and pediatric practices, development of a process map for Asthma Link	2-4 hours/week	Michelle Trivedi, MD
Execution of the refined Asthma Link protocol in a cluster RCT	Execution of the refined Asthma Link protocol in a cluster RCT of four pediatric practices comparing the outcomes of children w asthma in the practices that implement school-supervised asthma therapy and practices that do not.	Assist with day to day operations of the cluster RCT: recruitment, retention, communication with pediatric practices and schools, data management, data analysis, manuscript writing	2-8 hours/week	Michelle Trivedi, MD

Recent Publications in the Department of Pediatric Pulmonology

Trivedi M, Patel J, Hoque S, Mizrahi R, Biebel K, Phipatanakul W, Lemon SC, Byatt N, Gerald LB, Rosal M, Pbert L. Alignment of stakeholder agendas to facilitate the adoption of school-supervised asthma therapy. *Pediatr Pulmonol.* 2019 Dec 19

Hoque S, Spano M, Pbert L, Rosal M, Lemon S, Byatt N, Trivedi M. Motivators and Barriers to Participant Engagement in Real-World Supervised Asthma Therapy- A Qualitative Study, American Thoracic Society Conference, Virtual format July 2020

Pediatric Hospital Research Studies: Facts for Residents and Students

If interested in assisting in any of the following projects, please send your CV to Lauren Fortier
 (Lauren.Fortier@umassmemorial.org)

Study	Purpose of Study	General Responsibilities	Time Commitment	Primary Staff
Evaluate use and effect of Kid's Comfort Promise Tools/Techniques	The Kid's Comfort Promise is a program dedicated to decreasing the physical and emotional pain associated with needlesticks. This study evaluates the change in practice of this implemented program as well as the perception that staff and families have about the ease, use and efficacy of the tools/techniques. ED, inpatient and outpatient settings.	Survey and data collection of staff and patients/families about use of tools and techniques. Quality improvement write up of conclusions.	TBD	Lauren Fortier, NP Neal Tyrrell, MD

Pediatric Emergency Medicine Studies: Facts for Residents and Students

If interested in assisting in any of the following projects, please send your CV to Theodore Macnow
 (Theodore.Macnow@umassmemorial.org)

Study	Purpose of Study	General Responsibilities	Time Commitment	Primary Staff
Doctor as Good Samaritan: Management of Motor Vehicle Collisions in the Community	A literature review and descriptive study on practical management for the medical provider who comes upon a motor vehicle collision in the community. The study will review priorities in managing the scene, medical and trauma considerations, and legal liabilities.	Literature review and manuscript writing	TBD	Theodore Macnow, MD