

GW Faculty Proposals for Medical Student Summer Research Projects

Please review this packet of faculty proposals for medical student 2022 summer research projects.

Email any faculty who list a program of interest. We encourage faculty to interview three students before selection.

Remember that you can also identify your own faculty research mentor and develop a project not in the packet.

Once a faculty member has selected you to work on the project, you can use that proposal, along with that research mentor, to apply for funding for the project.

You are encouraged to develop the proposal to apply to multiple funding sources. This increases the likelihood you will receive a competitive fellowship, since no single source is guaranteed.

Consider fellowship opportunities for medical students:

- a. [External national summer fellowships](#)
- b. [External diversity-targeted national fellowships](#)
- c. [Diversity Supplement](#) to the mentor's NIH grant
- d. External [Medical student opportunities at other institutions](#)
- e. [GW Gill fellowships](#)- Apply [here](#)
- f. [GW Health Services Scholarship Program](#)
- g. [External national year-out fellowships](#)

[Click here for steps for a student to apply for funding](#). Work with your faculty research mentor to develop their proposal into your joint fellowship application.

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Briony Varda MD, MPH Assistant Professore, Pediatrics & Urology	Unplanned healthcare use and missed visits among children with spina bifida: the intersection between clinical complexity and social determinants of health

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David Yamane MD Assistant Professor	Hemodynamic measurement comparison between central lines and midline catheters
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David Mendelowitz, PhD, VJ Professor and Interim Chair, Department of Pharmacology Vivek Jain, MD	Cardiovascular health risk in obstructive sleep apnea (OSA)
Maureen E Lyon PhD Professor of Pediatrics	Palliative Care Needs of Children with Rare Diseases and their Families
Leigh A. Frame PhD Director, Integrative Medicine; Assoc. Dir., Resiliency & Well- being Center	Brain Health & the Microbiome: A Proof-of-Concept Study in Patients with Mild Cognitive Impairment

Faculty Proposal for MD Student Research by Muhammad Rahman

* 1. Faculty Sponsor

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* 2. Daily Supervisor

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Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
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Zipcode:
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* 3. Project Title (250 character limit)

Mental Health Misinformation Extraction from Social Media using Natural Language Processing and Machine Learning

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Giorgi, S., Guntuku, S. C., Himelein-Wachowiak, M., Kwarteng, A., Hwang, S., Rahman, M., & Curtis, B. (2022, May). Twitter Corpus of the# BlackLivesMatter Movement and Counter Protests: 2013 to 2021. In Proceedings of the International AAAI Conference on Web and Social Media (Vol. 16, pp. 1228-1235).

Himelein-Wachowiak, M., Giorgi, S., Devoto, A., Rahman, M., Ungar, L., Schwartz, H. A., ... & Curtis, B. (2021). Bots and misinformation spread on social media: Implications for COVID-19. Journal of Medical Internet Research, 23(5), e26933.

Kwarteng, A. E., Rahman, M. M., Gee, D. G., Infante, M. A., Tapert, S. F., & Curtis, B. L. (2021). Child reward neurocircuitry and parental substance use history: Findings from the Adolescent Brain Cognitive Development Study. *Addictive behaviors*, 122, 107034.

*** 5. Sponsor's Research Focus:**

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T4: Translation to Population Health

*** 7. Hypotheses (200 word limit)**

According to the Centers for Disease Control and Prevention, more than 50% will be diagnosed with a mental illness or disorder at some point in their lifetime. But it is one of the most misunderstood areas of public health. Due to the popularities of social media, people share information regarding mental health on social media. Our hypothesis is that people sometimes share misinformation about it either intentionally or unintentionally. In this study, we aim to develop computational approaches using Natural Language Processing (NLP) and Machine Learning to identify misinformation spread about mental health on social media.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

The goal of this project is to identify mental health (e.g., Depression and Anxiety disorder) misinformation posted on the social media (e.g., Twitter and Reddit). We will develop NLP and Machine Learning approaches to detect misinformation, analyze social media data and measure the level of misinformation spread about mental health.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

We have been collecting millions of social media posts from Twitter and Reddit. A Twitter dataset was published in International AAAI Conference on Web and Social Media (ICWSM), a top-tier Computer Science conference in the domain. In this summer project, our tentative activities and time frame are: 1 week for cleaning Reddit data, 2 weeks for data annotation, 2 weeks for model development, and 3 weeks for data analysis. In parallel, the supervisor and team will write a research article on the findings.

*** 10. Describe the student's role in the project (200 word limit)**

The student researchers will be involved in data cleaning, data annotation and reviewing literature. They will aid in data modeling and analysis. It is also expected that they will prepare an abstract for national conference presentation and participation in manuscripts will be encouraged, depending on their interests.

*** 11. Describe the mentor's role in the project. (200 word limit)**

The mentor will provide necessary trainings for the students to learn computational approaches. The mentor will supervise the students in a day-to-day basis. The mentor will manage the project by defining research questions and goals. The mentor will actively coordinate computational approach development and data analysis, abstract development for a local and international conference submission, and preparing manuscripts for publication. The mentor will also help the students in a future engagement in other research projects at Children's National Research Institute.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

Dr. Rahman worked with several NIH postbaccalaureate fellows and interns during his time at NIH. Some of these fellows are currently in their medical schools for MD degrees. Currently, Dr. Rahman is also working with a GW BA/MD student in AI and Data Science research.

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected No (Not Required)

Please specify why it is not required.

We are not working with human subjects and hence not required for IRP approval.

Faculty Proposal for MD Student Research by Susma Vaidya

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* 2. Daily Supervisor

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Email Address:

* 3. Project Title (250 character limit)

Virtual Counseling in Primary Care

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Christison AL, Vaidya S, Tinajero-Deck L, Hampl SE. Application of the Medical Neighborhood to Children with Severe Obesity. Child Obes. 2018 Oct;14(7):461-467. doi: 10.1089/chi.2017.0342. Epub 2018 Aug 15. PMID: 30109953.

DeSilva S, Vaidya SS. The Application of Telemedicine to Pediatric Obesity: Lessons from the Past Decade. Telemed J E Health. 2021 Feb;27(2):159-166. doi: 10.1089/tmj.2019.0314. Epub 2020 Apr 15. PMID: 32293986.

Krishnamoorthy M, Nadler E, Vaidya S. Resolution of confluent and reticulated papillomatosis after bariatric surgery. Clin Obes. 2021 Feb;11(1):e12427. doi: 10.1111/cob.12427. Epub 2020 Nov 8. PMID: 33164331.

*** 5. Sponsor's Research Focus:**

Yes - Pediatrics

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T3: Translation to Practice

*** 7. Hypotheses (200 word limit)**

The presence of a dietitian in primary care will facilitate improved nutritional counseling at well child visits and also enable children with elevated BMI's to receive nutritional counseling in their primary care home.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

A grant funded dietitian will meet virtually with all well child visits on Wednesdays and Fridays at the Shepherd Park Primary Care. She will meet all children between 9 months and 6 years of age at their well child visit on 2 days of the week and children with a BMI diagnostic of overweight or obesity. She will assess the patients' nutrition and counsel on ways to improve. This will be documented in the well child visit. 1. At the conclusion of the visit, the parent will be asked to complete a brief REDCap survey which will assess the value and impact of the counseling. This is to assess the perceived value and efficacy of this modified practice. 2. The dietitian will also complete a REDCap survey to assess her perception of the value and impact of the visit. 3. At the conclusion of the year that the dietitian will be part of primary care, a retrospective chart review of all patients who met with the dietitian will be performed and assessed for weight for length or BMI and compared with age matched controls on days that a dietitian was not part of the primary care visit.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

The American Academy of Pediatrics has recently reiterated the need for primary care providers to both emphasize and increase attention to obesity prevention and treatment; however, effective dietary and physical activity counseling is quite challenging in the 20 minutes that is allocated for a well child visit given the competing primary care topics that need to be reviewed with families. In the past, children with overweight or obesity in the Children's Health Center were scheduled to see a dietitian via a telemedicine visit after the well child visit; however, only one or most often no appointment out of 7 scheduled appointments per session was kept. Obstacles to telemedicine visits likely include technological barriers, limited perceived value of the appointment, as well as other competing life responsibilities. Follow up encounters for nutrition counseling with primary care providers are also often not kept. There is a critical need for intensive dietary counseling at the time of the well child visit. Given the recent increase in prevalence of pediatric obesity, especially in early childhood, and the limited success of our current practice, an increased focus

on dietary counseling in the primary care setting is a more promising approach but this cannot be accomplished with our current staffing. Recent findings indicate that an integrated model with dietitians as part of the primary care visit leads to more successfully completed nutrition encounters as well as better health outcomes. Further detailed and focused guidance on a healthy transition to an adult diet and the avoidance of obesogenic dietary traits and lifestyle is a critical need in primary care. Addressing overweight and obesity in early childhood is also an important time to counsel on healthy lifestyle changes to improve the BMI trajectory. Virtual nutritional counseling will be provided in the primary care setting to improve the quality of dietary counseling and the treatment of overweight/obesity in the primary care setting. This project is an important quality improvement initiative which can improve the prevention and treatment of pediatric obesity.

*** 10. Describe the student's role in the project (200 word limit)**

The student will help with collection of data in a retrospective chart review as well as assess the REDCap survey findings. The student will participate in well child visits to learn from these counseling sessions. I will also have the student shadow me in the IDEAL Clinic to learn more about pediatric obesity. The final goal is to write an article summarizing our findings in primary care.

*** 11. Describe the mentor's role in the project. (200 word limit)**

I will supervise the chart review and have the student work with me in the primary care setting and IDEAL Clinic to have a clinical experience. I will also be working with the student in writing of a journal submission.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

I have worked with a Gill Fellow and 2 Health Services Scholars. All three have had first author publications with me.

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected No (Not Required)

Please specify why it is not required.

Quality Improvement study

Faculty Proposal for MD Student Research by Irene Zohn

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* 3. Project Title (250 character limit)

Using High-resolution episcopic microscopy (HREM) to diagnose congenital heart defects in mice.

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Leon E, Nde C, Ray RS, Preciado D, Zohn IE. ALDH1A2-related disorder: A new genetic syndrome due to alteration of the retinoic acid pathway. Am J Med Genet A. 2022 Oct 19. doi: 10.1002/ajmg.a.62991. Epub ahead of print. PMID: 36263470.

Yitsege G, Stokes BA, Sabatino JA, Sugrue KF, Banyai G, Paronett EM, Karpinski BA, Maynard TM, LaMantia AS, Zohn IE. Variations in maternal vitamin A intake modifies phenotypes in a mouse model of 22q11.2 deletion syndrome. Birth Defects Res. 2020 Oct;112(16):1194-1208. doi: 10.1002/bdr2.1709. Epub 2020 May 20. PMID: 32431076; PMCID: PMC7586978

Sugrue KF, Zohn IE. Reduced maternal vitamin A status increases the incidence of normal aortic arch variants. *Genesis*. 2019 Jul;57(7-8):e23326. doi: 10.1002/dvg.23326. Epub 2019 Jul 12. Erratum in: *Genesis*. 2019 Nov;57(11-12):e23343. PMID: 31299141; PMCID: PMC6996855.

*** 5. Sponsor's Research Focus:**

Yes - Cardiology

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T0/T1: Basic Science Discovery and Initial Translation to Humans

*** 7. Hypotheses (200 word limit)**

Congenital Heart Defects (CHDs) are the most common structural birth defect affecting 1 in 100 live births. Despite their prevalence, the causes remain largely unknown. The Zohn laboratory has developed mouse models to identify new genes that cause CHDs. To characterize CHDs in these mouse lines, we recently obtained equipment to perform High-resolution episcopic microscopy (HREM). HREM is a three-dimensional (3D) episcopic imaging technique where two-dimensional (2D) images are serially obtained from the cut surface of a block of tissue embedded in resin. Images are aligned and stacked for 3D reconstruction, which can be analyzed in any plane. HREM is the gold standard for CHD diagnosis in fetal mice. We hypothesize that by using this technique, we can accurately diagnose complex congenital heart defects in our mouse models.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

The goal of the project is to utilize HREM to section and analyze CHDs in 5 mutant mouse embryos with CHDs and 5 sibling controls. The mouse lines model tetralogy of Fallot with malformation of the outflow tract, ventricular septal defects, and aortic arch malformations and include a model of 22q11 deletion syndrome and a mouse line with mutation of the novel ubiquitin ligase Hectd1.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

Embryos for analysis will be collected and embedded before the student arrives. A total of 20 embryos will be used for analysis. Sectioning of a single embryo takes a full day, so 1 month of the project will involve operating the HREM machine. Data analysis can be done concurrently and will also take a full day per embryo.

*** 10. Describe the student's role in the project (200 word limit)**

The student will operate the HREM machine to perform sectioning of the embryo and utilize the software to analyze the data. The analysis will be in collaboration with Linda Leatherbury, a cardiologist with over 30 years of experience analyzing CHDs in mouse models. The student will prepare a manuscript to publish findings and present abstracts at meetings.

*** 11. Describe the mentor's role in the project. (200 word limit)**

The mentor will provide guidance on the project, help with data analysis and organize the collection of the embryos for the project. Mentor will help write papers and ensure the work is published.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

Dr. Zohn has mentored 2 medical students and 5 undergraduate students who are currently in medical school or residency. Dr. Leatherbury has mentored over 30 medical students, residents and fellows. The two medical students that spent summers in the Zohn laboratory are Omowunmi Oluwo and Kevin Mcfadgen. Dr. Oluwo spent a summer in my lab Health Services Scholar when she was a GWU medical student. Currently, Dr. Oluwo is a surgical resident at the University of Arizona College of Medicine – Tucson, Arizona. Dr. Mcfadgen spent a summer in my laboratory while in medical school at Meharry Medical College in Nashville, Tennessee. Currently, Dr. Mcfadgen is a General Surgeon at MercyOne Des Moines Medical Center, Iowa.

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected No (Not Required)

Please specify why it is not required.

we are working with mice under an approved IACUC protocol

Faculty Proposal for MD Student Research by Tim McCaffrey

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* 2. Daily Supervisor

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* 3. Project Title (250 character limit)

Point of care CD15 Elastase levels in ED SIRS and ICU sepsis to predict severity of illness (SENSOR Trial).

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

R. Wargodsky, P. Dela Cruz, J. LaFleur, D. Yamane, J.S. Kim, I. Benjenk, E. Heinz, O.O. Irondi, K. Farrar, I. Toma, T. Jordan, J. Goldman, T.A. McCaffrey, RNA Sequencing in COVID-19 patients identifies neutrophil activation biomarkers as a promising diagnostic platform for infections, PloS one 17(1) (2022) e0261679.

A. Meltzer, R. Wargowsky, S. Moran, T. Jordan, I. Toma, T. Jepson, S. Shu, Y. Ma, T. McCaffrey, Diagnostic Accuracy of Novel mRNA Blood Biomarkers of Infection to Predict Outcomes in ED Patients with Undifferentiated Abdominal Pain., Preprint available at BioRx and Submitted to Scientific Reports. (2022).

T.A. McCaffrey, I. Toma, Z. Yang, R. Katz, J. Reiner, R. Mazhari, P. Shah, M. Tackett, D. Jones, T. Jepson, Z. Falk, R. Wargodsky, D. Shtakalo, D. Antonets, J. Ertle, J.H. Kim, Y. Lai, Z. Arslan, E. Aledort, M. Alfaraidy, G.S. Laurent, 3rd, RNA sequencing of blood in coronary artery disease: involvement of regulatory T cell imbalance, BMC Med Genomics 14(1) (2021) 216

*** 5. Sponsor's Research Focus:**

Yes - Genomics
Yes - Infectious Disease
Yes - Cardiology
Yes - Emergency Medicine

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T2: Translation to Patients

*** 7. Hypotheses (200 word limit)**

Hypothesis: Patients that progress to septic shock will exhibit significantly higher CD15 elastase activity at the time of enrollment in the ED compared to patients that do not progress to septic shock.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

Levels of elastase production by isolated leukocytes displaying CD15 antigens mirror the strength and acuity of the innate immune response in early infection and will provide means to stratify those at greater risk for decompensation and sepsis. The goal of this project is to test the accuracy of an RNA-based test and a functional elastase assay to determine if they improve identification among those meeting SIRS (systemic inflammatory response) criteria that will go on to decompensate and develop sepsis.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

This is an IRB-approved observational cohort study recruiting ED patients meeting SIRS criteria and identified as potentially septic by ED personnel. POC neutrophil elastase will be measured at the time of enrollment in the ED. An additional small sample of whole blood will be obtained for the purposes of parallel elastase measurements, and analysis of RNA markers of neutrophil activation by the basic science team. Frozen blood samples in a specialized RNA preservative (Tempus) will be analyzed by an established ddPCR test for specific RNA transcripts related to neutrophil activation. Those who eventually require ICU care will have repeat testing done daily until death, or patient transfer out of the ICU. Based upon previous work, it is estimated that 173 ED patients will need to be enrolled; it is expected that 17 of these will be transferred to the ICU, and 8 will have septic shock. We assume that the number of ED patients screened for sepsis that end up going to the ICU with septic shock will be 5%, and that there will be a mean 50%

difference in POC elastase scores between those that are admitted to the ICU, and those that are either sent home from the ED, or admitted to the hospital wards, treated, and subsequently sent home uneventfully. Standard deviation in elastase levels in those with septic shock is also estimated at 50%. Alpha=0.05; beta=0.80. Our study will be powered to detect this difference if 173 patients are enrolled; 8 with septic shock.

*** 10. Describe the student's role in the project (200 word limit)**

The student will be involved in all aspects of the project. They will be trained to screen and consent patients, collect the relevant samples, and then perform the laboratory analysis of the blood specimens. The student will be welcome to learn more detailed aspects of how we built this point of care device, including 3D printing techniques and microcontroller programming.

*** 11. Describe the mentor's role in the project. (200 word limit)**

The mentor is responsible for the proper training of all the team members on the project with particular attention to the careful collection of the patient samples and their analysis in the laboratory.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

Recent medical student members of our clinical/laboratory team: Kevin Jaatinen MS1 Jennifer Goldman MS2 Mary Pasquale MS2 Tristan Jordan MS3

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected Yes

Please provide IRB number and date

* IRB Number: NCR213645

* IRB Date: March 30,2022

Faculty Proposal for MD Student Research by Brandon Kohrt

* 1. Faculty Sponsor

* Name: Brandon Kohrt
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* 2. Daily Supervisor

Name: Chynere Best
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* 3. Project Title (250 character limit)

Task sharing mental health services from the clinic to the community in the U.S. and around the world

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Kohrt, B.A., Turner, E.L., Gurung, D. et al. Implementation strategy in collaboration with people with lived experience of mental illness to reduce stigma among primary care providers in Nepal (RESHAPE): protocol for a type 3 hybrid implementation effectiveness cluster randomized controlled trial. *Implementation Sci* 17, 39 (2022). <https://doi.org/10.1186/s13012-022-01202-x>
Kola L, Kumar M, Kohrt BA, Fatodu T, Olayemi BA, Adefolarin AO. Strengthening public mental health during and after the acute phase of the COVID-19 pandemic. *The Lancet*. 2022 May 14;399(10338):1851-2.

Alipanga B, Kohrt BA. Competency-based pre-service education for clinical psychology training in low-and middle-income countries: Case study of Makerere University in Uganda. *Frontiers in Psychology*. 2022;13. 924683. doi: 10.3389/fpsyg.2022.924683

*** 5. Sponsor's Research Focus:**

Yes - Psychiatry

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T4: Translation to Population Health

*** 7. Hypotheses (200 word limit)**

RESHAPE Aim - To evaluate the impact of the RESHAPE service user engagement on stigma among primary care workers. Hypothesis: Primary care workers in the RESHAPE arm will have less stigma toward persons with mental illness (measured with the Social Distance Scale) 3 months after training compared with primary care workers in the standard training. RECOUP Aim - To evaluate depression symptoms (primary outcome) and other mental health symptoms comparing CBO offices delivering services as usual (i.e., referral to specialists) vs. CBO offices with staff trained to deliver PM+. We will evaluate mechanisms of action (mediation hypothesis) including self-reported behavior change, as well as optional digital monitoring for objective behavior change. We will also evaluate the competencies of non-specialists providing mental health services (moderation hypothesis). STANDSTRONG Aim - To conduct proof-of-concept testing of the StandStrong platform to evaluate acceptability, feasibility, usage, benefit, and validity. We will iteratively test the StandStrong platform with non-depressed mothers, and then, with depressed mothers participating in a 5-week psychological intervention delivered by a non-specialist. This will establish parameters for five milestones: acceptability for mothers to participate, feasibility to collect representative passive sensing data, usage of the app by counselors, perceived benefit among mothers, and validity.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

RESHAPE - 1000 patients ; RECOUP - 1500 clients; STANDSTRONG - 100 patients

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

RESHAPE - Involvement of mental health service users in training primary care workers may reduce stigma, and that stigma reduction may mediate improved detection of mental illness. If these findings are confirmed in an appropriately powered cRCT, this service user collaborative implementation strategy could make a major contribution to improving primary care detection in LMIC, as well as in the U.S. RECOUP - This study would be the first cRCT of PM+ delivered in US community settings. The research is innovative by addressing key scientific issues including (i) specific benefits to NIH-designated health disparity groups, (ii) safety and competency of

non-specialists, (iii) cost-effectiveness, (iv) mechanisms of action for interventions delivered by non-specialists, and (v) COVID-19 public health impact. This will inform policy changes for mental health task-sharing during emergencies and for ongoing services in the U.S. STANDSTRONG - Our interdisciplinary team of experts in mHealth interventions, psychiatry, anthropology, implementation science, biostatistics, and health economics from the U.S., Nepal, and South Africa has been developing and testing a passive data collection suite and app interface for non-specialist counselors to treat adolescent mothers with depression in Nepal. Our platform, Sensing Technologies for Maternal Depression Treatment in Low Resource Settings (StandStrong), monitors geographic movement, activity levels, exposure to human speech, and mother-child proximity. Preliminary work with non-depressed and depressed adolescent and young mothers suggests that depression status may associate with less movement, less time spent with one's infant, and less exposure to social environments.

*** 10. Describe the student's role in the project (200 word limit)**

Students will have the opportunity to participate in project activities. Students committing at least 8 weeks of full time work and meeting ICJME criteria will have the opportunity to publish.

*** 11. Describe the mentor's role in the project. (200 word limit)**

The mentor will train the student in relevant research, e.g., Dedoose qualitative analysis.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

A current student is getting qualitative research training, then will go to Uganda for 3 months for a research study there working with persons with severe mental illness and their family members. Prior students have done work in Nepal, Belize, and Brazil.

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected Yes

Please provide IRB number and date

*** IRB Number:** NCR191416

*** IRB Date:** 07/14/2023

Faculty Proposal for MD Student Research by Colton Hood

* 1. Faculty Sponsor

* Name: Colton Hood
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* 2. Daily Supervisor

Name:
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

* 3. Project Title (250 character limit)

Vocal Biomarkers as a Screening Tool for Acute Myocardial Ischemia

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Jeffries PR, Bushardt RL, DuBose-Morris R, Hood C, Kardong-Edgren S, Pintz C, Posey L, Sikka N. The Role of Technology in Health Professions Education During the COVID-19 Pandemic. Acad Med. 2022 Mar 1;97(3S):S104-S109. doi: 10.1097/ACM.0000000000004523. PMID: 34789662; PMCID: PMC8855755.

Pourmand A, Boniface KS, Douglass K, Hood C, Frasure SE, Barnett J, Bhatt K, Sikka N. Utilization of Automated Keyword Search to Identify E-Scooter Injuries in the Emergency Department. Cureus. 2021 Nov 13;13(11):e19539. doi: 10.7759/cureus.19539. PMID: 34934557; PMCID: PMC8667961.

Aalam AA, Hood C, Donelan C, Rutenberg A, Kane EM, Sikka N. Remote patient monitoring for ED discharges in the COVID-19 pandemic. Emerg Med J. 2021 Mar;38(3):229-231. doi: 10.1136/emmermed-2020-210022. Epub 2021 Jan 20. PMID: 33472870; PMCID: PMC7818800.

*** 5. Sponsor's Research Focus:**

Yes - Emergency Medicine

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T2: Translation to Patients

*** 7. Hypotheses (200 word limit)**

To support the risk stratification or identification of patterns in patients voice presenting with chest pain and its association to their risk of having acute myocardial ischemia

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

The goal of the project is to create a machine learning model that assists in the risk stratification of chest pain in the emergency room. Study objectives would be to be able to develop and start validation of a machine learning model by the end of the study.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

We plan on recording patients voice in the emergency department and combine that with other criteria of their initial emergency department visit to see how it contributes to risk stratification of acute myocardial ischemia. Based upon their voice recording and other validated risk stratification tools we hope to understand if a person's voice can be used as a vocal biomarker and give insight into their underlying health, in this case acute myocardial ischemia.

*** 10. Describe the student's role in the project (200 word limit)**

The student will serve as the research assistant for this project. She/he will assist with recruitment, consent, study procedures, data analysis and preparing a publication. The student will also participate / exposed to the other health technology projects in the Department and other telehealth related educational activities such as journal club, shadowing, and learning about activities in the department.

*** 11. Describe the mentor's role in the project. (200 word limit)**

Dr. Hood will mentor all aspects of the research project and support the student. Dr. Neal Sikka is also a Co-Pi on the project. We are part of a very active section of innovative practice involved with telehealth, technology implementation. While this project will be the focus of the fellowship there will be ample opportunity to support other interests.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

The mentor team has enjoyed working with numerous Gill and HSP students in the last few years. Each student has had significant hands on exposure to telehealth or technology related project and mentoring. Student with interest in technology, health disparities, health access, telehealth, virtual reality and other innovative solutions at the cross of clinical care and population health will enjoy working with our team and have a high likelihood of having an abstract selected for a regional or national meeting as well as peer reviewed publications. My last mentee was Samay Shah, other mentees for which I was a CO-PI include Puja Sasankan and Rohan Patil.

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected Yes

Please provide IRB number and date

* IRB Number: NCR213874

* IRB Date: 5/16/22

Faculty Proposal for MD Student Research by Pedro A. Jose

* 1. Faculty Sponsor

* Name: Pedro A. Jose
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* 2. Daily Supervisor

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* 3. Project Title (250 character limit)

Genetics of Salt-sensitive hypertension: Role of G protein-coupled receptor kinase gamma 486V and GPR83

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Yang J, Hall JE, Jose PA, Chen K, Zeng C. Comprehensive insights in GRK4 and hypertension: From mechanisms to potential therapeutics. Pharmacol Ther. 2022 Nov;239:108194. doi: 10.1016/j.pharmthera.2022.108194.

Li L, Fu W, Gong X, Chen Z, Tang L, Yang D, Liao Q, Xia X, Wu H, Liu C, Tian M, Zeng A, Zhou L, Jose PA, Chen K, Wang WE, Zeng C. The role of G protein-coupled receptor kinase 4 in cardiomyocyte injury after myocardial infarction. Eur Heart J. 2021 Apr 7;42(14):1415-1430. doi: 10.1093/eurheartj/ehaa878.

Cao N, Tang H, Tian M, Gong X, Xu Z, Zhou B, Lan C, Chen C, Qu S, Zheng S, Ren H, Fan C, Jose PA, Zeng C, Xia T. Genetic variants of GRK4 influence circadian rhythm of blood pressure and response to candesartan in hypertensive patients. Clin Exp Hypertens. 2021 Oct 3;43(7):597-603. doi: 10.1080/10641963.2021.1919357.

*** 5. Sponsor's Research Focus:**

Yes - Pharmacology

Yes - Kidney

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T0/T1: Basic Science Discovery and Initial Translation to Humans

*** 7. Hypotheses (200 word limit)**

Salt(NaCl) sensitivity, >5-10% increase in blood pressure (BP) in response to an increase in NaCl intake, increases cardiovascular risk, even if the BP does not reach hypertensive levels. Salt sensitivity is present in 51% of the hypertensive and 26% of the normotensive population. The genetic causes of salt sensitivity are not well known. The kidney is critical in overall fluid and electrolyte balance and long-term regulation of BP. Therefore, the pathogenesis of salt sensitivity must involve a derangement in renal NaCl handling, i.e., an inability to increase sodium excretion when sodium load is increased. The human GRK4 locus, 4p16.3, is linked to and its variants are associated with human essential hypertension. GRK4 486V, by itself, or in conjunction with GRK4 65L and GRK4 142V, is associated with salt sensitivity. The orphan receptor GPR83 may counteract the salt-sensitive producing effect of GRK4 486V. We will test the overall novel hypothesis that salt sensitivity imparted by GRK4 486V is due to decreased expression/function of the orphan receptor GPR83 that results in an imbalance in natriuretic dopamine D1 receptor (D1R) and anti-natriuretic angiotensin type 1 receptor systems which increases BP. This project will test the hypothesis that GPR83 is necessary for D1R function.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

GPR83 expression can be induced by an increase in cAMP, which can be increased by D1R. In human renal proximal tubule cells (hRPTCs) from normotensive Euro-American male, the D1R agonist fenoldopam (2 microM, 30 min) induces a 2-fold ($P < 0.05$, $n = 3$) increase in GPR83 transcription. These studies will be repeated in immortalized hRPTCs from normotensive Euro- and African-American males (no samples from females). Based on our previous studies, a time-course (5 min, 10 min, 15 min, 30 min) and concentration-response using fenoldopam ($10^{-8}M$, $10^{-7}M$, $10^{-6}M$, $10^{-5}M$) and dopamine ($10^{-8}M$, $10^{-7}M$, $10^{-6}M$, $10^{-5}M$) on GPR83 mRNA and protein expression will be studied. We will also study the effect of fenoldopam and dopamine on GPR83 expression in the presence or absence of a D1-like receptor agonist Sch23390 ($10^{-6}M$) and verified by silencing D1R with siRNA. The effect of these drugs on cAMP production will be studied in hRPTCs in which GPR83 expression is silenced by siRNA; mocked-treated and untreated cells will serve as controls. The role of GPR83 on D1R expression will be studied also, by using peptides (proline, glutamic acid, and asparagine) derived from PCSK1N that may be the endogenous ligands of GPR83. The number of studies is justified by power calculation ($n = 10$ /group).

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

This proposed summer student project is an unfinished section of “GRK4 and salt sensitivity” grant funded by R01HL0921961 from 2013-2020. The genetic causes of salt sensitivity in humans are not well known. The kidney is critical to overall fluid and electrolyte balance and long-term regulation of BP. Therefore, the pathogenesis of salt sensitivity must involve an inability to decrease sodium transport and increase sodium excretion when the sodium load is increased. Variants of the human G protein-coupled receptor kinase type 4 (hGRK4) gene that regulates a limited number of G protein-coupled receptors, are associated with essential hypertension in several ethnic groups. Expression of the hGRK4 486V variant in mice causes salt sensitivity, depending on the genetic background. Preliminary data suggest that the orphan receptor GPR83 may counteract the salt-sensitive producing effect of hGRK4 486V, the expression of which is dependent on the genetic background and may explain ethnic-related differences in salt sensitivity. This project will test the overall novel hypothesis that salt sensitivity imparted by hGRK4 486V is due to decreased expression and function of the orphan receptor GPR83 that results in an imbalance in natriuretic (D1R) and antinatriuretic (angiotensin type 1 receptor, AT1R) systems which increases BP. Specific Aim 1 will test the hypothesis that GPR83 function is necessary to maintain BP under conditions of sodium excess. SJL/J mice are salt-resistant while BL/6J mice from Jackson Laboratories are salt-sensitive. Mice on at least a 12% SJL/J background (relative to BL/6J) are also salt-resistant but decreasing the SJL/J background to 6% and increasing BL/6J background to 94% result in the expression of the salt-sensitive phenotype that may be related to the ratio of renal GRK4 and GPR83 expression. GRK4 interacts with and phosphorylates GPR83. Specific Aim 2 will test the hypothesis that the protective effects of GPR83 are mediated by negative regulation of AT1R and positive regulation of D1R functions. This Specific Aim will clarify the cellular mechanisms involved in the regulation of these functions. Specific Aim 3 will test the hypothesis that GPR83 function is impaired by hGRK4 486V and that the ability to impair GPR83 function is dependent on the proportion of “salt sensitivity” and “salt resistance” genes. In mice with a predominant salt-sensitive background renal GPR83 is necessary to maintain normal BP even when sodium intake is not increased. These studies will be able to determine, for the first time, the role of the interaction of “salt sensitivity” and “salt resistance” genes in the pathogenesis of essential hypertension. The identification of a novel salt resistance gene, i.e., GPR83, may lead to the development of drugs that target its expression and function.

*** 10. Describe the student's role in the project (200 word limit)**

The student will finish part of Specific Aim 2 to determine if the protective effects of GPR83 in hypertension are mediated by positive regulation of D1R function. To make the project achievable by an individual with limited research experience, only in vitro studies are proposed. The role of D1-like receptors on the mRNA and protein expressions of GPR83 will be studied in immortalized human RPTCs to increase the translation potential of the proposed studies. Week-1 will be devoted to training the student in culturing the human RPTCs, under aseptic conditions to prevent contamination. Week-2 will be devoted to practicing making the appropriate concentrations of the drugs/reagents that will be used. Week-3 will study the effect of vehicle, mock-siRNA, and specific siRNAs on GPR83 mRNA and protein expressions. Week-4 will study the effect of the concentrations of fenoldopam (10-7M) and dopamine (10-6M) on cAMP production by themselves

and in the presence of the D1-like receptor antagonist, Sch23390. Weeks-5-8 will determine the effect of vehicle, mock-siRNA, and specific siRNA on the effect of fenoldopam, dopamine, and PEN on GPR83 and D1R mRNA expression/function. The student will present his work, using PowerPoint, at the laboratory meeting held Monday afternoons from 1-3 PM.

*** 11. Describe the mentor's role in the project. (200 word limit)**

The mentor (Pedro A. Jose, MD, PhD) and co-mentor (Ines Armando, PhD) will initially discuss with the student the project being proposed. The student will be asked to read the NIH grant proposal - R01HL0921961. The mentor and co-mentor will then discuss the grant proposal with the student on the days in which the student is not performing the experiments, e.g., Monday morning and after the laboratory meeting. The actual experiments will be performed on Tuesdays, Wednesdays, and Thursdays. Fridays will be devoted to cell culture. The co-mentor will teach and supervise the student in the experimental design and procedures. The student will not perform any in vivo study. However, another member of the laboratory, Laureano D. Asico, DVM, will show the in vivo component of the proposed studies so that the student can appreciate the translational potential of the in vitro studies. These entail the telemetric recording of blood pressure and administration of drugs and adeno-associated virus expressing the gene of interest, directly into the kidney. These entail the renal subcapsular and retrograde ureteral infusion that are routinely performed in our laboratory. These procedures are used to silence or overexpress the gene of interest.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

Dr. Jose has mentored more than 100 undergraduate, graduate, and postgraduate students, and junior faculty members. Many of Dr. Jose's trainees have become independent researchers with intramural and extramural funding, heading their own laboratories and centers. More specifically, Dr. Jose has mentored 22 students from GW. A GW graduate, Bibhas Amatya is currently working, as researcher, in Dr. Jose's laboratory. He is the first author of an original article (Peroxisomal Redox Signaling and Dopamine D5 Receptor Interact to Reduce Oxidative Stress and Inflammation in the Kidney. *Antioxid Redox Signal*. 2022 Nov 18. doi: 10.1089/ars.2022.0034) and a review article (SNX-PXA-RGS-PXC Subfamily of SNXs in the Regulation of Receptor-Mediated Signaling and Membrane Trafficking. *Int J Mol Sci*. 2021;22(5):2319). Michael D. Bishop, a former GW student, is a co-author of a review article (Primary Pediatric Hypertension: Current Understanding and Emerging Concepts. *Curr Hypertens Rep*. 2017;19(9):70). Momina Mazhar, another former GW student, is a co-author of an original article (Lipid rafts are required for effective renal D1 dopamine receptor function. *FASEB J*. 2020;34(5):6999-7017).

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected No (Not Required)

Please specify why it is not required.

Only renal proximal tubule cells will be used.

Faculty Proposal for MD Student Research by Brian K. Reilly

* 1. Faculty Sponsor

* Name: Brian K. Reilly
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* 2. Daily Supervisor

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Organization: Children's National Hospital
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Apt/Suite: Department of Otolaryngology
City: Washington
State: DC
Zipcode: 20010
Office Phone:
Email Address: breilly@cnmc.org

* 3. Project Title (250 character limit)

Cochlear Implant Navigator Project: Barriers to Surgical Care

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Barriers to Pediatric Osseointegrated Bone-Conduction Hearing Devices. Koenigs MB, Behzadpour HK, Harrington CB, Prado L, Gorelik D, Woolman K, Rana MS, Preciado DA, Reilly BK. Otol Neurotol. 2022 Jun 1;43(5):e590-e596. doi: 10.1097/MAO.0000000000003534. Epub 2022 Mar 8. PMID

A Review of Reported Adverse Events in MRI-Safe and MRI-Conditional Cochlear Implants. Bestourous DE, Davidson L, Reilly BK. Otol Neurotol. 2022 Jan 1;43(1):42-47. doi: 10.1097/MAO.0000000000003339

Cochlear signal alterations using pseudo-color perceptual enhancement for patients with sensorineural hearing loss. Whitehead MT, Guillot LM, Reilly BK. *Pediatr Radiol*. 2021 Jul;51(8):1448-1456. doi: 10.1007/s00247-021-04987-z. Epub 2021 Mar 9.

*** 5. Sponsor's Research Focus:**

Yes - Surgery

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T3: Translation to Practice

*** 7. Hypotheses (200 word limit)**

Hypothesis: There is improved patient satisfaction and care , as well outcome measures (time to implant, time to imaging, time to fitting with hearing aid, time to speech therapy) of the program after the addition of the program coordinator /patient navigator. We will look at early activation rates, analyze patients who have aberrant anatomy and investigate barriers to access to cochlear implant surgery Hearing loss poses an increased risk and impact on quality of life and development. Cognitive, linguistic and social skills are among those that can be impacted without lack of early evaluation and intervention. The Cochlear Implant program at Children's National is a multispecialty effort consisting of otolaryngologists, audiologists, and speech therapists that determine cochlear implant candidacy children presenting with hearing loss lacking benefit from traditional amplification.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

As a way of ensuring that quality care is being provided for patients and families going through this process, we have designed a program survey to filled out at the end of the process in addition to an inter-office intake form to further access that a quality care is being offered from process start to finish. We have worked on navigators, surgical checklist apps, and monthly implant meetings to improve the cochlear implant process and patient experience. We have access to patient hearing loss databases, as well as cochlear implant surgery lists, hearing aid fitting databases, and important follow-ups and aim to analyze all factors to improve processes. Methods: Anonymous patient survey, List runner , Surgical CNMC information, department database, Hearing loss database review Sample Size: 300 patients Plan for data Analysis: will be completed upon data collection and prior to manuscript being drafted

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

Potential significance: Learning more about cochlear implant candidacy patient experience and care/resources being offered. Student role: Survey administration and analysis of factors leading to delays in fitting for hearing aids, radiographic imaging Number of weeks: 6-8 weeks Acronym: HL= hearing loss CI= cochlear implant

*** 10. Describe the student's role in the project (200 word limit)**

Summer research student will have an active role. Researcher will participate and attend cochlear conferences via ZOOM as well as meet with me in person during hearing loss clinics, cochlear implant surgeries, attend hearing screenings, cochlear implant programming sessions, and well was work with cochlear implant coordinator to analyze if there's improved patient satisfaction and care and performance, as well outcome measures (time to implant, time to activation, time to speech, etc)

*** 11. Describe the mentor's role in the project. (200 word limit)**

I will work closely with student and meet several times weekly regarding out cochlear team at Children's as we strive to gain this important data . Most importantly the student and I will work with our cochlear team to look at ways of improved the candidacy selection processes with our team of cochlear implant audiologists, speech therapists, and our implant coordinator.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

I have had a longstanding commitment to medical student education and mentorship over 15 years. I have mentored several of Gills Fellows, Meteor Scholars, as well as Health Summer Scholars at George Washington Medical School. Under my supervision, these individuals conducted research to advance the treatment of hearing loss, cochlear implantation, and to improve patient safety issues. I have successful track-record and several Gill Fellows have not only published with me but gone on to pursue a career in Surgery or Otolaryngology

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected Yes

Please provide IRB number and date

* IRB Number: Cochlear implant Database IRB/Hearing Loss Databse

* IRB Date: Since 2019

Faculty Proposal for MD Student Research by Neal Sikka

* 1. Faculty Sponsor

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* 2. Daily Supervisor

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City:
State:
Zipcode:
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Email Address:

* 3. Project Title (250 character limit)

Augmenting Remote Medical Procedure Training and Assistance with Spatial Computing and Volumetric Capture

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Manuel Rebol, Claudia Ranniger, Colton Hood, Erin Maria Horan, Adam Rutenberg, Neal Sikka, Yasser Ajabnoor, Safinaz M Alshiakh, and Krzysztof Pietroszek. 2022. Mixed Reality Communication System for Procedural Tasks. In Proceedings of the 2022 International Conference on Advanced Visual Interfaces (AVI 2022), June 6–10, 2022, Frascati, Rome, Italy. ACM, New York, NY, USA, 3 pages. <https://doi.org/10.1145/3531073.3534497>

Ranniger C, Horan E, Rutenberg A, Hood C, Alshiakh S, Ajabnoor Y, Allabban A, Pietroszek K, Rebol M, Patil R, Schulte C, Galvao C, Sikka N. "Development of a cognitive load survey for central venous catheter insertion training across learning environments .", in The Journal of the Society for Simulation in Healthcare: Feb 2022 Vol 17, Issue 1 p e157. Doi: 10.1097/SIH.0000000000000648

Sikka, Neal & Shu, Liqi & Ritchie, Brandon & Amdur, Richard & Pourmand, Ali. (2019). Virtual Reality-Assisted Pain, Anxiety, and Anger Management in the Emergency Department. Telemedicine and e-Health. 25. 10.1089/tmj.2018.0273.

*** 5. Sponsor's Research Focus:**

Yes - Emergency Medicine

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T3: Translation to Practice

*** 7. Hypotheses (200 word limit)**

Having already built the mixed-reality training system for a complex procedure (US-CVC), we seek to streamline our remote teaching processes for and make our system replicable for simpler procedures such as peripheral IV, EKG lead placement, and FAST exam. We still have goals of assessing participant learning and performance, as well as instructor ease-to-teach, but for procedures that already have precedence in remote guidance, such as for a physician on a cruise ship. The hypotheses focus on our thoughts that there are ways to optimize the use of AR in teaching and learning which require further study. This project seeks to augment the way medical personnel communicate and collaborate across the distance by allowing for real-time exchange of three-dimensional information that is missing in current videoconferencing telehealth. The project hopes to identify technology and educational principles for remote mentoring that result in more equitable access to healthcare; improved success for medical procedures that require the assistance of a remote expert; more cost-effective distribution of healthcare skills and training; and higher quality expert medical advice from a distance. We are building and testing a mixed reality head set system to aid the remote provider perform US guided Central Line placement.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

There are numerous goals in developing tools like AR to support remote providers and teaching that include developing an understanding of the communication needs for medical staff in distant training, mentoring and procedural assistance, ii) gaining insights into the application of mixed-reality volumetric representation and transmission in remote healthcare settings; iii) designing guidelines for a mixed-reality volumetric communication system that simulates the physical presence of the patient at the location of the remote expert; iv) evaluating the utility of 3D spatial information in remote medical procedures assistance; and v) performing user studies examining the efficacy of spatially-enhanced communication in remote medical training and guidance.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

On the first phase of our study we recruited instructors (faculty with experience in US-CVC and medical education) and trainees (medical and allied health professionals and trainees including students on clinical rotations) to participate in in-person, 2-d video and AR training sessions. Our results suggest that cognitive load is similar across training modality. The late 2022/early 2023 phase of our study seeks to continue CVC procedure guidance, but with updated technologies, a new participant population, new independent variables to introduce, new measures to quantify the utilities and associated advantages of the system, and new assessments for the participants to complete. New developments include eye-tracking software to measure the amount of time the student spends watching the 2D video, volumetric view, or ultrasound feed. We also gained the capability to measure the time duration and distance moved of the 3D objects instructors uses to teach. We may seek to perform a “streamlined” CVC procedure that introduces a temporal stress component, as the participants would need to complete a set of tasks within a time limit. We are including new proprietary outcome measures that track number of attempts and time necessary to complete each steps.

*** 10. Describe the student's role in the project (200 word limit)**

The student will serve as the research assistant for this project. She/he will assist with recruitment, consent, questionnaire application, data analysis and preparing a publication. They will review the audio-visual content to help in coding the outcome measures.. The student will also participate / exposed to the other health technology projects in the Department and other telehealth related educational activities such as journal club, shadowing, and learning about activities in the department. The student will be immersed in an interdisciplinary environment containing physicians, software engineers and educators from GW and American University.

*** 11. Describe the mentor's role in the project. (200 word limit)**

Dr. Sikka, leads telehealth and Innovation efforts at MFA. He will mentor the student on health innovation, technology implementation, operations, and telehealth. He is also the leader PI on this NSF funded study and will mentor the student in all aspects of the recruitment and interviews. We will work with MFA statistician to complete the data analysis. David Li is the Research Coordinator for the study and works on the day to day operations of the project from a workflow perspective.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

The mentor team has enjoyed working with numerous Gill and HSP students in the last few years. Each student has had significant hands on exposure to telehealth or technology related project and mentoring. Student with interest in technology, health disparities, health access, telehealth, virtual reality and other innovative solutions at the cross of clinical care and population health will enjoy working with our team and have a high likelihood of having an abstract selected for a regional or national meeting as well as peer reviewed publications. Some recent Gill Fellows include Puja Sasankan and Rohan Patil.

* 13. Do you have or will you obtain IRB approval for this project?

Please note: Students cannot begin a human subjects project without IRB approval.

* (Please select ONE)

Selected Yes

Please provide IRB number and date

* IRB Number: NCR202767

* IRB Date: 12/03/2020

Faculty Proposal for MD Student Research by Michael Whalen

* 1. Faculty Sponsor

* Name: Michael Whalen
* Degrees: MD
* Title: Associate Professor of Urology; Director, Urologic Oncology
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* State: DISTRICT OF COLUMBIA
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* 2. Daily Supervisor

Name:
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

* 3. Project Title (250 character limit)

Urologic Oncology Clinical Outcomes Research - Bladder Cancer

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Prostate Cancer Outcomes in Patients Living with HIV/AIDS Treated with Radiation Therapy: A Systematic Review. Tina Vaziri, Yuan Rao, Michael Whalen, Jianqing Lin, Sharad Goyal. Advances in Radiation Oncology, 2023. 8(1): 101079; PMID: 36299566

Current laser therapy options for endoscopic treatment of upper tract urothelial carcinoma. Zollinger, Benjamin; Shoen, Ezra; Gresham, Charles; Whalen, Michael. Current Urology: October 10, 2022 - Volume - Issue - 10.1097/CU9.0000000000000158 doi: 10.1097/CU9.000000000000015

Impact of Variant Histology on Occult Nodal Metastasis after Neoadjuvant Chemotherapy for Muscle-Invasive Bladder Cancer: A Review of the National Cancer Database. Melinda Fu, Charles Klose, Andrew Sparks, Michael Whalen. Clin Genitourin Cancer, 2022. 20(2): e135-e139. PMID 34961704

*** 5. Sponsor's Research Focus:**

Yes - Cancer

Yes - Surgery

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T3: Translation to Practice

*** 7. Hypotheses (200 word limit)**

Bladder cancer is the fourth most common cancer in men. While the majority of bladder cancer diagnoses are non-muscle-invasive, and therefore amenable to endoscopic cure, 25% are muscle-invasive and prone to lymphovascular and hematogenous metastasis. Standard of care treatment involves multimodal therapy of neoadjuvant systemic chemotherapy followed by radical cystectomy, bilateral pelvic lymph node dissection, and creation of urinary diversion. This is a highly morbid operation with published complication rates up to 65%. The modern era has witnessed much progress in the reduction of perioperative complications through the use of minimally-invasive and robotic surgery. While radical cystectomy is standard of care, there are some highly selected patients with small, solitary muscle-invasive tumors that may benefit from partial rather than radical cystectomy. The role of neoadjuvant chemotherapy in this setting is controversial. The current research project will utilize the National Cancer Database (NCDB) to investigate patients with stage cT2-4N0M0 bladder cancer who underwent partial cystectomy from 2006-2019. The purpose of the study will be to examine trends in the use of neoadjuvant chemotherapy over time, as well as the impact of neoadjuvant chemotherapy on patient overall survival.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

We have access to the National Cancer Database through GW University Hospital. This is a large national database with access to over 100,000 individual, de-identified patient records. The database will be queried for metastatic bladder cancer patients to assess treatment patterns in partial cystectomy and cytoreductive cystectomy (2006-2019). The outcomes of interest will be overall survival, as well as examining trends over time and correlation with the use of neoadjuvant chemotherapy prior to partial cystectomy. Based on the student's growing proficiency/literacy with bladder cancer research, he/she may modify or propose additional projects using the NCDB data. The tangible goal will be drafting one or two abstracts for submission to the Society of Urologic Oncology annual meeting and the American Urological Association annual meeting. These abstracts will culminate in manuscripts to be submitted for publication.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

This research project is designed to provide exposure to clinical outcomes research within the field of Urology and Urologic Oncology. The student will engage in critical reading/analysis of published journal articles in the domain of bladder cancer. The research experience will teach the student how patient clinico-pathologic variables can be assessed with basic statistical methods to derive correlations with multiple clinically relevant study endpoints. The student will gain exposure to these statistical methods as well as work closely the Medical Faculty Associates and GW School of Medicine & Health Sciences biostatisticians. The student will also work very closely with other student members of the Urology Interest Group/Research Collaboration who have done research projects with Dr. Whalen in the past, and therefore serve as an excellent resource for guidance, mentorship, and troubleshooting of research methods. The student will also work closely with a Urology resident mentor to provide clinical context and relevance for the research hypotheses. Further projects using these databases will be possible based on the student's own intellectual curiosity and motivation to develop original ideas/hypotheses for investigation. There will also be opportunity and expectation to contribute to the growing IRB-approved Retrospective and Longitudinal Database of Genitourinary Cancer, as well as the prostate cancer MRI database and bladder cancer "Bluelight cystoscopy database" based on the clinical and surgical experience of the GW Urology physicians. These databases may be queried to answer many clinically relevant and potentially practice-changing questions using data extracted from real patient encounters in the Urology department at GW. Depending on the student's interests, time will be spent performing literature review and drafting the introduction and discussion of the manuscript. He/She will also spend time with data entry to input information from the electronic medical record into the database. This work will be supplemented by weekly meetings for troubleshooting and discussion of interesting aspects of bladder cancer diagnosis and treatment. The expectation will be that one or more abstracts are generated to be submitted to our national Urologic Oncology meetings (Society of Urologic Oncology, Genitourinary American Society of Clinical Oncology, American Urological Association). The deadline for the initial submission is late summer 2023.

*** 10. Describe the student's role in the project (200 word limit)**

The student will take the lead with literature search and drafting the project manuscript with the guidance of the Urology residents and attending supervisor. He/She will be responsible for coordination with the biostatistician and assist with interpretation of the statistical results. The goal of the project is for the student not only to learn about outcomes research, but to make a meaningful contribution to the field of Urologic Oncology. There will be opportunity for statistical analysis of the data alongside the professional statisticians as well. The student will work closely with the biostatisticians/senior student mentors to understand the NCDB dataset, including organization, statistical analysis, analysis of outcomes of interest (i.e. surgical complications and success rates) and presentation of data in a clear, concise, and meaningful format. There will be ample opportunity for shadowing experiences in the outpatient clinic and the operating room to gain further exposure to clinical Urology. The student will also participate in weekly Urology Grand Rounds and resident didactic sessions to supplement their growing Urologic fund of knowledge.

*** 11. Describe the mentor's role in the project. (200 word limit)**

The mentor will provide ample opportunity for discussion of the rationale for the project and the potential ideas for publication arising from the database. The mentor will schedule regular weekly research meetings to assess the student's progress and troubleshoot any questions. The mentor will also invite the student to participate in clinical patient care. One half-day per week will be spent shadowing in the Urology clinic and another day will be spent in the operating room. These mentorship experiences will provide student exposure to the field of Urology and to provide clinical context for the database work. The mentor will also attend regular meetings between the student and the statisticians. The mentor has significant experience in outcomes research as well as basic statistical methods, so is well-equipped to be able to guide the student's interest and success with the project.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

I have worked with many medical students and Urology residents since 2018. Medical students have been involved with published manuscripts in peer-reviewed journals, as well as authorship of review articles and book chapters. Students have presented at numerous local, regional, and even national research meetings and society conferences. I serve as Research Coordinator for the Urology Department. I was awarded the "Outstanding Clinical Instruction" award ("Teacher of the Year") by the Urology residents in June, 2019. –Summer 2022: Paul Nagao: Definitive local treatment in the setting of metastatic prostate cancer, submitted to Society of Urology Oncology meeting 2022; submitted to American Urological Association meeting, 11/2022 -Summer 2021: Christian Farag (Health Services Scholarship), bladder cancer and nutrition project, submitted to AUA 2022 meeting; Jennica Egan (Jean L. Fourcroy Research Award), NCDB project and GW Hospital Cancer Committee Quality Improvement Project -Summer 2020: Michael Wynne, (Summer Research Fellowship award); Cyrus Adams-Mardi, MS, GW medical student and recipient of Jean L. Fourcroy Research Award 8/2020; Melinda Fu, GW medical student, presented at the annual Society of Urologic Oncology conference 12/2020; -Summer 2019: Akshay Reddy (Gill Fellow), multiple presentations, multiple publications -Summer 2018: Christina Darwish; Gill Fellow, published project in journal, Urology

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected Yes

Please provide IRB number and date

*** IRB Number:** 041723

*** IRB Date:** exp 7/19/2023

Faculty Proposal for MD Student Research by Jessica Weisz

* 1. Faculty Sponsor

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* 2. Daily Supervisor

Name: Jessica Weisz
Degrees: MD
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

* 3. Project Title (250 character limit)

Use of a QI Model to Implement Food Pharmacy at Community Pediatric Practice

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Weisz J, Magee P, Clarence I, Ottolini, Falusi O. "TEACH"ing Medical Students to Address Child Poverty: A Multimodal Curriculum." Acad Pediatr. 2021 May 19:S1876-2859(21)00263-1. doi: 10.1016/j.acap.2021.05.011. Epub ahead of print. PMID: 34020103.

Weisz J, Krueger J, Henriques J, Lacy M, Gai J, Boogaard C. "Barriers to Infant Preventative Care During the COVID-19 Pandemic." Clinical Pediatrics. October 2021. doi:10.1177/00099228211050476.

Falusi O, Weisz J, Clarence I, Lichtenstein C, Coddington D, Avent G, Beers L, Ottolini M. "Leveraging E-Learning and Community Assets to "TEACH" Residents to Address Child Poverty." Acad Pediatr. 2022 Feb 16:S1876-2859(22)00073-0. doi: 10.1016/j.acap.2022.02.009. Epub ahead of print. PMID: 35182791.

*** 5. Sponsor's Research Focus:**

Yes - Pediatrics

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T4: Translation to Population Health

*** 7. Hypotheses (200 word limit)**

An onsite Food Pharmacy co-located in a community pediatric health center will an important benefit to a medical home. It will be appreciated by patients/families, will increase engagement with health educator, and will improve linkage with community resources.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

The project aims to start the first Food Pharmacy at an outpatient general pediatric practice at Children's National. It will distribute food daily to patients who screen positive for food insecurity and are interested in taking a bag of food (food will be provided by Capital Area Food Bank). Since this is implementation of a new project, the level of patient engagement is unknown. The immediate project goals are to assess patient satisfaction and to increase patient engagement with the health educator.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

The research of this project will be optimizing the implantation of a Food Pharmacy. The existing research on Food Pharmacies in pediatric health centers compared to adults is scant and the only current Food Pharmacy at Children's National is within a subspecialty clinic. The project will include pre and post surveys of patients before and after participating in the food pharmacy. The survey will include components to assess the effectiveness of the food pharmacy processes, chart review of patient engagement with the Health Educator, and understanding of community resource access. Winter/Spring 2023 focus will be on finalizing permits and ordering storage equipment for the food and applying for the QI IRB. Initial PDSA cycles will examine how the process is working for patients and for staff. Then PDSA cycles will examine patient engagement and track follow up for specific disease type (ie obesity).

*** 10. Describe the student's role in the project (200 word limit)**

Student will need to help team brainstorm and execute PDSA cycles. This will include but not be limited to (1) creating a data collection tool like RedCap (2) talking to patients and staff for data collection, (3) partner with Capital Area Foodbank and (4) designing pre and post surveys. Part of this work may be done offsite, but student will be expected to be onsite most days to talk to patients and staff and troubleshoot issues. Spanish-speaking students would be a plus.

*** 11. Describe the mentor's role in the project. (200 word limit)**

The research team consists of social worker, family service associate, health educator, medical director, assistant medical director, physician champion, resident champion, and Master of Public Health student. Physician champion will be the main contact for mentee to develop research goals. Mentor and mentee will meet weekly or as needed for goals.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

The medical director has had a Gill Fellow in separate research project. The associate medical director and physician champion of supervised MPH students in their capstone projects. This specific project has not had a medical student involved as it is the first year of the project.

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected No (Pending)

Faculty Proposal for MD Student Research by Melissa Dvorsky

* 1. Faculty Sponsor

* Name: Melissa Dvorsky
* Degrees: PhD Clinical Psychology
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* Email Address: mdvorsky@childrensnational.org

* 2. Daily Supervisor

Name:
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

* 3. Project Title (250 character limit)

Development and Evaluation of a Technology-Enhanced Executive Functioning Skills Intervention for Adolescents with ADHD

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Dvorsky, M. R., Breaux, R., Langberg, J. M., & Becker, S. P. (2022). Adolescents with ADHD are at Increased Risk for COVID-19 Vaccine Hesitancy. *Journal of Psychiatric Research*, 152, 25-30. <https://doi.org/10.1016/j.jpsychires.2022.06.005>

1. Pfflner, L. P., Dvorsky, M. R., Friedman, L. F., Haack, L., Chung, S., Charalel, J. M., Hawkey, E., Spiess, M. (2022). Development of a Web-Based Training Platform for School Clinicians in Evidence-Based Practices for ADHD. *School Mental Health* [Epub ahead of print]. <https://doi.org/10.1007/s12310-022-09556-9>

Dvorsky, M. R., Tamm, L., Denton, C. A., Epstein, J. N., Schatschneider, C. (2021). Trajectories of response to treatments in children with ADHD and word reading difficulties. *Research on Child and Adolescent Psychopathology*, 49, 1015-1030. DOI: 10.1007/s10802-021-00815-y.

*** 5. Sponsor's Research Focus:**

Yes - Pediatrics

Yes - Psychiatry

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T3: Translation to Practice

*** 7. Hypotheses (200 word limit)**

This study aims to co-develop with stakeholders and evaluate an online platform/mobile app for improving executive functioning skills for adolescents with Attention-Deficit/Hyperactivity Disorder (ADHD) and their families. We will use an iterative user-centered design process whereby qualitative feedback will be obtained from potential end-users including adolescents, parents, and school providers. We will a) conduct focus groups with youth, parents, and providers before, during, and after development to guide and prioritize content and features; and b) conduct a pilot RCT of the behavioral intervention+online tool compared to the intervention alone. Hypothesis 1: Youth with ADHD, their parents, and mental health providers will identify key content and themes for features of the digital health tool. Hypothesis 2: Youth with ADHD, their parents, and mental health providers will rate the intervention as feasible, easy to use, acceptable, and responsive to their needs. Participants who receive the digital augmentation treatment will demonstrate significant improvements in skill utilization (primary treatment target) at post-treatment. We also hypothesize that the technology use will be associated with mechanisms of skill utilization (i.e., motivation/reward responsivity, executive functioning, social support) to skill utilization which is associated with subsequent skill utilization and improved outcomes.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

This project is part of an ongoing NIMH-funded study examining the feasibility, acceptability, usability and initial efficacy of a technology-enhanced executive functioning skills intervention designed to promote treatment engagement, skills use, and treatment response for adolescents with ADHD. The project is currently enrolling participants (enrollment began November, 2018). 80 participants (youth ages 11-15) with ADHD, their, and 12 providers) will complete three separate focus group/qualitative interview sessions and participate in an open trial (n=20), or the pilot RCT (n=60). Participants will complete 90-minute focus group/qualitative interview sessions either in-person or via videoconference and provide ratings of the technology intervention usability. 5 additional adolescents with ADHD (ages 11-15) will participate in the open trial/extended usability testing of the technology-enhanced intervention and complete pre/post treatment ratings. Assessments for the open trial are conducted pre-intervention, weekly during treatment, immediate post intervention, and 6-months follow-up. Skills utilization and treatment adherence are assessed by observed and self-report measures in addition to real-time data collected via the digital platform.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

Digital health (dHealth) strategies offer unprecedented opportunities for increasing adolescents' skills utilization, boosting effectiveness of EBTs, and reducing time and cost of care. This project leverages dHealth to overcome the barriers specific to ADHD by: (1) providing frequent opportunities for immediate reinforcement at the point-of-performance and motivating adolescents with game mechanics; (2) using interactive tools to reinforce in-vivo skill use and compensate for inherent EF deficits (e.g., forgetting); and (3) promoting social support and parents' consistent reinforcement. By engaging these intermediate targets, we hypothesize the dHealth tool will increase adolescents' in vivo skill utilization. This study aims to develop, refine, and preliminarily test a scalable dHealth augmentation that promotes skills utilization during treatment for young adolescents with ADHD. This project emphasize training in: 1) interactive health technology, 2) adherence promotion, 3) methods and statistical approaches for ecologically valid, real time assessment and adaptive intervention designs, 4) mechanism-based refinement and evaluation, as well as grant writing skills and dissemination. Intervention content is delivered in clinic and school settings through the ADHD and Learning Differences program at Children's National Hospital. We are currently recruiting 20 youth ages 6-17, 20 parents, and 5 providers to participate in focus groups/qualitative interview sessions and complete ratings of usability/feasibility on the digital tool over the next 6 months. We are simultaneously recruiting 5 adolescents with ADHD to participate in an open trial investigation of the digital platform tool and the executive functioning intervention to determine if the digital tool provides added benefits to treatment adherence, engagement, and overall response relative to pre/post comparison results with prior trials. For the open trial, we are targeting enrollment to adolescents with ADHD who have not previously participated in an executive functioning or organizational skills intervention. Screening and consenting will be conducted over the phone and with the use of REDCap, and assessments are conducted pre-treatment, during treatment (weekly), and postintervention and 6-months follow-up. This project is currently in the second year of participant enrollment and is funded by the National Institutes for Mental Health (NIMH) through 7/1/2024. We are actively enrolling participants, developing/refining intervention content, and conducting initial assessments. Assessments are conducted at study visits at Children's National Hospital and via online surveys through REDCap.

*** 10. Describe the student's role in the project (200 word limit)**

Specific roles for a research fellow on this project include co-facilitating focus groups and/or qualitative interviews and in-clinic data collection including diagnostic interviews (structured and semi-structured), clinical background interviews, and other ADHD testing. The fellow also has the opportunity to complete data analyses with prior datasets from studies with adolescents with ADHD, including a large Randomized Controlled Trial of the executive functioning skills intervention and a longitudinal observational study of adolescents with ADHD, service utilization, and psychosocial functioning as well as substance use across the transition from high school to college. It is expected that the fellow will prepare an abstract for national conference presentation and participation in manuscripts will be encouraged, depending on the fellow's interests. The fellow will also work with our ADHD & Learning Differences team to observe outpatient encounters with the executive functioning skills intervention program and contribute to clinical and community outreach initiatives in the ADHD & Learning Differences Program.

*** 11. Describe the mentor's role in the project. (200 word limit)**

The mentor will take primary responsibility for training the research fellow, as well as the day-to-day supervision of the research fellow and will directly support training for data collection and analyses. The mentor will actively engage the medical student mentee in all aspects of ongoing research in the ADHD & Learning Differences program, including regular attendance at research team meetings, participant enrollment, data collection, developing abstracts for local and national conference submissions, and preparing manuscripts for publication. The mentor will also engage the research fellow in other training opportunities in Pediatrics, Psychiatry, Translational Research, and related areas as they come available at Children's National and locally.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

Dr. Dvorsky has worked with a number of medical students informally and formally including mentoring two health services scholars during summer 2022. From 2020-2021 Dr. Dvorsky provided several mental health wellness workshops to GW residents and medical students as well as support group seminars for managing stress and mental health during COVID-19. Before starting her current faculty position at , Dr. Dvorsky mentored two medical students and four child/adolescent psychiatry fellows in ADHD research and clinical initiative as part of her role in the Hyperactivity, Attention, and Learning Problems program at the University of California, San Francisco. Dr. Dvorsky supervises one clinical fellows and two clinical psychology externs in research/clinical activities. Dr. Dvorsky also has a research coordinator to support day-to-day research activities and data management. Dr. Dvorsky has not previously mentored any GW fellows, although she works closely with Dr. Randi Streisand (Co-Investigator on the proposed project) who has mentored numerous GW Gill fellows and other GW medical students in behavioral diabetes/adherence research in recent years. Dr. Dvorsky will collaborate with Dr. Randi Streisand on this project and she will provide support with the medical student training.

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected Yes

Please provide IRB number and date

* IRB Number: Pro00014877

* IRB Date: 11/4/2020

Faculty Proposal for MD Student Research by Padma Swamy

* 1. Faculty Sponsor

* Name: Padma Swamy
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* 2. Daily Supervisor

Name:
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

* 3. Project Title (250 character limit)

Understanding the impact of the electronic health record on value-based healthcare: A scoping review

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Swamy P, Duran C, Gupta A, Misra SM, Fredricks K, Cruz AT. "Driving" to Reduce Socioeconomic Barriers to Latent Tuberculosis Infection Care: A Mobile Pediatric Treatment Program. Journal of Public Health Practice and Management. Accepted for publication October 30, 2021.

Misra SM, Holdstock N, Baez JC, Garcia N, Gutierrez A, Swamy P, Lee K, Bjugstad A. Systematic review of former unaccompanied immigrant minors' access to healthcare services in the United States. Journal of Public Health. Published September 28, 2021.

Sandoval M, Swamy P, Kay A, Ustero P, Dube GS, Hlophe- Dlamini H, Mandalakas AM. Distinct Risk Factors for Clinical and Bacteriologically Confirmed Tuberculosis among Child Household Contacts in a High-Burden Setting. The American Journal of Tropical Medicine and Hygiene. Published September 2020.

*** 5. Sponsor's Research Focus:**

Yes - Pediatrics

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T4: Translation to Population Health

*** 7. Hypotheses (200 word limit)**

In the past 10-15 years there has been a significant shift in medicine from paper-based records to the electronic health record (EHR). There also has been a gradual shift from fee-for service towards value-based payment. Value-based payment involves measuring outcomes like control of A1C etc. There has been literature on value-based care and also on the EHR and impact on timely documentation; however, there has been a lack of information on the impact of EHR on value-based care. We would like to explore how the EHR impacts value-based care by looking at factors such as usability from the provider perspective those who are inputting the data, and that of the hospital system who are pulling the data to look at outcomes. We are planning on utilizing a scoping review methodology to study this particular question.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

The overall goal of this project is to review the literature to understand the impact of the EHR on value-based health care delivery and measurement of outcomes. We will utilize a scoping review methodology to understand this question. The objective for our student will be to assist with selection of studies to be incorporated into the review. The student will evaluate the studies to determine the studies that meet the inclusion criteria. Given the work of the student on this project, we would like for the student to be included as an author on this future publication.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

For this project, we specifically chose a scoping review given the broad question. We are working with a librarian to refine the question and conducting the literature search prior to the start of the summer program. We will also have created inclusion and exclusion criteria prior to the summer starting. When our student starts, we plan on having a list of the studies that need to be reviewed. Our student will then review the studies and determine if the study meets the inclusion criteria to be included in the data analysis step. We will utilize the PRISMA frame-work for reporting on a scoping review. Our student will also learn about scoping reviews as a research methodology. Regarding the timeline, we are already working on refining the question and will have created the

exclusion and inclusion parameters at the start of the 8 week period. Our student will be assisting with the selection of the studies to include in the review during the 8 week period. Our student will have access to the mentors and we will have weekly meetings to answer any questions. Once the 8 weeks are completed, as the mentor team we hope to then collate and conduct the data evaluation and publication. Given the amount of work that the student has done towards the paper, we do plan on having the student as an author on the publication. We plan on having this study ready for publication about 4-6 months after completion of the summer research opportunity. This study while conducted by outpatient pediatricians, is not just limited to pediatrics and the studies that will be reviewed will be from diverse fields. As EHR has become a part of medical care, understanding its role in value-based health care is key and important to the overall field of medicine regardless of specialty.

*** 10. Describe the student's role in the project (200 word limit)**

Our student will play a key role in reviewing the studies that have been identified after the literature search. Our student will be responsible for determining if the study meets inclusion and exclusion criteria for the study. During this 8 week period, we expect for the student to review the studies to determine if they meet inclusion criteria. This study can be conducted remotely and does not require the student to be in the DC, Maryland, Virginia area; however, we still would like to meet with the student remotely (via Zoom etc) on a weekly basis.

*** 11. Describe the mentor's role in the project. (200 word limit)**

As mentors for this project, we will be discussing the inclusion and exclusion criteria with our student. We will also be available for any questions through either email or during the weekly meeting with our student. We also will involve our student in our meetings with the librarian team which we hope will provide our student with the opportunity to think critically about different research studies and the limitations that exist.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

P. Swamy: Elizabeth Herrin (University of Texas- Medical Student)- Presented at Pediatric Academic Societies (national pediatric conference) on Social Media for Advocacy 2019-2022 P. Swamy: Brandon Ho (Baylor College of Medicine)- Food Insecurity in Pasadena, TX, won the best abstract at Texas Pediatric Society 2017 E. Bekele: MPH Practicum mentor for two PA/MPH students, Ethiopian and Eritrean Patient Needs Assessment, 2019-2020 E. Bekele: Mentor- for Cheryl Chun: Research, Education, Advocacy and Child Health Care (REACH). Effect of Parental Adverse Childhood Events (ACEs) on Their Children's Sick Visit Utilization- June 2015-July 2017

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected No (Not Required)

Please specify why it is not required.

As this study will be reviewing existing literature, it does not meet criteria for human subjects research.

Faculty Proposal for MD Student Research by Lanre Falusi

* 1. Faculty Sponsor

* Name: Lanre Falusi
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* 2. Daily Supervisor

Name: Daniel Newman
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* 3. Project Title (250 character limit)

The Persistent Chilling Effect of the Public Charge Rule and Its Impact on Participation in Public Benefit Programs for Immigrant Families

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Roche, K. M., White, R. M. B., Rivera, M. I., Safa, M. D., Newman, D., & Falusi, O. (2021). Recent immigration actions and news and the adjustment of U.S. Latino/a adolescents. *Cultural Diversity and Ethnic Minority Psychology*. Advance online publication. <https://doi.org/10.1037/cdp0000330>

Cholera R, Falusi O, Linton JM. Sheltering in Place in a Xenophobic Climate: COVID-19 and Children in Immigrant Families. *Pediatrics*. 2020;146(1):e20201094.

Ayalew B, Dawson-Hahn E, Cholera R, Falusi O, Haro TM, Montoya-Williams D, Linton JM. The health of children in immigrant families: Key drivers and research gaps through an equity lens. *Academic Pediatrics*. 2021;21(5):777-792.

*** 5. Sponsor's Research Focus:**

Yes - Pediatrics

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T4: Translation to Population Health

*** 7. Hypotheses (200 word limit)**

Public charge is a legal term that describes someone who relies primarily on government benefits for support. A public charge test is used by federal immigration officials to decide who they will allow into the United States and who can get Lawful Permanent Residency (LPR)—also known as a green card. In 2019, a federal government rule expanded the list of programs used to decide if an immigrant is considered a public charge. In 2021, the change was reversed, returning to the previous narrow scope definition. Research has shown that changes to the definition of Public Charge from 2019-2021 created fear and apprehension among immigrant families around utilization of important public benefit programs for children and families. Despite a return of the Public Charge policy to its previous narrow definition, we hypothesize that many families—oftentimes unnecessarily—are still avoiding public assistance programs (health care, housing, food assistance, etc) programs due to concerns it may affect their ability adjust their immigration status in the future.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

In our primary care pediatric office practice, we routinely screen our patients and families for food insecurity and help connect them to food assistance programs as needed. At the same time, we have a robust medical legal partnership to support families with immigration legal needs and regularly have conversations of immigration legal status. As such, we consider our primary care medical home an important place to inquire about families' understanding of the Public Charge rule and how it may affect their engagement in food assistance programs that they may benefit from. We hope to interview at least 50 immigrant families (one or more family members born outside the US) and learn how the Public Charge rule changes have affected their practices using food assistance programs. Using this information, we hope to create a better patient-centered way to help inform our families around the Public Charge rule history in order for them not to unnecessarily avoid public benefit programs due to Public Charge concerns that may not apply to their families.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

1. The student researcher will help create and design a brief REDCap survey that asks immigrant families about their understanding and awareness of the Public Charge rule, as well as their participation in public assistance programs. 2. IRB application will be submitted 3. Embedded in our medical home, the student researcher will engage with families during their primary care visits to enroll in the study and conduct the brief survey. 4. Survey data will be analyzed and interpreted. 5. Using findings from survey data analysis, we will plan next steps in terms of an intervention to increase patient/family awareness around Public Charge and when this may or may not be relevant to their family. This may include information handouts to patients, and may involve staff training as well.

*** 10. Describe the student's role in the project (200 word limit)**

The student will take a central role in the survey creation in REDCap, as well as the IRB submission. The student researcher will then spend the summer days working in our primary care medical home office, engaging with families before or after medical visits to recruit for participation in the study/survey.

*** 11. Describe the mentor's role in the project. (200 word limit)**

The faculty mentors will help support and guide all steps in the research. Drs. Newman or Falusi, or another colleague working on this project, will be present each day in the medical office to help troubleshoot. Periodic meetings will be set up to check-in on research progress and help troubleshoot any questions or concerns.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

Our primary care medical home serves a large number of immigrant children and families. As our immigration law support program has grown from doing rudimentary online legal screenings during office visits to having a robust co-located immigration law medical-legal partnership now, medical students have continued to be heavily involved and support this work. We have had summer medical student researchers work in our pediatric office around immigration law-related topics for the past 5 summers, including past successful Gill Fellows and Health Services Scholars who have presented their work at local and national conferences. Each student has taken on a different research role- including last year's HSS recipient (Sophie Kurschner) who helped evaluate parents' reception to being asked about immigration legal topics at their child's primary care visit. In addition to supporting this scholarly research work over the years, Drs. Falusi and Newman are heavily involved in medical education, both with medical students and pediatric resident trainees.

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected No (Pending)

Faculty Proposal for MD Student Research by Jesus Trevino

* 1. Faculty Sponsor

* Name: Jesus Trevino
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* 2. Daily Supervisor

Name:
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

* 3. Project Title (250 character limit)

The association of automated traffic enforcement systems with the prevalence of motor vehicle collisions in Washington, DC.

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Trevino J, Rizvanolli L, Yarrow M, Christian E, Chhabra N, Kaminsky M. Survey of firearm injury victims suggests a role for social media in violence prevention programs. Am J Emergency Medicine. 2022 (in press).

Trevino J, Malik S, Schmidt M. Integrating Google Trends Search Engine Query Data Into Adult Emergency Department Volume Forecasting: Infodemiology Study. JMIR Infodemiology. 2022 Apr;2(1):e32386

Derdzakyan N, Pourmand A, Shesser R, Ganguli S, Trevino J. Using Google reviews to assess patient satisfaction in the Emergency Department. Am J Emergency Medicine. 2022 Feb;52:110-113.

*** 5. Sponsor's Research Focus:**

Yes - Emergency Medicine

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T4: Translation to Population Health

*** 7. Hypotheses (200 word limit)**

In 2020, there were 35,766 motor vehicle crashes in the US that resulted in fatalities which represents a 6.8% increase compared to the prior year. To decrease the occurrence of motor vehicle collisions resulting from aggressive or reckless driving, municipal law enforcement agencies have implemented automated traffic enforcement systems that detect instances of reckless driving (i.e., speeding, running red lights or stop signs) and issue traffic violation citations with the goal of deterring this behavior and ultimately decreasing mortality and morbidity from traffic-related injuries. However, there are concerns that stationary automated traffic enforcement systems only modify driving behavior in the immediate surveillance vicinity and consequently unsafe driving behavior resumes unchecked in areas without active automated traffic enforcement systems. Therefore, we hypothesize that the probability of motor vehicle collisions in a given area is negatively associated with the presence of automated traffic enforcement systems in Washington, DC.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

Goals include: 1) Background literature search on automated traffic enforcement systems in the US and abroad. 2) Acquisition of statistical programming skills in R using the GW Center for Injury Prevention & Control's access to an online data science learning platform (i.e., Datacamp.com). 3) Data collection/ wrangling of calendar year 2020 motor vehicle collisions and automated traffic enforcement systems from publicly available datasets on opendata.dc.gov. 4) Application of geospatial data processing and regression analysis methods. 5) Presentation of findings to the George Washington University Emergency Medicine Residency Program. 6) Drafting of manuscript suitable for publication in an injury prevention and/or emergency medicine journal.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

This is a retrospective study of the association between calendar year 2020 motor vehicle collisions and automated traffic enforcement systems in Washington, DC. The student will become familiar with the datasets and perform a background literature search on the topic of automated traffic enforcement systems (activity duration: 2 week). The datasets are publicly available from opendata.dc.gov and are called “Crashes in DC”, “Crash Details Table”, and “Automated Traffic Enforcement;” data processing will involve geospatial operations to categorize motor vehicle collisions occurring with or without a nearby automated traffic enforcement installation. Descriptive statistics for categorical variables will include counts, proportions, 95% CI, and continuous variables included median and 95% CI. Statistical comparisons for categorical and continuous variables will include the Chi-squared test and the student t-test, respectively. Multivariate logistic regression will be used to derive probabilities of motor vehicle collisions occurring with US census tracts in Washington, DC (activity duration: 4 weeks). The end deliverables of this analysis will include a presentation of results and manuscript draft (activity duration: 2 weeks).

*** 10. Describe the student's role in the project (200 word limit)**

The student will perform a background literature search on the topic of automated traffic enforcement systems in the US and abroad. If of sufficient interest, the student will be trained in the statistical programming language R and attempt data analysis under the supervision of the faculty mentor. The student will primarily draft a manuscript and implement revisions with the goal of creating a final manuscript ready for submission to a peer-reviewed journal.

*** 11. Describe the mentor's role in the project. (200 word limit)**

The faculty mentor will: 1) Provide training on the statistical programming language R. 2) Provide background information on automated traffic enforcement systems and guide the background literature search. 3) Provide an overview on the analytical methods. 4) Primarily conduct data analysis in tandem with the student. 5) Supervise the drafting of a presentation and manuscript.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

The faculty mentor hosted a medical student, Lauren Sullivan, for a 2021 summer internship in consumer product injuries; a manuscript of this academic work is process. In addition, the faculty mentor is an instructor in the Practice of Medicine course. The faculty mentor has mentored a George Washington University undergraduate student on a research project resulting in a peer-reviewed publication, and is a PhD advisor to a health informatics student from the Rutgers School of Health Professions.

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected No (Pending)

Faculty Proposal for MD Student Research by Christopher Payette

* 1. Faculty Sponsor

* Name: Christopher Payette
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* 2. Daily Supervisor

Name: Christopher Payette
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

* 3. Project Title (250 character limit)

What are we missing on missed dialysis? Social determinants of health affecting emergency department visits in dialysis patients.

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

N/A

* 5. Sponsor's Research Focus:

Yes - Kidney
Yes - Emergency Medicine

* 6. Sponsor's translational level

*** (Please select ONE)**

T4: Translation to Population Health

*** 7. Hypotheses (200 word limit)**

Hypothesis 1: Patients with ESRD on HD present to the ED face a significant burden of social barriers, chronic pain, mental health co-morbidities and substance use disorders. We expect patients with multiple ED visits related to missed outpatient dialysis will face more barriers than those who need the ED only once. Hypothesis 2: ESRD patients who present to the ED due to complications related to missed outpatient HD will be more likely to face barriers to care such as substance use disorder (SUD), poor social determinants of health, mental health illness and chronic pain when compared with ESRD patients who present for any cause. Similar risk factors are more likely to be present in ED patients with multiple visits.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

This study aims to look at risk factors for missing HD in all ESRD on HD patients who present to the ED. Additionally it aims to assess for differences in social needs between ESRD on HD patients who present to the ED for complaints related to missed HD and ESRD on HD patients presenting to the ED for any cause. This study utilizes a complementary set of research questions and methodologies to answer these overarching questions. We will collect data in a variety of domains that may function as barriers to care including mental health co-morbidities, chronic pain, substance use disorder, and social determinants of health. The goal is to enroll and survey 100 patients throughout the study with optimally 25-50 enrollees during the Gill Fellowship period.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

Patients who present to the George Washington University (GWU) ED will be screened for eligibility by research staff. If they meet inclusion criteria then they will be enrolled. Inclusion criteria will be all adult (age over 18) ESRD on HD patients who are not too critically ill or altered to participate. We will enroll consecutive ED patients with ESRD on HD. We will collect data in a variety of domains that may function as barriers to care including mental health co-morbidities, chronic pain, substance use disorder, and social determinants of health. Patients will be followed for hospitalizations and repeat visits at day 30 and one year after their index visit through electronic health record integration. For this data we will report descriptive statistics of the collected variables in order to compare the social background of ESRD on HD patients who present to the ED. We will report means and confidence intervals for the Distressed Community Index Score and Social Vulnerability Index in order to compare established measurements of social determinants of health between ESRD on HD patients presenting to the ED and the general population. We will also use established scoring systems including ASSIST and PROMIS29 as described above in order to generate risk scores for participants.

*** 10. Describe the student's role in the project (200 word limit)**

The student's role in the project will be to identify and enroll participants in the study at United Medical Center and to interview patients. The student will undergo mentored training on how to use the study technologies (Microsoft Box, RedCap, Mendeley) and learn how to manage the data set. Student will perform joint interviewing with a trained member of study staff (research assistant, research mentor) and then be able to independently enroll and interview participants when ready. The student will also be responsible for coming up with clinical questions (with the mentor's assistance) to promote their own critical thinking. Using either a new or existing study question the student will prepare an abstract and/or poster presentation for submission at a research conference. They will also be able to contribute to the manuscript for the project and have authorship if they choose to contribute to the manuscript at all.

*** 11. Describe the mentor's role in the project. (200 word limit)**

The mentor will oversee all study procedures. The student will be in regular contact with the mentor throughout the Gill period with meetings on a regular basis (twice weekly at a minimum). The mentor will help the student input data collected, teach the student study procedures, and help the student in coming up with at least an independent first author abstract or poster presentation (ideally also contribute to a manuscript) using data collected in the study. Mentor will additionally be available for shadowing opportunity through the summer and additional teaching on basic study procedures, basic statistical analysis and other research topics as they interest the student.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

No other personal previous medical students. I was a Gill Fellow in 2015.

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected Yes

Please provide IRB number and date

* IRB Number: NCR213721

* IRB Date: 10/19/22

Faculty Proposal for MD Student Research by Rebecca Lynch

* 1. Faculty Sponsor

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* 2. Daily Supervisor

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* 3. Project Title (250 character limit)

Investigating differences in anti-HIV antibodies in people suppressed on antiretrovirals.

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Wilson A, Shakhtour L, Ward A, Ren Y, Recarey M, Stevenson E, Korom M, Kovacs C, Benko E, Jones RB, Lynch RM. Characterizing the Relationship Between Neutralization Sensitivity and env Gene Diversity During ART Suppression. Front Immunol. 202. PMID: PMC8479156

41. Stevenson EM, Terry S, Copertino D, Leyre L, Danesh A, Weiler J, Ward AR, Khadka P, McNeil E, Bernard K, Miller IG, Ellsworth GB, Johnston CD, Finkelsztejn EJ, Zumbo P, Betel D, Dündar F, Duncan MC, Lapointe HR, Speckmaier S, Moran-Garcia N, Papa MP, Nicholes S, Stover CJ, Lynch RM, Caskey M, Gaebler C, Chun TW, Bosque A, Wilkin TJ, Lee GQ, Brumme ZL, Jones RB. SARS CoV-2 mRNA vaccination exposes latent HIV to Nef-specific CD8+ T-cells. Nat Commun. 2022 PMID: PMC9389512.

37. Ren Y, Korom M, Ward AR, Truong R, Chan D, Huang SH, Kovacs CM, Benko E, Safrit JT, Lee J, Garbán H, Lynch R, Jones RB. Relationships between Neutralization, Binding, and ADCC of Broadly Neutralizing Antibodies against Reservoir HIV. J Virol. 2020 PMID: PMC7944442.

*** 5. Sponsor's Research Focus:**

Yes - Infectious Disease

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T0/T1: Basic Science Discovery and Initial Translation to Humans

*** 7. Hypotheses (200 word limit)**

People who are suppressed on antiretrovirals early post infection will have lower levels of anti-HIV antibodies that have different subclasses of IgG compared to people who are suppressed later.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

Measuring the isotopes (IgA, IgG, IgM) and subclasses (IgG1, IgG2, IgG3, and IgG4) of HIV specific antibodies in 8 participants who were suppressed on antiretrovirals at different times post infection.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

The first 2 weeks would consist of training in the multiplex binding assay. The middle 4 weeks would be collecting binding data. The last 2 weeks would be data analysis.

*** 10. Describe the student's role in the project (200 word limit)**

The student would be leading the project with oversight from the faculty and post-doc in the lab.

*** 11. Describe the mentor's role in the project. (200 word limit)**

The mentor's role in the project is describing the hypothesis and importance of the project, overseeing the training plan and experiment execution. The mentor will also guide the student in analyzing the data and data presentation.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

We have hosted pre-medical students most summers before they start at SMHS. We also have hosted a previous Gill Fellow who won the William Beaumont Research Award in 2018.

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected No (Not Required)

Please specify why it is not required.

Deidentified human plasma

Faculty Proposal for MD Student Research by Shilpa Patel

* 1. Faculty Sponsor

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* 2. Daily Supervisor

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* 3. Project Title (250 character limit)

Characterizing Suicide Attempts by Intentional Self-poisoning among Child and Adolescent Patients Presenting to a Pediatric Emergency Department Before and During the COVID-19 Pandemic: Implications for Intervention

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

K McKinley, K Namah-Rickard, S Patel. Impact of Universal Suicide Risk Screening in a Pediatric Emergency Department: A Discrete Event Simulation Approach. Healthcare Informatics Research. 2022;28(1):25-34.doi: 10.4258/hir.2022.28.1.25 Published online January 31, 2022. PMID: 351720888

CA King, D Brent, J Grupp-Phelan, TC Casper, JM Dean, LS Chernick, JA Fein, M Mahabee-Gittens, SJ Patel, RD Mistry, S Duffy, M Melzer-Lange, A Rodgers, DM Cohen, Akeller, R Sheno, R Hickey, M Rea, K Page, TC McGuire, J Wang, R Gibbons, for the Pediatric Emergency Care Applied Research Network. The Computerized Adaptive Screen for Suicidal Youth (CASSY). JAMA Psychiatry. 2021 Feb 3; doi:10.1001/jamapsychiatry.2020.4756 [epub ahead of print] PMID:33533908.

F Latif, S Patel (corresponding author), G Badolato K McKinley et al. Improving Youth Suicide Risk Screening and Assessment in a Pediatric Hospital Setting using The Joint Commission Guidelines. Hospital Pediatrics. 2020 Oct; 10(10):884-892. doi: 10.1542/hpeds.2020-0039. PMID:32928898.

*** 5. Sponsor's Research Focus:**

Yes - Pediatrics

Yes - Emergency Medicine

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T2: Translation to Patients

*** 7. Hypotheses (200 word limit)**

We hypothesize that there is rich and important data contained within the medical records of patients who presented to the emergency department due to a suicide attempt by intentional self-poisoning, and that exploring this data will lead to patterns, correlations and conclusions that have implications for interventions to keep at-risk youth safe. Specific hypotheses include that youth often overdose on their own prescribed medications, others use household members' prescribed medications, and others use over-the-counter medications or household toxic substances such as cleaning products. We suspect that a significant proportion of youth who present with intentional self-poisoning will have had prior emergency department encounters for suicidal ideation or attempt, and that many will have repeat encounters for intentional self-poisonings. This is a sub-population of particular interest as these patients who have repeat suicide attempts may represent a group that would particularly benefit from ED-based interventions to reduce the risk of future episodes. We also hypothesize that there will be significant differences between the characteristics of intentional ingestions when comparing data from before and during the COVID-19 pandemic, which may also inform optimal interventions for youth at risk of suicide by self-poisoning in the present day.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

The project goals include analyzing all of the patient records identified in our data-pull from the electronic medical record for patients seen for a chief complaint of intentional ingestion. Many of the variables of interest, such as the source of the medication used for ingestion, are documented in free-text within the electronic medical record, so a detailed and comprehensive chart review is necessary to obtain the information of interest for this project. We will be focusing on three one-year periods (March 2019-Feb 2020, March 2020-Feb 2021, and March 2021-Feb 2022) in order to look for potential trends in the characteristics of pediatric self-poisoning before and during the COVID-19 pandemic. We estimate that this will include analysis of several hundred charts, and would aim for the medical student to be involved with reviewing around 50-100 charts and entering data into a RedCAP repository. We hope to present the results as a poster presentation

at pediatric national meetings and to ultimately submit a manuscript of the results.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

This project is a retrospective chart review of the electronic medical record of the Pediatric Emergency Department at Children's National Hospital and the Suicide Risk Registry, which is a specialized registry that also utilizes data from the CNH ED EMR. The Suicide Risk Registry (IRB Approved) captures all children who have had a behavioral health suicide screening in the Pediatric Emergency Department. Recognizing that this may not capture patients with self-poisonings who are too ill/unstable to undergo suicide screening during their ED encounter, we will also query the CNH database for all encounters for "ingestion", "self-poisoning" and related terms, focusing on three separate time periods before and during the COVID-19 pandemic, in order to look for potential trends in the characteristics of pediatric self-poisoning as impacted by the pandemic. Once the list of encounters is generated, the pediatric emergency medicine fellow and the medical student will perform comprehensive chart review, extracting data from several areas of the medical chart including emergency department, inpatient, psychiatry social work and psychiatrist H&P and progress notes. These data include, but may not be limited to, demographic information about the patient, household members of the patient, type of medication used for ingestion, dose of medication used for ingestion (if known), whether the medication was the patient's own, a household member's, or over-the-counter, time from ingestion to ED presentation, patient disposition (inpatient floor vs. PICU for ongoing medical management vs. admission to psychiatry unit vs. discharge home) and prior ED encounters for related or unrelated complaints within the prior several years. Once a database of all of these data are collected by chart review, statistical analysis will be performed to analyze and describe the data including highlighting key trends that emerge from the data. The student will then be invited to participate in abstract, poster and manuscript presentation and submission. The pediatric emergency medicine fellow will seek IRB submission and approval in December 2022 and will request the data from the CNH EMR in March 2023 in order to best capture the desired years within the study. The pediatric emergency medicine fellow will then begin the chart review process, ensuring that the variable list and collection format (RedCAP form) are optimized for the medical student to begin participating in the chart review in Summer 2023.

*** 10. Describe the student's role in the project (200 word limit)**

The student will participate in the retrospective chart review process, extracting and recording data from the medical charts of patients identified to meet inclusion criteria. This project relies on careful extraction of data from free-text fields within the medical record to capture specific details about the nature of each patient's presentation, for example, whether the medication used in the ingestion was prescribed to the patient, a household member, a friend, etc. Once data collection is finished, the student will also be involved in the statistical analysis and summarization of results, and with abstract/manuscript submission with opportunities for authorship for the student. If the student wishes, they can also engage in shadowing in the pediatric emergency department, with opportunities to shadow shifts on the "C" side where all patients with behavioral health complaints are seen, in order to contextualize their work in the clinical context.

*** 11. Describe the mentor's role in the project. (200 word limit)**

The student will be mentored more directly on a day-to-day basis by the pediatric emergency medicine fellow (Ilana Lavina), who will train the student on the chart review/data collection process and work closely with them throughout the process. Dr. Shilpa Patel, Attending Physician, will also meet with the research team regularly to oversee the project.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

Bilal Negash (2020- current; continuing work on lethal means reduction data with Suicide Registry Data, Recipient of a competitive Health Services Scholarship which provides a stipend for summer research, Poster Presentation GW Student Research Day: B Negash, SJ Patel. Firearm Safety Screening and Counseling Among Emergency Department Visits with Suicide Risk) Taylor Brewer (2021-current; working on social needs screening data in the IMPACT DC clinic and separate advocacy initiatives, presented at PAS Meeting: T Brewer, R Margolis, SJ Patel, S Stringfield, K Parikh. Association between Social Needs and Asthma Control among Children Evaluated at a Single-Center High-Risk Asthma Clinic. Poster Presentation at the Pediatric Academic Societies Meeting. (April 2022, Denver, CO)) Ashley Booth (2021-current; working on the seasonal predictive model in the IMPACT DC Asthma Registry) Anha Telluri (October 2021; research elective with StethAid for Lungs, chart review to help with NIH funded study looking at automated detection of wheeze using a mobile stethoscope). Genevieve Donahey (2019-2020, Completed Course Report: "Gun violence in pediatric patients– how we can help") Walters Tebung (Summer 2021; Literature review "Financial Incentives to improve Adolescent adherence to medication for asthma")

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected No (Pending)

Faculty Proposal for MD Student Research by Maranda Ward

* 1. Faculty Sponsor

* Name: Maranda Ward
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* State: District of Columbia
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* Office Phone: 2029940202
* Email Address: maranda@gwu.edu

* 2. Daily Supervisor

Name: Maranda Ward
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

* 3. Project Title (250 character limit)

SMHS Curriculum Guidelines on Teaching Race

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Ward, M.C. and Ganjoo, R.. (2022). When I say...Health equity. Medical Education.1-2 doi: 10.1111/medu.14962. Article available at <https://onlinelibrary.wiley.com/doi/10.1111/medu.14962>
Tyriss J, Gourishankar A, Ward M.C., Kachroo N, Teach SJ, Parikh K. (2022). Social determinants of health and at-risk rates for pediatric asthma morbidity. Pediatrics published online: July 25, 2022 (doi: 10.1542/2020-000123)

Nwaozuru, U., Obiezu-Umeh, C., Diallo, H., Graham, D., Bourgeau, M.J., Ritchwood, T., Nelson, L.E., Whembolua, G., Ward, M.C., Conserve, D. F. (2022). Perceptions of COVID-19 self-testing and recommendations for implementation and scale-up among Black/African Americans: implications for the COVID-19 STEP project. BMC Public Health 22, 1220. <https://doi.org/10.1186/s12889-022-13619-6>

*** 5. Sponsor's Research Focus:**

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T4: Translation to Population Health

*** 7. Hypotheses (200 word limit)**

Given that there is no oversight or monitoring of how faculty heed curriculum guidelines: -we anticipate that there will be case studies that continue to present race as part of the medical history (as opposed to the social history). -we also anticipate that there will be case studies that may unintentionally reify stereotypes when representing health disparities impacting socially disadvantaged populations.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

The medical student will review up to 150 PowerPoint slides uploaded to Panopto to assess if case studies follow the SMHS curriculum guidelines on how to present race and other social identities, along with the social and structural determinants of health.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

Over the course of the summer 2022, the medical student will: -review the SMHS curriculum guidelines -create a checklist that represent the SMHS curriculum guidance -access any medical school course PowerPoint slide deck uploaded to Panopto that includes a case study with a social and medical history -complete the checklist for each downloaded slide deck with case study/ies -write a report summarizing the findings, including data visualizations (with a set of recommendations) -present orally to the Office of Diversity and Inclusion (which is the office funding this student position with a \$1000 honorarium)

*** 10. Describe the student's role in the project (200 word limit)**

The medical student will review the SMHS curriculum guidelines and create an assessment checklist to reflect the guidance. They will review the case studies presented on slides uploaded to Panopto to assess if, and how, medical student courses are adhering to and falling short of these recommendations. The student will prepare a report of their findings that we will present to the SMHS Office of Diversity and Inclusion's Associate Dean Grace Henry (who served as one of the co-authors of these guidelines).

*** 11. Describe the mentor's role in the project. (200 word limit)**

I am the PI on three studies. I am used to mentoring students by introducing them to research, challenging and supporting them with meaningful work and fielding their questions along the way. I host weekly team meetings and I schedule one-on-one meetings with students to ensure they have adequate resources and support they need to fulfill their scope of work.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

I have mentored a medical student (Julia Xavier) as part of my CORE HEALTH research lab for the last 3 semesters. She presented at the Medical Student Poster Day and she co-authored a poster presentation for the Association of American Colleges of Nursing Diversity Summit. I added Julia to a externally granted funded project as a senior research assistant and have recently hired a new medical student (Bobga Gang) on an internally funded health equity study. More details on my lab can be found here: <https://corehealth.smhs.gwu.edu/>

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected No (Not Required)

Please specify why it is not required.

This is not human subjects research.

Faculty Proposal for MD Student Research by Briony Varda

* 1. Faculty Sponsor

* Name: Briony Varda
* Degrees: MD, MPH
* Title: Assistant Professore, Pediatrics & Urology
* Organization: Childrens National
* Address: 111 Michigan Ave. NW
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* City: Washington
* State: DC
* Zipcode: 20012
* Office Phone: 612-578-9877
* Email Address: bvarda@childrensnational.org

* 2. Daily Supervisor

Name: Teresa Russell
Degrees: MS
Title: Senior Research Coordinator
Organization: Children's National
Address: 111 Michigan Ave NW
Apt/Suite:
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Zipcode: 20012
Office Phone: 612-578-9877
Email Address: bvarda@childrensnational.org

* 3. Project Title (250 character limit)

Unplanned healthcare use and missed visits among children with spina bifida: the intersection between clinical complexity and social determinants of health

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Varda BK, Johnson EK. What the editors are reading: Population and health services. J Pediatr Urol. 2022 Apr;18(2):239-242. doi: 10.1016/j.jpuro.2022.02.024.

Lee T, Varda BK, Venna A, McCarthy I, Logvinenko T, Nelson CP. Changes in Clinical Presentation and Renal Outcomes among Children with Febrile Urinary Tract Infection: 2005 vs 2015. J Urol. 2021 Jun;205(6):1764-1769.

Jacobs SE, Tiusaba L, Al-Shamaileh T, Bokova E, Russell TL, Ho CP, Varda BK, Pohl HG, Mayhew AC, Gomez-Lobo V, Feng C, Badillo AT, Levitt MA. Fetal and Newborn Management of Cloacal Malformations. Children (Basel). 2022 Jun 14;9(6):888.

*** 5. Sponsor's Research Focus:**

Yes - Emergency Medicine

Yes - Surgery

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T4: Translation to Population Health

*** 7. Hypotheses (200 word limit)**

Both clinical complexity and adverse social determinants of health are factors that contribute to increased use of the Emergency Room, hospital admissions and missed outpatient clinic visits among children with Spina Bifida.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

Using a multi-center national registry, we aim to investigate the rates of hospital admission among children with Spina Bifida presenting to the Emergency Room in the U.S. and to identify both clinical and non-clinical factors associated with admissions with a special focus on the intersection of social determinants of health with clinical complexity. Project goal is for the student to: 1) Learn how to clean data from a large dataset derived from a multi-center registry (PHIS) with outcomes focused on hospital admissions 2) Calculate basic descriptive statistics (e.g. median, range, frequencies, proportions, etc.) and summarizes some initial observations related to the data 3) Generate a project proposal with the support of Dr. Varda 4) Present a proposal and cleaned data set to our department statistician 5) Review statistical results with Dr. Varda and learn to summarize the finding through writing, tables and graphics. 6) Write an abstract to submit to an academic meeting 7) Draft a manuscript within the next academic year

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

Summer (weeks 1-3): 1) Clean data from a large dataset derived from a multi-center registry (PHIS) 2) Calculate basic descriptive statistics (e.g. median, range, frequencies, proportions, etc.) and summarizes some initial observations related to the data 3) Generate a project proposal with the support of Dr. Varda 4) Present a proposal and cleaned data set to our department statistician Summer (weeks 4-8): 5) Review statistical results with Dr. Varda and learn to summarize the finding through writing, tables and graphics. Fall: 6) Write an abstract to submit to an academic meeting End of Academic Year: 7) Draft a manuscript

*** 10. Describe the student's role in the project (200 word limit)**

Students with experience using excel, SAS or R statistical packages will be highly favored. Experience with the Pediatric Health Information Service (PHIS) dataset is a plus. 1) Learn how to clean data from a large dataset derived from a multi-center registry (PHIS) with outcomes focused on hospital admissions 2) Calculate basic descriptive statistics (e.g. median, range, frequencies, proportions, etc.) and summarizes some initial observations related to the data 3) Generate a project proposal, including a clear objective, with the support of Dr. Varda 4) Present a proposal and cleaned data set to our department statistician 5) Review statistical results with Dr. Varda and learn to summarize the finding through writing, tables and graphics. 6) Write an abstract to submit to an academic meeting 7) Draft a manuscript within the next academic year

*** 11. Describe the mentor's role in the project. (200 word limit)**

Support the student in each step of the project through meetings and discussion. Provide feedback on student work in progress talks, commentary on written work. Provide didactics regarding the steps of research project development, including writing an object, abstract, manuscript, basic statistics, etc. Past students have indicated they really enjoy these sessions and take away a new skill set at the end of the Summer. Mentorship regarding academic medicine and career goals. Support for students seeking to advance statistics abilities and the use of stats packages (such as SAS or R). Student will attend meetings with current research and clinical fellows to see examples of varying levels of ability related to conducting research and to observe and understand what academic Health Services research looks like. Dr. Varda loves to have students shadow in the clinic and the OR!

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

Seven prior students. All received either the Gill, Health Services or Fourcroy research grants. All had abstracts for submission. All have manuscripts in draft form or in submission at this time. Dr. Varda provides didactic sessions where she speaks about various aspect of the research project process, particularly as it relates to Health Services Research. The students have indicated they really enjoy these sessions and take away a new skill set at the end of the Summer.

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected Yes

Please provide IRB number and date

*** IRB Number:** Pro000-15735

*** IRB Date:** 10/25/2021

Faculty Proposal for MD Student Research by Andrew Meltzer

* 1. Faculty Sponsor

* Name: Andrew Meltzer
* Degrees: MD, MS
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* Email: Ameltzer@mfa.gwu.edu
Address:

* 2. Daily Supervisor

Name:
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

* 3. Project Title (250 character limit)

Cannabinoid Hyperemesis Syndrome Survey

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Marko KI, Ganju N, Krapf JM, Gaba ND, Brown JA, Benham JJ, Oh J, Richards LM, Meltzer AC A Mobile Prenatal Care App to Reduce In-Person Visits: Prospective Controlled Trial JMIR Mhealth Uhealth 2019;7(5):e10520

Meltzer, A. C., Limkakeng, A. T., Gentile, N. T., Freeman, J. Q., Hall, N. C., Vargas, N. M., et al. (2021). Risk stratification with video capsule endoscopy leads to fewer hospital admissions in emergency department patients with low-risk to moderate-risk upper gastrointestinal bleed: A multicenter clinical trial. *J. Am. Coll. Emerg. Physicians Open* 2021 (5), e12579. doi:10.1002/emp2.12579

Meltzer, AC, Newton, S, Lange, J, et al. A randomized control trial of a multiplex gastrointestinal PCR panel versus usual testing to assess antibiotics use for patients with infectious diarrhea in the emergency department. *JACEP Open*. 2022; 3:e12616. <https://doi.org/10.1002/emp2.12616>

*** 5. Sponsor's Research Focus:**

Yes - Gastroenterology

Yes - Emergency Medicine

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T0/T1: Basic Science Discovery and Initial Translation to Humans

*** 7. Hypotheses (200 word limit)**

We hypothesize that patients who have CHS and continue to use marijuana will screen positive for risky use on an ASSIST screening. If our hypothesis is not rejected, then we will implement a virtual drug counseling and cessation program aimed at these patients in a future arm of this study.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

Cannabis (marijuana) is the most commonly used illicit drug in the United States (US) with over 30 million past month users in 2019. Risky cannabis use is generally defined as using cannabis at a daily or near-daily frequency over the past year. Cannabinoid hyperemesis syndrome (CHS) is a debilitating condition associated with risky cannabis use which can lead to significant morbidity due to unremitting vomiting, abdominal pain, severe dehydration, electrolyte abnormalities, renal failure and even death. CHS is the most common cannabis-related cause of US emergency department (ED) visits and there is currently no well-defined treatment. In a recent survey, 32.9% of ED patients who smoked cannabis 20 or more days per month suffered from CHS, and the incidence of CHS nearly doubled after state legalization of cannabis. The disease is costly due to repeat ED visits, multiple hospital admissions, and serial laboratory and imaging tests. The purpose of this project is to understand the patterns of marijuana use that lead to the development of CHS and to understand the patterns of marijuana use in patients with a known history of CHS. The counseling for patients with CHS is to cease use of marijuana and this study will allow us to know what percentage of patients actually do this, and to what degree patients with CHS still develop symptoms with repeated use.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars

- **The project fulfills discovery/original research**

This study will take place over a 2-month timeframe over the summer with preliminary data analysis conducted at the end of the summer. The study population will include people who have experienced or are experiencing cannabinoid hyperemesis syndrome who are over the age of 18. Study procedures are as follows: 1. Patients will be identified by clinicians in the Emergency Department or via self-identified online support groups. 2. The patients will complete an on-line survey. 3. Study data will be securely kept in electronic data capture system, RedCap. The research results will be used to better understand the cannabis use patterns of patients who have suffered from or are suffering from CHS. It will allow us to know what proportion of patients who use marijuana and develop CHS and additionally will allow us to know what proportion of patients diagnosed with CHS continue to use marijuana and what their use patterns are. By understanding these patterns of use, and whether patients with CHS continue using marijuana and suffering from CHS symptoms, we will know if there is a need for marijuana cessation programs targeted at this patient population to reduce patient suffering and unnecessary healthcare spending and ED visits.

- * **10. Describe the student's role in the project (200 word limit)**

Student will spend 20 hours per week in the Emergency Department screening and enrolling patients for primary project and related secondary projects. During this time, the student will be directly involved in collecting patient level data, obtaining informed consent, applying inclusion criteria, in addition to randomization, sample collection and research intervention where applicable. Outside of their time in the ED, student will be mentored in the methodology and ethical conduct of clinical research, in addition to the basics of data management, data analysis, and manuscript preparation. Student will be an integral part of a large ED Research team which includes multiple faculty members and research staff. Weekly team meetings plus additional ad hoc meetings will be held. Gill students from recent years have all gone on to publish in peer-reviewed journals and/or present their data at national conferences.

- * **11. Describe the mentor's role in the project. (200 word limit)**

Mentor is a full professor and practicing clinician at United Medical Center ED and GW ED who also leads a large research portfolio of studies funded by NIH, CDC and industry. The mentor will be available on site and will meet with student individually and in group settings throughout the week. Mentor has ten plus years of experience with students and prioritizes career development of student and providing students with meaningful experiences and not "grunt work."

- * **12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

Recent mentees and peer-reviewed publications - Sophia Newton (MS4) A randomized control trial of a multiplex gastrointestinal PCR panel versus usual testing to assess antibiotics use for patients with infectious diarrhea in the emergency department. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8760946/> - Ben Zollinger (MS4) Factors associated with clinical severity in Emergency Department patients presenting with symptomatic SARS-CoV-2 infection <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7743088/> - Michael Makutonin (MS3) -- 1st Author Patients with complicated gallstone disease in the emergency department: clinical impact and cost-effectiveness of emergency department disposition decision <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9562831/> - Kayla Authelet, BS MS4 Factors associated with clinical severity in emergency department patients presenting with symptomatic SARS-CoV-2 infection <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8240469/>

* 13. Do you have or will you obtain IRB approval for this project?

Please note: Students cannot begin a human subjects project without IRB approval.

* (Please select ONE)

Selected No (Pending)

Faculty Proposal for MD Student Research by Amanda Castel, Melissa McCarthy, Natasha Powell

* 1. Faculty Sponsor

* Name: Amanda Castel, Melissa McCarthy, Natasha Powell
* Degrees: Castel-MD, MPH McCarthy- PhD, MPH Powell, MD, MPH
* Title: Professor, Professor, Assistant Professor
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* Apt/Suite:
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* State: DC
* Zipcode: 20052
* Office Phone: 2029948325
* Email Address: acastel@gwu.edu

* 2. Daily Supervisor

Name: Amanda Castel
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Title: Professor
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Address: 950 New Hampshire Ave NW, 5th floor
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Office Phone: 2029948325
Email Address: acastel@gwu.edu

* 3. Project Title (250 character limit)

Evaluating the Feasibility and Willingness to Start Pre-Exposure Prophylaxis (PrEP) in an Emergency Department Setting

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Aronson B, Kulie P, Castel AD, Powell NN, McCarthy M. Evaluating Patient Perceptions on PrEP Screening and Referral in the Acute Care Setting. AIDS Behav. 2022 Oct 11. doi: 10.1007/s10461-022-03839-7. Epub ahead of print. PMID: 36219272

Kulie P, Castel AD, Zheng Z, Powell NN, Srivastava A, Chandar S, McCarthy ML. Targeted Screening for HIV Pre-Exposure Prophylaxis Eligibility in Two Emergency Departments in Washington, DC. AIDS Patient Care STDS. 2020 Dec;34(12):516-522. doi: 10.1089/apc.2020.0228. PMID: 33296271; PMCID: PMC7869869.

Siegler AJ, Mehta C, Mouhanna F, Mera Giler R, Castel AD, Pembleton E et al. Policy and County-Level Associations with HIV Preexposure Prophylaxis Use, United States, 2018. Ann Epidemiol. 2020;45:24-31.e3. doi:10.1016/j.annepidem.2020.03.013.

*** 5. Sponsor's Research Focus:**

Yes - Infectious Disease

Yes - Emergency Medicine

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T3: Translation to Practice

*** 7. Hypotheses (200 word limit)**

We will prospectively screen and enroll 1,500 GWUH ED patients with chief complaints or diagnostic tests ordered in the ED indicative of HIV risk. We will offer PrEP education, a 10-day starter pack of Truvada/Descovy and arrange a follow-up appointment with a community PrEP provider (CPP) to those who are determined to be PrEP eligible. For PrEP eligible patients who decline to start PrEP in the ED, we will offer to arrange a referral visit to a community PrEP provider. Among those who start PrEP in the ED or are referred to a community PrEP provider, we will conduct surveys and/or chart abstraction to measure 1-month PrEP uptake, 4-month PrEP retention and 6-month PrEP persistence. Hypothesis 1A. 25% of ED patients who screen eligible for PrEP will start PrEP in the ED. Hypothesis 1B. At 1 month, 40% of PrEP eligible patients will have a current PrEP prescription. Hypothesis 1C. At 4 months, 24% of PrEP eligible patients will have a current PrEP prescription.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

Measurable objective: Screen 150 patients, enroll 15 patients, complete 15 follow-up phone calls

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

We are conducting a prospective study to assess PrEP uptake in the DC and to conduct an implementation evaluation. The Gill Fellow (functioning as a research assistant) will use the ED tracking board to screen potential patients based on selected chief complaints and/or diagnostic tests ordered. Participants will be considered PrEP eligible if they meet any of the following criteria based on the screening survey or diagnostic tests completed in the ED: (1) serodiscordant partner; (2) history of condomless sex in the past 6 months with a partner of unknown HIV status; (3) self-reported STI within the past 6 months or STI test ordered in the ED; (4) active injection drug user; (5) commercial sex worker or anyone who exchanges sex for goods; (6) HIV test ordered that is not related to an occupational exposure; (7) PrEP request; or (8) a negative pregnancy test. We will conduct a brief educational and motivational counseling session about PrEP among PrEP-eligible patients and encourage them to try it. For those starting PrEP in the

ED, we will conduct baseline laboratory tests to rule out any contraindications and to start STI treatment if necessary. All participants will complete two rapid HIV tests in the ED to confirm HIV negative status. The ED provider will also order STI testing for those patients not already being tested, a pregnancy test for female participants, and a point of care serum creatinine test. If either rapid HIV test is positive, the patient is pregnant or has a creatinine clearance level (CrCL) <30 mL/min, the ED provider will not give a starter pack to the patient. Instead, the patient will be linked to an appropriate provider for follow-up. If there are no medical contraindications to PrEP, the RA will provide brief HIV prevention and PrEP medication counseling to include proper dosing, missed doses, review of medication side effects and efficacy, risk reduction counseling, and the need to follow-up with a community provider. After counseling, the ED provider will participants a 10-day starter pack of Descovy or Truvada to cover them until they see a community provider. The RA will make a 1-week follow-up appointment with the provider before the participant leaves the ED. For PrEP eligible participants who decline to start PrEP in the ED, the RA will offer them the option to start PrEP with a community provider. One, 4 and 6-months after the ED visit, RAs will call participants who agreed to start PrEP in the ED or in the community to complete a follow-up survey. We will also ask participants who are on PrEP at 4-months to complete a dried blood spot test so that we can obtain an objective measure of PrEP adherence.

*** 10. Describe the student's role in the project (200 word limit)**

The student will screen the ED tracking board for eligible patients, enroll/consent eligible patients, complete chart abstractions, be trained on and perform OraQuick rapid HIV tests, perform dried blood spot testing for TDF levels and complete follow-up surveys. They may help with data management and preliminary analyses of the data for preparation for an abstract or manuscript submission.

*** 11. Describe the mentor's role in the project. (200 word limit)**

The study PIs will provide mentorship to the student and teach them about HIV, the conduct of clinical research and implementation science. The student will work closely with the study coordinator, who will provide training and guidance in day to day study management. The student will also work closely with the staff in the ED including the Research Assistants, and the designated PrEP Navigator to conduct the study activities.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

Dr. Castel mentored a Gill fellow in 2009 who did a project on HIV and cancer. Dr Castel has a secondary appointment in the School of Medicine and is an annual faculty contributor as a presenter or moderator in the HIV Summit since 2014 during which time she works closely with medical students. Drs. Castel and McCarthy serve as advisors for student practicums and masters theses in the MPH program, as well as on dissertation committees for doctoral dissertations. Dr. Powell regularly mentors medical students and emergency medicine residents both at GW and at institutions in India.

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected Yes

Please provide IRB number and date

* IRB Number: NCR213868

* IRB Date: 3/23/22

Faculty Proposal for MD Student Research by Jason Triplett, PhD

* 1. Faculty Sponsor

* Name: Jason Triplett, PhD
* Degrees: B.S. - Xavier University (OH) Ph.D. - Indiana University School of Medicine
* Title: Associate Professor
* Organization: Children's National Hospital
* Address: 111 Michigan Ave, NW
* Apt/Suite: Center for Neuroscience Research,
* City: Washington
* State: DC
* Zipcode: 20010
* Office Phone: 202-476-3985
* Email Address: jtriplett@childrensnational.org

* 2. Daily Supervisor

Name:
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

* 3. Project Title (250 character limit)

Rescuing visual circuit disruption in fragile X syndrome

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Su J, Sabbagh U, Liang Y, Olejníková L, Dixon KG, Russell AL, Chen J, Pan, YA, Triplett JW, Fox MA. A cell-ECM mechanism for connecting the ipsilateral eye to the brain. Proc Natl Acad Sci USA. 2021 Oct 19;118(42):e2104343118. PMCID: PMC8545493

Russell AL, Dixon KG, and Triplett JW. Diverse modes of binocular interactions in the mouse superior colliculus. J Neurophysiol 2022 Apr 1;127(4):913-927. PMID: 35294270

Johnson KO, Harel L, and Triplett JW. Post-synaptic NMDA receptor expression is required for visual corticocollicular projection refinement in the mouse superior colliculus. in revision. J Neurosci in press

*** 5. Sponsor's Research Focus:**

Yes - Ophthalmology

Yes - Neurology

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T0/T1: Basic Science Discovery and Initial Translation to Humans

*** 7. Hypotheses (200 word limit)**

Sensory dysfunction is a common co-morbid condition with many neurodevelopmental disorders (NDDs), presenting an attractive therapeutic target that could have reverberating impacts on many aspects NDDs. However, there is a significant gap in our understanding of the etiology of sensory dysfunction in NDDs, precluding the development of effective therapies. To bridge this gap, we previously investigated visual circuit organization and function in a model of fragile X syndrome (FXS). We found deficits in visual function in the superior colliculus (SC), a critical midbrain nucleus. Intriguingly, our preliminary data suggests that inputs to the SC from the primary visual cortex (V1) develop normally in FXS mice but then degrade after the onset of visual experience. These data raise the exciting possibility that sensory experience is required for the maintenance of circuitry and could also be exploited to rescue deficits observed in FXS mice. To test this possibility, we will subject FXS mice to an enriched visual environment and observe impacts on SC circuitry using in vivo electrophysiological approaches.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

Goal: To determine the impact of environmental enrichment on SC circuit function in control and FXS mice. Objectives: 1) Utilize computer-assisted receptive field mapping to determine the function of visual neurons in the SC. In order to achieve statistical confidence, at least 70 visually-responsive neurons from at least 10 mice in each group will be characterized. Importantly, the collection of these data is feasible in the time frame proposed and would represent a complete publishable unit of potentially high impact.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

These experiments will leverage techniques and analyses that are well-established in the Triplett lab and, thus, have a high probability of success. Briefly, high density silicon multi-electrodes will be placed in the SC and neuronal signals acquired while a battery of visual stimuli is presented. Receptive field properties will be determined post hoc using custom software. Importantly, all mouse lines and reagents are present in the laboratory, reducing any potential delays in the performance of experiments. These experiments represent original, cutting-edge investigations and are likely to yield high-impact results that will be of broad interest to the neuroscience community. Timeline: After a brief period of training to master the techniques (2-3 weeks), we

expect that the experiments outlined will take approximately 1.5 months to complete, including the collection and analyses of all data. The preparation of a manuscript is expected to take another month.

*** 10. Describe the student's role in the project (200 word limit)**

Student will perform all experimental techniques, collect and analyze data, interpret results in collaboration with mentor, and present the findings in written/oral/poster format as appropriate.

*** 11. Describe the mentor's role in the project. (200 word limit)**

The mentor or oversee the training of the student in experimental techniques, meet regularly with the student to discuss results and troubleshoot experiments, and aid in the preparation of data for dissemination to the community as a paper, talk, and/or poster. Importantly, the Triplett lab is relatively small, allowing for frequent interactions between the mentor and all members of the lab.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

I have previously mentored one Gill fellow in the lab (Mohib Khan).

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected No (Not Required)

Please specify why it is not required.

Research is in animal models. We have IACUC approval for these studies.

Faculty Proposal for MD Student Research by Amanda Castel, MD, MPH and Anne Monroe, MD, MSPH

*** 1. Faculty Sponsor**

* Name: Amanda Castel, MD, MPH and Anne Monroe, MD, MSPH
* Degrees: Amanda Castel, MD, MPH and Anne Monroe, MD, MSPH
* Title: Professor and Associate Professor
* Organization: GW Milken Institute School of Public Health
* Address: 950 New Hampshire Ave NW
* Apt/Suite: Room 507
* City: Washington
* State: DC
* Zipcode: 20052
* Office Phone: 202-994-0251
* Email Address: amonroe@gwu.edu

*** 2. Daily Supervisor**

Name: same as above
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

*** 3. Project Title (250 character limit)**

Examining the Association Between VACS Index and HIV Outcomes Among D.C. Cohort Participants

*** 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.**

Monroe AK, Xiao J, Greenberg AE, Levy ME, Temprowsa M, Resnik JB, Castel AD; DC Cohort Executive Committee. Risk of Severe COVID-19 Disease and the Pandemic's Impact on Service Utilization Among a Longitudinal Cohort of Persons with HIV-Washington, DC. AIDS Behav. 2022 Oct;26(10):3289-3299. doi: 10.1007/s10461-022-03662-0. Epub 2022 Apr 13. PMID: 35416594; PMCID: PMC9005919.

Monroe AK, Happ LP, Rayeed N, Ma Y, Jaurretche MJ, Terzian AS, Trac K, Horberg MA, Greenberg AE, Castel AD. Clinic-Level Factors Associated With Time to Antiretroviral Initiation and Viral Suppression in a Large, Urban Cohort. Clin Infect Dis. 2020 Oct 23;71(7):e151-e158. doi: 10.1093/cid/ciz1098. PMID: 31701144; PMCID: PMC7583410.

Happ LP, Monroe AK, Young HA, Ma Y, Greenberg AE, Horberg MA, Castel AD; DC Cohort Executive Committee. Individual-Level and Clinic-Level Factors Associated With Achieving Glycemic Control in a Large Cohort of People With HIV in Care-Washington, DC. J Acquir Immune Defic Syndr. 2020 Sep 1;85(1):113-122. doi: 10.1097/QAI.0000000000002416. PMID: 32541383; PMCID: PMC8011340.

*** 5. Sponsor's Research Focus:**

Yes - Infectious Disease

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T3: Translation to Practice

*** 7. Hypotheses (200 word limit)**

The setting of this study is the DC Cohort, an ongoing longitudinal cohort study of over 11,800 consenting people living with HIV (PLWH) receiving care at fourteen clinical sites in the District of Columbia. The overall goal of the DC Cohort is to improve the quality of care and treatment for PLWH. The VACS Index

(<https://medicine.yale.edu/intmed/vacs/cohorts/vacsresources/vacsindexinfo/>) has been associated with various clinical outcomes, and the objective of this project is to examine the association between VACS Index and HIV care outcomes (HIV care utilization and viral suppression). We hypothesize that individuals with the highest VACS Index Scores would have the most utilization, which would reflect highest usage by the sickest individuals. We also hypothesize that individuals with the highest VACS Index Scores will be most likely to be virally suppressed as they will have high care engagement.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

Measurable objectives: Complete analysis, publish manuscript

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

This will be a longitudinal analysis to assess the relationship between VACS Index and HIV care outcomes. The DC Cohort Study is an ongoing research project that started in 2011. It gathers data from people receiving HIV care in fourteen clinics in DC. Clinical data, including labs, diagnoses, and encounters, are extracted automatically from the electronic medical record (EMR) with minimal manual data extraction of demographic and HIV transmission risk factor data. The VACS Index will be calculated for each person and updated over time. The association between

VACS Index and HIV outcomes will be determined. The time frame is 2-4 weeks for analysis, 2-4 weeks for manuscript preparation

*** 10. Describe the student's role in the project (200 word limit)**

Student will collaborate closely with team to complete data analysis and publish manuscript. In addition, the student will assist with other data-cleaning related tasks to be determined by the PI, project director, and staff at the GW Biostatistics Center.

*** 11. Describe the mentor's role in the project. (200 word limit)**

The student will work with the Study PI (Castel), Project Director (Monroe) and one of our Research Analysts who mentor them through the process of designing a hypothesis driven analysis for submission at a scientific conference and/or submission in the peer-reviewed literature.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

The DC Cohort serves as a resource not only for HIV investigators and community members but is also a resource for trainees at various levels. In the past 2 years, we have had one infectious disease fellow , three medical residents , one PA student , one post-doctoral fellow , six doctoral students and 9 masters-level students use the DC Cohort data to further their various academic and training requirements. Dr. Castel mentored a Gill fellow in 2009 who did a project on HIV and cancer. Both faculty also mentor students through the annual HIV Summit at the medical school. Dr. Monroe has mentored a GW medical student for her Community Health/Urban Health Scholarly Concentration project focused on HIV+ individuals with homelessness/housing instability. The resulting project, "Examining Retention in HIV Care and HIV Suppression on Housing Services Intake at a Washington, DC Community Based Organization" combined HIV surveillance data from DC HAHSTA with Housing Counseling Services (CBO) data and was published in the Journal of Community Health.

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected No (Not Required)

Please specify why it is not required.

The parent study (DC Cohort) is IRB approved and this analysis would fall under the IRB approval. The student will need to submit CITI and HIPS to be added to the IRB for the parent study.

Faculty Proposal for MD Student Research by Anita Krishnan

* 1. Faculty Sponsor

* Name: Anita Krishnan
* Degrees: MD, (MBA/certificate of clinical and translational research in progress)
* Title: Associate Professor of Pediatrics
* Organization: Children's National Hospital
* Address: 111 North Michigan AvenueNW
* Apt/Suite:
* City: Washington
* State: DC
* Zipcode: 20010
* Office Phone: 202-476-6552
* Email Address: akrishna@childrensnational.org

* 2. Daily Supervisor

Name: Alix Fetch
Degrees: PhD
Title: Research Manager
Organization: Children's National
Address: 111North Michigan Avenue NW
Apt/Suite:
City: Washington
State: DC
Zipcode: 20010
Office Phone:
Email Address:

* 3. Project Title (250 character limit)

Development of a portable beat to beat fetal electrocardiography device

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Frequency-Based Maternal Electrocardiogram Attenuation for Fetal Electrocardiogram Analysis. Roshanitabrizi P, Krishnan A, Ingbar C, Salvador T, Zhang A, Donofrio MT, Govindan R. Ann Biomed Eng. 2022 Jul;50(7):836-846. doi: 10.1007/s10439-022-02959-4. Epub 2022 Apr 11. PMID: 35403976

Feasibility of Non-invasive Fetal Electrocardiographic Interval Measurement in the Outpatient Clinical Setting. Doshi AN, Mass P, Cleary KR, Moak JP, Funamoto K, Kimura Y, Khandoker AH, Krishnan A. Pediatr Cardiol. 2019 Aug;40(6):1175-1182. doi: 10.1007/s00246-019-02128-w. Epub 2019 Jun 6. PMID: 31172229

Noninvasive Fetal Electrocardiography in the Diagnosis of Long QT Syndrome: A Case Series. Sethi N, Funamoto K, Ingbar C, Mass P, Moak J, Wakai R, Strasburger J, Donofrio M, Khandoker A, Kimura Y, Krishnan A. Fetal Diagn Ther. 2020;47(9):711-716. doi: 10.1159/000508043. Epub 2020 Jul 2. PMID: 32615554

*** 5. Sponsor's Research Focus:**

Yes - Cardiology

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T2: Translation to Patients

*** 7. Hypotheses (200 word limit)**

A portable version of a beat to beat fetal electrocardiography system will have comparable or superior performance on signal quality metrics in visualizing the fetal electrocardiogram to our current research prototype (cart sized).

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

We will build on previously NIH R21 supported work evaluating the feasibility of visualizing the fetal electrocardiogram using a novel signal processing method. We have submitted an NIH STTR grant to begin testing a smaller portable version of the device which can be applied in low resource settings to identify fetuses at risk for stillbirth. The primary goal is to perform bench testing in 10 patients of the portable and cart based systems sequentially and identify whether signal processing performance is comparable (loss function and clinical quality grading). We will also optimize the current user interface.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

Fetuses and infants that receive timely detection and therapy of most arrhythmias have survival rates as high as 96%, but frequently are detected incidentally during routine obstetric evaluations after compromise has occurred. Electrocardiography is the gold standard diagnostic test for arrhythmias, but existing fetal electrocardiogram (fECG) devices have not been able to reliably measure cardiac time intervals (CTIs) including the QT interval in the second and third trimester of pregnancy. In previous work supported by NICHD and philanthropy, we have developed a novel fetal ECG device. The proposed project is to convert this early prototype to a portable, laptop-sized, low-cost device and to bench test the resulting device. The student will work with the team to build a miniaturized fetal ECG system using components already purchased. They will also explore alternative signal acquisition systems and do a literature review related to optimizing signal acquisition in complex conditions. If the student has coding experience they can work with the team on aspects of the user interface. They will then bench test the portable device and compare both signal quality and clinician judgement of the signals using methodology we have

previously developed. We will identify whether our novel system performs as well as or in a superior fashion on two metrics (signal quality and clinician interpretation of quality).

*** 10. Describe the student's role in the project (200 word limit)**

This project requires an engineering background, preferably electrical or mechanical and ability to work with MatLab. Signal processing toolbox familiarity is helpful but not required. The student will assist in enrolling patients under mentor supervision, performing fetal electrocardiograms with assistance, preparing/post processing datasets from 10 patients, and obtaining clinician grading. The student will be guiding in performing statistical analysis comparing the current and new system. The student will prepare an abstract and be supported to present at a national meeting.

*** 11. Describe the mentor's role in the project. (200 word limit)**

The mentor will work closely with the trainee to develop and conduct the study. Dr. Krishnan collaborates with experienced engineers and scientists in the Sheikh Zayed Institute who will also be resources to the conduct of the study. Dr. Krishnan will aid the student in performing the ECGs, interpreting data, performing literature searches, assisting in coding of the user interface, and abstract and manuscript prep. The student can attend lectures within the Pediatric Cardiology Division or Summer Intern Lecture Series at Children's National.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

I have supported two previous Health Service Scholars, both of whom have gone on to present and publish their work and pursue careers in academic medicine.

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected Yes

Please provide IRB number and date

* IRB Number: PR 7309

* IRB Date: as of 11/10/2022

Faculty Proposal for MD Student Research by lia losonczy

* 1. Faculty Sponsor

* Name: lia losonczy
* Degrees: MD, MPH
* Title: Assistant Prof
* Organization: SMHS
* Address: 2120 L Street NW
* Apt/Suite:
* City: Washington
* State: DC
* Zipcode: 20037
* Office Phone: 9149129063
* Email Address: lia.losonczy@gmail.com

* 2. Daily Supervisor

Name:
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

* 3. Project Title (250 character limit)

Core Critical Care Competencies by Residency Training: Comparing EM, IM, Surgery, and Anesthesiology

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Losonczy LI, Papali A, Kivlehan S, Calvello Hynes EJ, Calderon G, Laytin A, Moll V, Al Hazmi A, Alsabri M, Aryal D, Atua V, Becker T, Benzoni N, Dippenaar E, Duneant E, Girma B, George N, Gupta P, Jaung M, Hollong B, Kabongo D, Kruisselbrink RJ, Lee D, Maldonado A, May J, Osei-Ampofo M, Osman YO, Owoo C, Rouhani SA, Sawe H, Schnorr D, Shrestha GS, Sohoni A, Sultan M, Tenner AG, Yusuf H, Adhikari NK, Murthy S, Kissoon N, Marshall J, Khoury A, Bellou A, Wallis L, Reynolds T. White Paper on Early Critical Care Services in Low Resource Settings. Ann Glob Health. 2021 Nov 3;87(1):105. doi: 10.5334/aogh.3377. PMID: 34786353; PMCID: PMC8570193.

Lim AG, Kivlehan S, Losonczy LI, Murthy S, Dippenaar E, Lowsby R, Yang MLCLC, Jaung MS, Stephens PA, Benzoni N, Sefa N, Bartlett ES, Chaffay BA, Haridasa N, Velasco BP, Yi S, Contag CA, Rashed AL, McCarville P, Sonenthal PD, Shukur N, Bellou A, Mickman C, Ghatak-Roy A, Ferreira A, Adhikari NK, Reynolds T. Critical care service delivery across healthcare systems in low-income and low-middle-income countries: protocol for a systematic review. *BMJ Open*. 2021 Aug 30;11(8):e048423. doi: 10.1136/bmjopen-2020-048423. PMID: 34462281; PMCID: PMC8407204.

Losonczy LI, Barnes SL, Liu S, Williams SR, McCurdy MT, Lemos V, Chandler J, Colas LN, Augustin ME, Papali A; Research and Education consortium for Acute Care in Haiti (REACH) Study Group. Critical care capacity in Haiti: A nationwide cross-sectional survey. *PLoS One*. 2019 Jun 13;14(6):e0218141. doi: 10.1371/journal.pone.0218141. PMID: 31194795; PMCID: PMC6565360.

*** 5. Sponsor's Research Focus:**

Yes - Anesthesiology

Yes - Emergency Medicine

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T4: Translation to Population Health

*** 7. Hypotheses (200 word limit)**

Emergency medicine trainees have a different training experience in residency than internal medicine, anesthesia, or general surgery residents who pursue critical care fellowships and will therefore likely have different needs for fellowship training to be a competent intensivist.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

Critical Care Fellowship programs are integral in training competent physicians to work in Intensive Care Units. However, there is significant heterogeneity in the skills that residency trained physicians bring with them when they begin fellowship because Critical Care Fellows may have trained in either Emergency Medicine, Internal Medicine, Surgery, or Anesthesiology. The goal of our study is to evaluate the skills fellowship trainees who are coming from Emergency Medicine have and compare that to other residency-trained doctors entering their Critical Care Fellowships. To accomplish this goal, we plan to conduct an online survey of Critical Care Fellowship Directors. We will ask them about how their trainees perform as several different key competencies such as airway management, use of vasoactive medications, and palliative care.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

Data will be analysed for each individual core competency in the survey using multiple linear regression models to identify difference in response between Emergency Medicine trainees and IM, Surgery, and Anesthesia trainees. With appropriate power, results will be stratified based on which specialty the Fellowship Program's is accredited by.

*** 10. Describe the student's role in the project (200 word limit)**

Student would help collect data, potentially analyze data and write manuscript if interested

*** 11. Describe the mentor's role in the project. (200 word limit)**

Mentor will be lead on project in all aspects. Will help mentor student on how to collect data and gather background information and possibly analyze data and write manuscript

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

I have mentored many medical students, teach two courses at the SMHS, and am the clerkship director for the CC AI.

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected No (Pending)

Faculty Proposal for MD Student Research by Nobuyuki Ishibashi

* 1. Faculty Sponsor

* Name: Nobuyuki Ishibashi
* Degrees: MD
* Title: Professor
* Organization: Children's National
* Address: 111 Michigan Avenue, NW
* Apt/Suite:
* City: Washington
* State: DC
* Zipcode: 20010
* Office Phone: 202-476-2388
* Email Address: nishibas@childrensnational.org

* 2. Daily Supervisor

Name:
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

* 3. Project Title (250 character limit)

Cell Therapy for Neuroprotection in Congenital Heart Disease

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Dhari Z, Leonetti C, Lin S, Prince A, Howick J, Zurakowski D, Wang PC, Jonas RA, Ishibashi N. Impact of Cardiopulmonary Bypass on Neurogenesis and Cortical Maturation. Ann Neurol. 2021 Vol. 90 Issue 6 Pages 913-926. doi: 10.1002/ana.26235.

Saric N, Hashimoto-Torii K, Jevtovic-Todorovic V, Ishibashi N. Non-apoptotic caspases in neural development and in anesthesia-induced neurotoxicity. Trends Neurosci. 2022 Jun;45(6):446-458.DOI: 10.1016/j.tins.2022.03.007.

Kobayashi K, Maeda T, Ayodeji MA, Tu SC, Chen A, Hanley PJ, Ishibashi N. The dose-effect of mesenchymal stromal cell delivery through cardiopulmonary bypass in a juvenile porcine model. Ann Thorac Surg. 2022 Aug 8:S0003-4975(22)01007-4. DOI: 10.1016/j.athoracsur.2022.07.035.

*** 5. Sponsor's Research Focus:**

Yes - Pediatrics
Yes - Pharmacology
Yes - Cardiology
Yes - Neurology
Yes - Surgery

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T0/T1: Basic Science Discovery and Initial Translation to Humans

*** 7. Hypotheses (200 word limit)**

Our studies show that potential cell-based interventions for improvement of CHD-induced brain damage include: 1) promoting white matter (WM) regeneration through endogenous oligodendrocyte progenitors; 2) restoring the neurogenic potential of subventricular zone (SVZ) neural stem/progenitors; and 3) controlling CPB-induced prolonged microglia activation. Mesenchymal stem/stromal cells (MSCs) are multipotent, non-hematopoietic cells that possess both immunomodulatory and regenerative properties, and can treat a wide range of diseases including hypoxic brain injury. Various rodent studies have shown that in the brain MSCs: 1) accelerate WM remyelination through the activation of endogenous oligodendrocyte progenitors; 2) promote neurogenesis from SVZ neural stem/progenitors; and 3) regulate microglia activation after hypoxic-ischemic brain insults. Multiple clinical trials have also established the safety of MSC-based therapy. These findings have led to our principal hypothesis that: MSC delivery to the early postnatal brain at the time of corrective cardiac surgery promotes endogenous regeneration of damaged neuronal and glia cells in children with CHD.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

Neonatal cardiac surgery provides a unique opportunity to control cerebral perfusion through CPB. We are proposing for the first time the use of CPB itself as a novel MSC delivery system in the CHD population. Our preliminary data demonstrates that in our piglet model: 1) CPB is an effective delivery system; 2) MSCs modulate CPB-induced systemic inflammation; and 3) MSCs reduce microglia activation in the acute period following CPB. In order to design optimal MSC-based therapies in the CHD population, overall goal of our studies is to determine the behavior of three specific stem/progenitor cell lines: i) delivered MSCs; ii) WM oligodendrocyte progenitors; and iii) SVZ neural stem/progenitors by using our unique piglet of neonatal cardiac surgery. Measureable objective for Gill summer fellow is to determine the effect of MSC treatment on CPB-induced microglia activation and maturation of neuronal and glia cells using either immunohistochemistry (IHC) or bioinformatic approach. Gill summer fellow will also participate to our phase 1 clinical trial at Children's National termed MeDCaP (Mesenchymal stromal cell Delivery through Cardiopulmonary bypass in Pediatric Cardiac Surgery).

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

Based on student's interest and discussion with mentor team, the student will perform studies using either IHC assays or bioinformatics approach based on following time frame. Time frame is designed based on our previous experience with Gill fellows to complete the projects from the beginning. Cell population of interest in summer 2023 will be discussed and selected according to progress of ongoing studies. Sample time frame for IHC assays Week 1: Preparation: cryostat training for the large animal brain section and antibody optimization Week 2:

Immunohistochemistry of the first cell population and image acquisition with a direct mentor Week 3: Data quantification using imaging software Week 4: Data analysis using statistical software and optimization for 2nd study Week 5: Immunohistochemistry of the second population based on the results of the first studies Week 6: Data quantification using imaging software Week 7: Data analysis using statistical software Week 8: Presentation at the lab meeting and development of poster draft for presentation at meetings The proposed studies have the potential to identify and assess novel strategies to treat brain immaturity and brain injury and define new standards of perinatal care in the patient with CHD.

*** 10. Describe the student's role in the project (200 word limit)**

The program is intended to provide the highest quality experience for medical school students with a strong interest in pursuing careers as physician-scientists. To define hypoxia-induced alterations on the gyrencephalic brain and the effect of MSC delivery through CPB during CHD surgery, the student role will be focused on immunohistochemical assay of the developing brain in our clinically relevant experimental models. We offer students the opportunity to: 1) learn uniquely integrated research field in developmental neuroscience and pediatric cardiology/cardiac surgery; 2) gain experience in hands-on laboratory research; 3) interact with faculty, postdoctoral fellows, and other summer interns; 4) attend weekly luncheon/seminar presentations by members on specific research projects and cutting-edge research tools; and 5) improve presentation, writing, and communication skills. In partnership with Children's National Heart Institute, students can participate in weekly surgery case discussions and daily Cardiac ICU rounds to learn more about congenital heart disease. Our pediatric cardiac surgery team performs hundreds of cardiac surgeries. World-renowned, pediatric cardiac surgeon Yves d'Udekem, MD, is the co-director of the Heart Institute.

*** 11. Describe the mentor's role in the project. (200 word limit)**

The nature of Dr. Ishibashi's training plan will entail multiple sessions, so that he/she can overcome the technical obstacles that are intrinsic to the study in the animal brain. Daily supervisor - Drs. Saric, Prasad, Henmi, Lam, and Furuta (Post-doc research associates in my lab) - and he/she will meet one-on-one before each experiment in order to establish the best experimental approach to be used and to determine how to avoid any difficulties that may naturally arise with the use of different samples. The training will be provided through multiple hands-on sessions at the time of actual analysis of samples and imaging data. Once he/she has acquired data, meetings with Dr. Ishibashi will be focused on data interpretation and building hypotheses relevant to our future study.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

The current and previous medical students training by my mentor team are listed below: Sonali Kumar (2013 W.T. Gill Summer Fellow) David Kim (2014 W.T. Gill Summer Fellow) Angeline Pham (2015 W.T. Gill Summer Fellow) Soraiya Thura (2015 AATS Summar Scholarship) Vincent Parenti (2016 W.T. Gill Summer Fellow) Joel Rosenberg (2018 Foglia-Hills Summer Fellow) James F. Howick (2018 Foglia-Hills Summer Fellow) Nisha Kapani (2018 W.T. Gill Summer Fellow) Naeha Haridasa (2019 W.T. Gill Summer Fellow) Casey Briggs (2019 Foglia-Hills Summer Fellow) Tessa Higgins (2020 Foglia-Hills Summer Fellow) Alice Chen (2021 W.T. Gill Summer Fellow) Christopher M. Liu (2021 Foglia-Hills Summer Fellow) Julia Ryan, M.S., B.S. (2022 Foglia-Hills Summer Fellow) Stephen Xu, B.S. (2022 W.T. Gill Summer Fellow) Previous summer students at the Ishibashi laboratory performed oral and poster presentations at multiple regional and national conferences as the first author. Their work was included in our peer reviewed publications. Previous fellows obtained authorship for their contributions including publications at J Am Heart Assoc. 2017, Ann Thorac Surg. 2020, JTCVS open 2021, Cardiol Young 2022, and Ann Thorac Surg. 2022.

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected Yes

Please provide IRB number and date

* IRB Number: Pro00011914

* IRB Date: 12/18/2019

Faculty Proposal for MD Student Research by Katie Donnelly

* 1. Faculty Sponsor

* Name: Katie Donnelly
* Degrees: MD, MPH
* Title: Assistant Professor of Pediatrics and Emergency Medicine
* Organization: Children's National Hospital/The George Washington University
* Address: 111 Michigan Ave NW
* Apt/Suite:
* City: Washington
* State: DC
* Zipcode: 20011
* Office Phone: n/a
* Email Address: kdonnell@childrensnational.org

* 2. Daily Supervisor

Name: same as above
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

* 3. Project Title (250 character limit)

The Epidemiology of Motor Vehicle Accidents Involving Children with Special Needs

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Howard MB, Jarvis LR, Badolato GM, Parrish BT, Donnelly KA. Variations in Safe Sleep Practices and Beliefs: Knowledge is not Enough. Matern Child Health J. 2022 May;26(5):1059-1066. doi: 10.1007/s10995-021-03341-x. Epub 2022 Jan 6. PubMed PMID: 34988864.

Donnelly KA, Rucker A, Boyle MD, Fornari MJ, Badolato GM, Goyal MK. Experiencing Bullying Is Associated With Firearm Access, Weapon Carriage, Depression, Marijuana Use, and Justice Involvement in Adolescents. Pediatr Emerg Care. 2022 Feb 1;38(2):e918-e923. doi: 10.1097/PEC.0000000000002473. PubMed PMID: 34116552.

Donnelly KA, Badolato GM, Goyal MK. Determining Intentionality of Pediatric Firearm Injuries by International Classification of Disease Code. *Pediatr Emerg Care*. 2022 Jan 1;38(1):e306-e309. doi: 10.1097/PEC.0000000000002272. PubMed PMID: 33105466.

*** 5. Sponsor's Research Focus:**

Yes - Pediatrics

Yes - Emergency Medicine

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T4: Translation to Population Health

*** 7. Hypotheses (200 word limit)**

Hypothesis 1: Children with special needs involved in car accidents will have significantly more severe injuries than children without special needs. Hypothesis 2: Children with special needs involved in car accidents will have significantly more testing performed on them than children without special needs.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

Chart review of approximately 1000 charts (250 children with special needs, 750 children without special needs)

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

This study will first look at the epidemiology of children with special needs who are involved in motor vehicle collision (MVC). We will retrospectively look at all children involved in an MVC who were brought to the Children's National Hospital (CNH) Emergency Departments (ED) at either the Sheikh Zayed or Southern Avenue campuses from Jan 1 2017-Dec 31 2022. Children will first be identified by ICD code for MVC. ICD codes for special health care needs assigned to this child in the medical record prior to their motor vehicle collision will also be recorded. Examples of special health care needs that can be tracked by ICD code include cerebral palsy (G80.9), tracheostomy (Z93.0) and autism (F84.0). This will allow for an epidemiologic understanding of the scope of the problem. Next, we will perform a retrospective case-control study looking at a selection of children with special needs involved in a MVC vs children without special needs involved in an MVC. This will allow us to assess for statistically significant differences in restraint practices, severity of crash and injuries and trauma workup provided.

*** 10. Describe the student's role in the project (200 word limit)**

Student will assist with phase two of the project, performing a chart review on the 1000 identified charts to assess for restraint practices, severity of crash and injuries and the trauma workup documented. If times allows they will also be able to participate in abstract and paper drafting.

*** 11. Describe the mentor's role in the project. (200 word limit)**

Dr. Donnelly is the primary investigator of this study, which is being funded by the DC Department of Transportation. She will provide oversight of the whole project as well as mentorship for the student. She will also be responsible for coordination with the ED data team, data security, statistics, abstract writing and submission.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

I have worked with numerous Gill fellows and Health Services Scholars on summer projects. These include Dariush Kafashzadeh (abstract and publication), Krithika Rao (abstract, publication in submission) and Katherine Markin (abstract). I am also currently working on a project with GW medical student Colleen Morris, outside of the Gill Fellow Program

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected No (Pending)

Faculty Proposal for MD Student Research by david yamane

* 1. Faculty Sponsor

* Name: david yamane
* Degrees: MD
* Title: assistant professor
* Organization: Department of emergency medicine/ department of anesthesia and critical care
* Address: 2120 L street NW
* Apt/Suite: suite 400
* City: washington
* State: District of Columbia
* Zipcode: 20037
* Office Phone: 8083753004
* Email Address: david.yamane@gmail.com

* 2. Daily Supervisor

Name: david yamane
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

* 3. Project Title (250 character limit)

Hemodynamic measurement comparison between central lines and midline catheters

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Rizvi G, Marcinkowski B, Srinivasa N, Jett A, Benjenk I, Davison, D, Yamane, D. Impact on Blood Product Utilization with Thromboelastography Guided Resuscitation for Gastrointestinal Hemorrhage. Journal of Intensive Care Medicine. 2022;0(0). doi:10.1177/08850666221126661 - (publication of previous gill student)

Prasanna N, Yamane D, Haridasa N, Davison D, Sparks A, Hawkins K, Safety and Efficacy of Vasopressor Administration through Midline Catheters. J Crit Care. 2021;61:1-4. doi:10.1016/j.jcrc.2020.09.024 - (previous work on midline catheters)

Yamane D, Zarabian K, Devine K, et al. Hospital-Based Healthcare Worker Perceptions of Personal Risk Related to COVID-19: One Year Follow-Up. J Am Board Fam Med. 2022;35(2):284-294. doi:10.3122/jabfm.2022.02.210272

*** 5. Sponsor's Research Focus:**

Yes - Anesthesiology

Yes - Cardiology

Yes - Emergency Medicine

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T3: Translation to Practice

*** 7. Hypotheses (200 word limit)**

We are seeking to compare hemodynamic measurements between the classically used central line with the less invasive mid-line in a prospective study. Central lines are commonly used in the critical care setting for the administration of certain medications (ie vasopressors) as well as used for surrogate measures of measuring assessing cardiac output and volume status. Two such measures are the central venous gas and the central venous pressure. The central venous gas measures the oxygen delivery to the body and the central venous pressure estimates the pressure of the right atrium and by assumption the right ventricular end diastolic volume. There has been a large push to reduce central line infections, one way is by utilizing less invasive midline catheters. Midline catheters are 20cm lines that are placed in the veins in the arm and are durable for several weeks. Our research group has already study midline catheters for the administration of vasopressors which has led to a significant reduction in central line use. We are hopeful to compare the central venous gas and the central venous pressure to their counterparts in the midline. If the midline measurements are comparable, it would reduce the need for invasive central lines.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

Goals for the Gill fellow: -enroll 50 participants in the study -learn about the enrollment process (screening, consenting, data collection) -establish and manage a redCAP database -write an abstract -present an abstract at a national conference -learn to draft a manuscript for full publication

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

This will be a prospective observational study of patients admitted to the ICU with both a central line and midline catheter. Patients will be screened daily for central lines. patients receiving a midline to replace the central line or placed as additional iv access, will be considered for inclusion. The patient or more commonly their legal representative will be approached for consent. Once consent is obtained, a blood sample will be processed for a central venous sat and a midline sat. A central venous pressure and midline pressure will also be measured over an hour for 4 different measurements. demographic and clinical data will be collected into a redcap database.

*** 10. Describe the student's role in the project (200 word limit)**

-screen for patients daily -consent and enroll patients -coordinate with nursing the collection of blood samples -process the point of care central venous gas and midline gas -monitor the central venous pressure and midline pressure -manage the redcap database -write the abstract for publication at society of critical care medicine conference -write the draft of the manuscript for full publication

*** 11. Describe the mentor's role in the project. (200 word limit)**

-oversee the students daily operation -coordinate with other members of the research team to ensure the student is well supported.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

Previously supervised 3 gill students. all have had at least one abstract accepted to the society of critical care medicine conference. Supervised over 50 students in a COVID 19 hospital registry resulting in multiple abstracts and manuscripts with several first author publications for students.

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected Yes

Please provide IRB number and date

*** IRB Number:** NCR213925

*** IRB Date:** 3/3/22

Faculty Proposal for MD Student Research by Randi Streisand

* 1. Faculty Sponsor

* Name: Randi Streisand
* Degrees: PhD
* Title: Professor, Chief of Psychology & Behavioral Health
* Organization: Children's National Hospital
* Address: 111 Michigan Ave. NW
* Apt/Suite:
* City: Washington DC
* State: DC
* Zipcode: 20010
* Office Phone: 202-476-2730
* Email Address: rstreis@childrensnational.org

* 2. Daily Supervisor

Name: Randi Streisand
Degrees: Other lab members will also work with summer medical student(s).
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

* 3. Project Title (250 character limit)

Optimizing Technology Uptake and Use in Hard to Reach Adolescents with Type 1 Diabetes. The major goal of the project is to evaluate a brief behavioral intervention to improve uptake and sustained use of continuous glucose monitoring (CGM) in young adolescents with T1D.

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Hilliard, M. E., Tully, C., Monaghan, M., Hildebrandt, T., Wang, C., Barber, J. R., Clary, L., Gallagher, K., Levy, W., Cogen, F., Henderson, C., Karaviti, L., & Streisand, R. (2022). First STEPS: Primary Outcomes of a Randomized, Stepped-Care Behavioral Clinical Trial for Parents of Young Children with New Onset Type 1 Diabetes. *Diabetes Care*.

Sinisterra, M., Wang, C., Marks, B., Monaghan, M., Barber, J., Tully, C., Hilliard, M., & Streisand, R. (2021). Patterns of continuous glucose monitoring use in young children throughout the first 18-months following T1D diagnosis. *Diabetes Technology & Therapeutics*.

Inverso, H., LeStourgeon, L., Parmar, A., Bhangu, I., Hughes, B., Alford, M., Straton, E., Streisand, R., & Jaser, S. S. (2022). Demographic and glycemic factors linked with diabetes distress in teens with type 1 diabetes. *Journal of Pediatric Psychology*.

*** 5. Sponsor's Research Focus:**

Yes - Pediatrics

Yes - Endocrinology

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T2: Translation to Patients

*** 7. Hypotheses (200 word limit)**

Aim 1 . Evaluate feasibility and acceptability of the CGM support intervention. Feasibility and acceptability indicators include recruitment , retention, and satisfaction. Hypothesis 1.1: The CGM support intervention will be feasible and acceptable, with high recruitment (>60% of eligible participants), retention (>85 % at 12 mos), and satisfaction (>80% would recommend the study to others). Aim 2. Evaluate preliminary impact on T1D outcomes. Primary outcomes (glycemic control (A1c, CGM - derived time in range) and secondary outcomes (adolescent/parent - reported CGM benefits and burdens, diabetes distress, and diabetes - related family conflict) will be assessed 3 - (T1), 6 - (T2), and 12 - (T3) months post - baseline. Hypothesis 2.1: At T2, youth in immediate intervention will evidence improved glycemic control (lower A1c, higher CGM - derived time in range ; primary outcomes) compared to delayed intervention. Hypothesis 2.2: At T2, youth in immediate intervention will evidence reduced CGM burdens, diabetes distress, and family conflict with increased CGM benefits (secondary outcomes) compared to delayed intervention. Hypothesis 2.3 : Key demographic (e.g. age; race/ethnicity ; insurance), disease (e.g. insulin regimen), and behavioral (e.g. T1D adherence) factors will moderate intervention impact.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

Target sample size for the overall study is n=60 parent/child dyads. Children ages 10-15 years with T1D duration >=6 months, either new to CGM use, or use is less than 75% wear time. Dyads are randomized to the diabetes educator telemedicine intervention immediately, or delayed intervention (6 months later). The 3 session telemedicine intervention focuses on problem solving, parent-child communication, and review of CGM data. Parent participants are also matched with a peer parent coach who offers support on CGM use over a 12 week period. Primary/secondary outcome assessments will be conducted at baseline, 3, 6, and 12 months later.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

This is an NIH funded R01 study that is currently enrolling participants. We should have baseline data available by summer 2023 to start to examine associations among CGM benefits, barriers, and other demographic and medical variables. We are also collecting psychosocial data including parent/child mood and diabetes distress. The medical student will have the opportunity to write an abstract with expected submission to the American Diabetes Association 2024 conference (abstracts due early Jan 2024, conference in June 2024). Interested students will continue involvement and participate in submitting an expanded report for publication following completion of the project's baseline data collection.

*** 10. Describe the student's role in the project (200 word limit)**

The medical student will participate in all project activities including shadowing/participating in determining participant eligibility, recruiting and enrolling participants, observing intervention sessions, and reviewing medical record data. The student will participate in weekly study team meetings, and will also have the opportunity to join the larger lab meetings (twice monthly) as well as learn about other ongoing NIH funded projects in children with diabetes and obesity.

*** 11. Describe the mentor's role in the project. (200 word limit)**

Dr. Streisand will meet with the student on a weekly basis and provide guidance about the independent research investigation (the student will choose variables of interest among those being collected). The medical student will have the opportunity to participate in mentored journal article reviews. Dr. Streisand will also support the medical student in their interest in exploring other aspects of clinical research, and provide opportunities for shadowing and meeting other faculty members at Children's National.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

Dr. Streisand has mentored numerous researchers over her 22+ year career at Children's National. Mentees include students from the MPH program, PhD in psychology, and the medical school. Prior medical students including Gill Fellows include the following individuals: Seema Sarin Laleisha Peterson-Knappe Ngwe Achrimofor Chandra Singh (Georgetown) Tamiko Younge (UCSF) Lyndsey O'Brecht Priya Mehta Suzanne Collier (UMichigan) Miriam Toaff

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected Yes

Please provide IRB number and date

*** IRB Number:** Pro00016314

*** IRB Date:** 02/02/2022

Faculty Proposal for MD Student Research by Susma Vaidya

* 1. Faculty Sponsor

* Name: Susma Vaidya
* Degrees: MD, MPH, Diplomate of American Board of Medicine
* Title: Assistant Professor of Pediatrics
* Organization: Children's National Hospital: Shepherd Park Primary Care
* Address: 7125 13th Place, NW
* Apt/Suite:
* City: Washington
* State: DC
* Zipcode: 20012
* Office Phone: 202-545-2900
* Email Address: svaidya@cnmc.org

* 2. Daily Supervisor

Name: Susma Vaidya
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

* 3. Project Title (250 character limit)

Virtual Nutrition Counseling in Primary Care

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

DeSilva S, Vaidya SS. The Application of Telemedicine to Pediatric Obesity: Lessons from the Past Decade. Telemed J E Health. 2021 Feb;27(2):159-166

Krishnamoorthy M, Nadler E, Vaidya S. Resolution of confluent and reticulated papillomatosis after bariatric surgery. Clin Obes. 2021 Feb;11(1):e12427.

Efficacy of an obesity screening and referral protocol for pediatric dental residents Caffrey, E.,1, Vaidya, S.2 Division of Pediatric Dentistry, University of Maryland School of Dentistry, Baltimore MD 2Department of General and Community Pediatrics, The George Washington School of Medicine, Washington DC (Poster Presentation at APHA)

*** 5. Sponsor's Research Focus:**

Yes - Pediatrics

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T3: Translation to Practice

*** 7. Hypotheses (200 word limit)**

The American Academy of Pediatrics has recently reiterated the need for primary care providers to both emphasize and increase attention to obesity prevention and treatment; however, effective dietary and physical activity counseling is challenging in the 20 minutes that is allocated for a well child visit. Given the recent increase in prevalence of pediatric obesity, especially in early childhood, an increased focus on dietary counseling in the primary care setting is a promising approach to prevention and treatment of pediatric obesity, but this cannot be accomplished with our current staffing. Recent findings indicate that an integrated model with dietitians as part of the primary care visit leads to more successfully completed nutrition encounters as well as better health outcomes. Further detailed and focused guidance on a healthy transition to an adult diet and the avoidance of obesogenic dietary traits and lifestyle is a critical need in primary care. Virtual nutritional counseling is provided in the primary care setting to improve the quality of dietary counseling leading to better prevention and treatment of pediatric overweight/obesity.

*** 8. Project goals and measurable objectives (e.g. number of patient records, assays completed) (200 word limit).**

1. At the conclusion of the visit, the parent will complete a brief REDCap survey to assess the value and impact of the counseling. The dietitian will also complete a REDCap survey to assess her perception of the value and impact of the visit. 2. At the conclusion of the year that the virtual dietitian will be in primary care, we will perform a retrospective chart review of patients who met with the dietitian and assess weight for length or BMI and compare with age matched controls on days that the dietitian was not present in clinic. Additionally, we will assess for specific dietary habits documented in the chart and compare with age matched controls who did not see the dietitian. 3. Data will be analyzed to assess for parent satisfaction or impact from the visits via a review of REDCap surveys completed. The retrospective chart review data will be analyzed to assess for a statistical significance in improved dietary habits as well as BMI or weight for length. The goal is to provide evidence that this quality improvement in the current practice is effective and should be continued. 4. Anticipate about 1100 patients participating.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

1. The virtual dietitian will have completed a full year of care at Shepherd Park by July 1, 2022. 2. The goal is to assess this quality improvement endeavor in both a qualitative and qualitative manner. We will look at parents self reported surveys as well as dietitian surveys of parental engagement. We will also be looking at measurements such as BMI and weight for length and differences between patients who received counseling and those who did not. 3. Lastly, we will perform a retrospective chart review to look at the quality of diet in those children who received counseling versus those who did not.

*** 10. Describe the student's role in the project (200 word limit)**

The student will be performing this retrospective chart review. They will be creating an Excel spreadsheet which will have all patients who participated as well as age matched patients who did not receive counseling. This spreadsheet will have BMI or weight for length as well as a section for quality of diet. The student will also help with a qualitative review of the REDCap surveys that were completed. Lastly, I would like to have the student help with the initial drafting of a manuscript detailing the findings of this quality improvement project.

*** 11. Describe the mentor's role in the project. (200 word limit)**

I will be working with the student and supervising progress. I will also have the student join me in the IDEAL Clinic once a a week to learn about pediatric obesity outside of the primary care setting. Lastly, I will be helping this student with drafting a manuscript.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

I have worked with three previous students. My first student was a Gill Fellow. We did a retrospective chart review of the identification, assessment, and treatment of pediatric obesity in the primary care setting. I worked with another student on compiling a review of the use of telemedicine in pediatric obesity care. Lastly, I worked with a student over the pandemic who helped with telemedicine assessment; however, the pandemic interfered with the completing of the project. We did do a case report on Confluent Reticulated Papillomatosis.

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected No (Not Required)

Please specify why it is not required.

STUDY00000303: Nutrition Counseling This has been designated as a QI project by the IRB.

Faculty Proposal for MD Student Research by David Mendelowitz and Vivek Jain

* 1. Faculty Sponsor

* Name: David Mendelowitz and Vivek Jain
* Degrees: DM - PhD VJ - MD
* Title: Professor and Interim Chair, Department of Pharmacology and Physiology
* Organization: George Washington University
* Address: 2300 I Str NW
* Apt/Suite: Ross hall 654
* City: Washington
* State: District of Columbia
* Zipcode: 20037
* Office Phone: 5713178020
* Email Address: dmendel@gwu.edu

* 2. Daily Supervisor

Name: David Mendelowitz
Degrees: PhD
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address: dmendel@gwu.edu

* 3. Project Title (250 character limit)

One major, yet poorly understood cardiovascular health risk is obstructive sleep apnea (OSA). Recent work in the Mendelowitz lab has demonstrated that activation of oxytocin neurons in the hypothalamus can prevent the hypertension and deleterious changes in cardiac function that occur in an animal model of OSA. The Gill Summer Fellow will build upon these exciting results by participating in both animal and clinical studies currently underway. In the first project the fellow will advance from the work that has shown activation of oxytocin neurons prevents the development of hypertension with OSA, and will test if activation of oxytocin neurons reverses, or blunts progression of pre-existing hypertension and cognitive declines caused by OSA. In the second project the fellow, supervised by Dr. Vivek Jain (MFA, Pulmonary and Critical Care), will examine, in patients diagnosed with OSA, whether intranasal administration of oxytocin significantly blunts the progression of HTN, decreases the pressure needed to maintain airway patency, and increases the compliance of OSA patients to continuous positive airway pressure (CPAP) treatment. The student's role in the animal study will be test these hypotheses by conducting and analyzing the experiments, and in the clinical studies the fellow will help with

patient enrollment, and proper data acquisition and analysis from at home auto-CPAP devices.

*** 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.**

Intranasal oxytocin increases respiratory rate and reduces obstructive event duration and oxygen desaturation in obstructive sleep apnea patients: a randomized double blinded placebo controlled study. Jain V, Kimbro S, Kowalik G, Milojevic I, Maritza Dowling N, Hunley AL, Hauser K, Andrade DC, Del Rio R, Kay MW, Mendelowitz D. Sleep Med. 2020 Oct;74:242-247. doi: 10.1016/j.sleep.2020.05.034. Epub 2020 Jun 5. PMID: 32862007

Activation of Oxytocin Neurons Improves Cardiac Function in a Pressure-Overload Model of Heart Failure. Dyavanapalli J, Rodriguez J, Rocha Dos Santos C, Escobar JB, Dwyer MK, Schloen J, Lee KM, Wolaver W, Wang X, Dergacheva O, Michelini LC, Schunke KJ, Spurney CF, Kay MW, Mendelowitz D. JACC Basic Transl Sci. 2020 May 25;5(5):484-497. doi: 10.1016/j.jacbts.2020.03.007. eCollection 2020 May. PMID: 32478209

Targeting Parasympathetic Activity to Improve Autonomic Tone and Clinical Outcomes. Kay MW, Jain V, Panjra G, Mendelowitz D. Physiology (Bethesda). 2022 Jan 1;37(1):39-45. doi: 10.1152/physiol.00023.2021. Epub 2021 Sep 6. PMID: 34486396

*** 5. Sponsor's Research Focus:**

Yes - Pharmacology

Yes - Cardiology

Yes - Pulmonology

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T2: Translation to Patients

*** 7. Hypotheses (200 word limit)**

One major, yet poorly understood cardiovascular health risk is obstructive sleep apnea (OSA). Recent work in the Mendelowitz lab has demonstrated that activation of oxytocin neurons in the hypothalamus can prevent the hypertension and deleterious changes in cardiac function that occur in an animal model of OSA. The Gill Summer Fellow will build upon these exciting results by participating in both animal and clinical studies currently underway. In the first project the fellow will advance from the work that has shown activation of oxytocin neurons prevents the development of hypertension with OSA, and will test if activation of oxytocin neurons reverses, or blunts progression of pre-existing hypertension and cognitive declines caused by OSA. In the second project the fellow, supervised by Dr. Vivek Jain, will examine, in patients diagnosed with OSA, whether intranasal administration of oxytocin significantly blunts the progression of HTN, decreases the pressure needed to maintain airway patency, and increases the compliance of OSA patients to continuous positive airway pressure (CPAP) treatment. The student's role in the animal study will be test these hypotheses by conducting and analyzing the experiments, and in the clinical studies the fellow will help with patient enrollment, and proper data acquisition and analysis

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

We are currently (oct 2022) enrolling patients in our new study that will examine, in patients diagnosed with OSA, whether intranasal administration of oxytocin significantly blunts the progression of HTN, decreases the pressure needed to maintain airway patency, and increases the compliance of OSA patients to continuous positive airway pressure (CPAP) treatment. The student's role in the animal study will be test these hypotheses by conducting and analyzing the experiments, and in the clinical studies the fellow will help with patient enrollment, and proper data acquisition and analysis

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

This project will build upon a successful collaboration between Drs. Mendelowitz and Jain. The project design makes it likely that the objectives will be achieved, it is likely to result in a report of interest to other scholars and fulfills discovery/original research.

*** 10. Describe the student's role in the project (200 word limit)**

The student's role in the animal study will be test these hypotheses by conducting and analyzing the experiments, and in the clinical studies the fellow will help with patient enrollment, and proper data acquisition and analysis

*** 11. Describe the mentor's role in the project. (200 word limit)**

This project will be co-mentored by Drs. Mendelowitz and Jain.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

Previous trainees: Ryan Bateman, prior Gill fellow, currently resident, Emergency Department, Thomas Jefferson University; Whitmey Wolaver, currently resident, Anesthesiology, VCU Health System; Kerry (Philbin) Sadler, currently Family Physician, Naval Hospital Jacksonville; Sunit Baxi, currently internist, University of Maryland Medical Center Midtown Campus and Sinai Hospital of Baltimore; Chris Stephens, currently Associate Professor, Department of Anesthesiology, Program Director, Trauma Anesthesiology Fellowship, McGovern Medical School, University of Texas; Cory Evans, currently trauma surgeon at Regional One Health and assistant professor in the department of surgery at University of Tennessee Health Science Center. Previous Graduate Student Trainees: Robert Neff III, 2004, currently at Johnson and Johnson, Scientist, (Pain & Related Disorders), Kathy Griffioen, 2007, currently adjunct Assistant Professor, Liberty University, Julie Frank, 2011, currently scientist, FDA, Amanda Woerman, 2013, currently Assistant Professor at University of Massachusetts Amherst, Chris Gorini, 2012, currently Research Director at Spinal Research Foundation, Ramon Pinol, 2012, currently post-doctoral fellow, NIH, Heather Jameson, 2015, currently Research Scientist, Massachusetts General Hospital, Harvard Medical School. Previous Postdoctoral Trainees: Dr. Qi Cheng, Currently intern at Clinical Research Center, RWJMS/UMDNJ, Dr. Harriet Kamendi, currently Director of Toxicology, American Preclinical Services, Dr. Priya Venkatesan, currently Senior Assistant Editor at The Lancet

* 13. Do you have or will you obtain IRB approval for this project?

Please note: Students cannot begin a human subjects project without IRB approval.

* (Please select ONE)

Selected Yes

Please provide IRB number and date

* IRB Number: ncr224463

* IRB Date: 2022

Faculty Proposal for MD Student Research by Maureen E Lyon

* 1. Faculty Sponsor

* Name: Maureen E Lyon
* Degrees: PhD, Clinical Health Psychology
* Title: Professor of Pediatrics
* Organization: Children's National Hospital
* Address: 111 Michigan Avenue NW
* Apt/Suite:
* City: Washington
* State: DC
* Zipcode: 20010-2970
* Office Phone: 703-346-2873
* Email Address: mlyon@childrensnational.org

* 2. Daily Supervisor

Name: Maureen E Lyon, PhD
Degrees: Same as above.
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

* 3. Project Title (250 character limit)

Palliative Care Needs of Children with Rare Diseases and their Families

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

2. Needle J, Friebert S, Thompkins JD, Grosseohme, DH, Baker JN, Jiang J, Wang J, Lyon ME. Effect of the Family-Centered Advance Care Planning for Teens With Cancer intervention on congruence about end-of-life treatment preferences: a randomized clinical trial. JAMA Netw Open. July 2022;5(7):e2220696. doi:10.1001/jamanetworkopen.2022.20696

Sandquist M, Davenport T, Monaco J, Lyon ME. The Transition to Adulthood for Youth Living with Rare Diseases. Children May 2022; 9(5):710. DOI:10.3390/children9050710

27. Lyon ME, Thompkins J, Fratantoni, Fraser J, Schellinger S, Briggs L, Frieber S, Aoun S, Cheng Yao, Wang J. Family Caregivers of Children and Adolescents with Rare Diseases: A Novel Palliative Care Intervention. *BMJ Supportive & Palliative Care*. (July) 2019;0:1-10:10. doi: 10.1136/bmjspcare-2019-001766. Pub Med ID: 31345846

*** 5. Sponsor's Research Focus:**

Yes - Pediatrics

Yes - Cancer

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T3: Translation to Practice

*** 7. Hypotheses (200 word limit)**

AIM 1. To evaluate the initial efficacy of FACE-Rare in a pilot RCT on primary outcome: family quality of life (QoL) at 3-months post-intervention, controlling for co-variables (age, sex/gender, race of family caregiver) to seek an effect size for a future R01. Hypotheses (H) 1a: FACE-Rare families will report significantly better QoL (emotional, spiritual) compared to controls. H1b: Family caregiving appraisals will moderate effect of FACE-Rare on QoL outcomes. H2c: Religiousness will moderate the effect of FACE Rare on QoL outcomes. AIM 2. To evaluate process outcomes with respect to satisfaction with study participation. H 2: FACE-Rare families will report significantly greater satisfaction, compared to controls. AIM 3. To evaluate the initial efficacy of FACE-Rare on secondary outcomes: plans and actions: completion of and documentation of advance care plans in the electronic health record at 3-months post-intervention. H3a: FACE-Rare families will have a significant higher probability of completing pACP documents for their child, compared to controls; H3b: FACE-Rare families will have a significant higher probability of having pACP documents locatable in the electronic health record, compared to controls.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

Our long-term goal with this project is to develop a model of structured pACP and to integrate patient-centered/family-supported health service delivery models nationally and internationally, as standard of care for children with rare diseases who are unable to participate in shared EOL decision-making. 30 families of children with rare diseases who cannot communicate. See Specific Aims above for measurable objectives.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

Enrollment and follow-up study visits will be completed. This is a pilot randomized controlled clinical trial of the FAMily CEntered pediatric Advance Care intervention for family caregivers of children living with rare diseases who cannot communicate. All data will be cleaned and entered by the summer of 2023 and ready for analysis. Qualitative video data are also available.

*** 10. Describe the student's role in the project (200 word limit)**

Student will develop a Concept Sheet based on data available for analysis and have it approved by Dr. Lyon. Student may consult with our biostatistician as needed.

*** 11. Describe the mentor's role in the project. (200 word limit)**

Meet weekly with student. Provide access to the data. Review concept sheet, data analysis and interpretation. Support presentation of study results to a professional meeting and, if interested, provide feedback on manuscript to submit for publication.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

I have worked with 2 students who were Health Services Scholars. Both completed their projects. One presented at a professional meeting and published as first author in a peer reviewed journal. See references below. The other has completed her data analysis and is preparing to submit an abstract to PAS for presentation. -Schreiner KL, Daniel H. Grossoehme DH, Baker JN, Needle JS, Frieber S, Lyon ME. IO_2-4. "Being healthy and living life as if I never had cancer": the meaning of "living well" from adolescents with cancer. IPOS 2021 Abstracts Booklet, Journal of Psychosocial Oncology Research and Practice: June 2021;3(S1):30. e054 doi: 10.1097/OR9.00000000000005418. -Schreiner, K., Grossoehme, D.H., Frieber, S., Baker, J.N., Needle, J., & Lyon, M.E. "Living as if I never had cancer": A study of the meaning of living well in adolescents and young adults who have experienced cancer. Pediatric Blood & Cancer. First published: 19 July 2020. 2020;67(10):1-8. PubMedID: 32918519. <https://doi.org/10.1002/pbc.28599> Volume67, Issue10 October 2020 e28599

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected Yes

Please provide IRB number and date

* IRB Number: 8808

* IRB Date: 5/23/2023

Faculty Proposal for MD Student Research by Leigh A. Frame

* 1. Faculty Sponsor

* Name: Leigh A. Frame
* Degrees: PhD, International Health: Human Nutrition; MHS, Molecular Microbiology and Immunology
* Title: Director, Integrative Medicine; Assoc. Dir., Resiliency & Well-being Center
* Organization: GW SMHS Clinical Research and Leadership
* Address: 2600 Virginia Ave NW, Suite 300
* Apt/Suite:
* City: Washington
* State: DC
* Zipcode: 20037
* Office Phone: 202-994-0184
* Email leighframe@gwu.edu
Address:

* 2. Daily Supervisor

Name:
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

* 3. Project Title (250 character limit)

Brain Health & the Microbiome: A Proof-of-Concept Study in Patients with Mild Cognitive Impairment

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Frame LA, Costa E, Jackson SA. Current Explorations of Nutrition and the Gut Microbiome: A Systematic Evaluation of the Review Literature. Nutrition Reviews. 2020. DOI: <https://doi.org/10.1093/nutrit/nuz106>

Leonard H, Jackson SA, Frame LA. From Patient to Laboratory: Challenges in Developing Standardized Measurements for the Microbiome. SAGE Research Methods. 2020. DOI: <https://dx.doi.org/10.4135/9781529726602>

*** 5. Sponsor's Research Focus:**

Yes - Gastroenterology
Yes - Genomics
Yes - Geriatrics
Yes - Neurology
Yes - Endocrinology

*** 6. Sponsor's translational level**

*** (Please select ONE)**

T2: Translation to Patients

*** 7. Hypotheses (200 word limit)**

This study will examine the gut microbiomes of three groups in the hopes of identifying a dose-response relationship: 1) mild cognitive impairment (MCI), 2) Alzheimer's disease (AD), and 3) healthy controls (HC). Microbiome testing will be conducted at baseline (2 consecutive samples to be integrated into a single EzBiome report). Subjects will receive their EzBiome reports and be advised to consider implementing the suggested lifestyle changes. This will be repeated at 3- and 6-month time points, as this will allow for the lifestyle feedback to be iterative (they can implement something and see how it affects their microbiome for additional motivation and/or modification). All changes implemented by the subjects while participating in the study will be documented. MCI outcome measures will include MoCA scores, PROMIS 29 assessment, and caregiver report of symptoms; participants will answer questions and will be assisted by their caregivers as needed. Additional measures that are part of standard of care (such as inflammation, e.g. CRP) will also be collected. These will likely be unavailable for the healthy controls but may inform future research.

*** 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

Sampling at 0-, 3-, & 6-months for 45 subjects
Specific Aim 1 To compare the gut microbiomes of patients with early Alzheimer's disease, mild cognitive impairment, and healthy controls using diversity as well as genus, species, and strain level differences in composition and function.
Hypothesis 1 Gut microbiome diversity will exhibit a dose-response relationship among subjects with early Alzheimer's disease, mild cognitive impairment, and healthy controls.
Hypothesis 2 Gut microbiome composition will exhibit a dose-response relationship among subjects with early Alzheimer's disease, mild cognitive impairment, and healthy controls.
Hypothesis 3 Gut microbiome function will exhibit a dose-response relationship among subjects with early Alzheimer's disease, mild cognitive impairment, and healthy controls.
Specific Aim 2 To document microbiome changes following lifestyle changes in subjects with early Alzheimer's disease, mild cognitive impairment, and healthy controls.

*** 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

Selection criteria include:

- **The project design makes it likely that the objectives will be achieved**
- **The project is likely to result in a report of interest to other scholars**
- **The project fulfills discovery/original research**

In this foundation-funded research study, we will partner with a cutting-edge microbiome innovation and discovery platform, EzBiome, to collect pilot data on the gut microbiome alterations in MCI at a greater depth and precision than has previously been conducted to our knowledge. The ability to obtain such detailed and high-fidelity information is a unique opportunity. This alone will advance the field of gut microbiome research and, potentially, care in patients with MCI/AD. It will also make it possible to obtain larger grant funding to reproduce these findings in more robust and diverse cohorts, allowing for generalizability and, hopefully, immediate application to personalized and precision medicine. In addition to the higher resolution of the gut microbiome composition (genus, species, and strain). The EzBiome platforms allows us to begin to explore functional analysis with shotgun metagenomics—singularly a major advantage over 16S rRNA. This means that we can move away from simply cataloging who is there and begin to investigate what roles they are playing. This functional understanding is necessary to translate this into the clinic be that in the form of a microbiome therapeutic, lifestyle intervention, or a multi-modal approach (most likely). With analysis of each sample, EzBiome issues a report, which includes personalized, actionable advice about basic actions to improve gut health including lifestyle measures such as diet as well as probiotics if relevant. EzBiome does not sell, market, or endorse any specific probiotic products; instead, they recommend the introduction of keystone species or species/strains with known probiotic activity and health benefits. This report will be provided to each subject in this proposed proof-of-concept study. Implementation of such actionable advice by each subject will be monitored and correlated with the findings. While this study may be underpowered to determine the effect of such interventions, it will certainly lay the groundwork for evidence-based design of a study to investigate such interventions and will serve as the pilot data necessary to fund intensive interventional studies.

*** 10. Describe the student's role in the project (200 word limit)**

There is the opportunity for the student to be intimately involved in the setup/organization, enrollment, data collection, data analysis, developing an outline for the manuscript, writing portions of the manuscript, and integrating with the research team, which can be customized to fit the skills, needs, and availability of the student. They will have access to the research team for assistance and mentoring throughout the process.

*** 11. Describe the mentor's role in the project. (200 word limit)**

Dr. Frame is the PI for this research study and its grant funding, which was awarded in October 2022. She has worked with many students on similar projects in the past. She has a supportive approach that allows the students to get their hands messy and even struggle through the process to some extent, as this leads to the most robust learning. Through her years of experience, she has developed an approach to conducting such clinical research with relative ease even with novice researchers.

*** 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows or Health Services Scholars. (200 word limit)**

Dr. Frame is currently working with a number of medical students on various projects including an intervention related to gut microbiome patient education and behavior change, several comprehensive and scoping reviews, and one outcomes research project using the All of Us Research Database. In addition, she has another clinical trial that is set to launch in 2023, looking at the delivery of vitamin D orally versus topically and how that affects the gut and skin microbiome, for which some medical students have expressed interest in being involved.

*** 13. Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

*** (Please select ONE)**

Selected No (Pending)