RESEARCH NEWSLETTER

Winter 2020

Northwestern University Feinberg School of Medicine, Department of Emergency Medicine

A Warm Welcome to New Faculty and Staff

Maryanne Mason, PhD, completed her doctoral research in Sociology and is a leader in the fields of social epidemiology and program evaluation. She has been on faculty at Northwestern since 2006, previously appointed in the Department of Pediatrics. While there, she built an impressive portfolio of research centered on problems that affect distressed communities in Chicago and beyond. These projects include: 1) federally funded surveillance epidemiology, focused on causes of violent death and drug overdose and 2) development of a community facing program evaluation core. As she joins the Department of EM and the Buehler Center for Health Policy and Economics, she seeks to continue and expand this work that is of deep relevance to the communities we serve.

Sarah Welch, MPH, is the new Director of Evaluation Research at the Buehler Center for Health Policy and Economics. Her early research focused on childhood obesity prevention program evaluation.

More recently, her research focus has been on community engagement and capacity building on evaluation topics. In her new role, she seeks to continue to consult on and co-design evaluation plans for a wide range of evaluation and research efforts.

Q&A with Dr. Emilie Powell

Below, she discusses her recent completion of an AHRQ R18

Congratulations on completing your R18 grant from AHRQ. Your project was focused on using simulation to improve sepsis care. What first sparked your interest in studying sepsis?

DePauw University, BA
Indiana University, MD
Indiana University, MBA
Northwestern University, MS and residency

Honestly, it was working in the ED and treating patients with sepsis that sparked my interest in studying sepsis. I truly believe that working day to day in the ED is the best way to formulate research interests and valuable research questions. I have always been intrigued by the sepsis disease process and find it very satisfying that we as emergency physicians are able to move the marker, achieve goals in their care while still in the ED, and ultimately know that we are truly impacting outcomes and mortality. That being said, sepsis is complicated – it is challenging to identify at times, and then even more of a challenge to treat– so I was interested in improving how we deliver sepsis care and how we can improve patient outcomes.

Can you tell us a bit about the project design?

The study was conducted in two rural emergency departments in central Illinois– both within the OSF Healthcare System. We implemented an educational intervention (in situ simulation training program) to promote the use of telehealth in the care of patients presenting to these EDs with sepsis to hopefully improve guideline adherence and ultimately patient mortality. We studied the impact of the educational intervention and implementation of telehealth through a retrospective cohort study of all patients presenting to these two EDs with sepsis and looked at compliance and outcomes before and after the intervention/implementation of telehealth.

What is in-situ simulation and what are the benefits of using it?

In situ simulation is the use of simulation in the real, working clinical environment. We use real physicians, nurses, and technicians who are on shift; the real ED bays, and real ED equipment. For this study, we used a standardized patient and the real telehealth equipment (a video cart) and telehealth nurses on the other end of the line. The benefit here was that participants could see how telemedicine could really work in the operations of their ED and how they would interact with the video cart and telehealth nurses on the other end.

Q&A Continued

What were the main results of your study?

We were able to demonstrate an improvement in telehealth use and compliance with several sepsis bundle measures: antibiotics within 3 hours, IV fluid administration for patients that necessitated IV fluids by the SEP-1 rules, repeat lactic acid evaluation, and vasopressor administration. This could relate to the sepsis training we delivered and/or the training in telehealth. We did find that specifically in cases where telehealth was utilized, there was improved compliance with particular sepsis bundle components: repeat lactic acid assessment and reassessment for septic shock. It appears that telehealth helped teams to stay vigilant in the care of critically ill patients with sepsis- even hours into their ED course.

Unfortunately, we did not demonstrate an improvement in mortality. This could be for several reasons: lower numbers because our study took place in low volume EDs or potentially the care that took place after the ED visit (factors beyond our control).

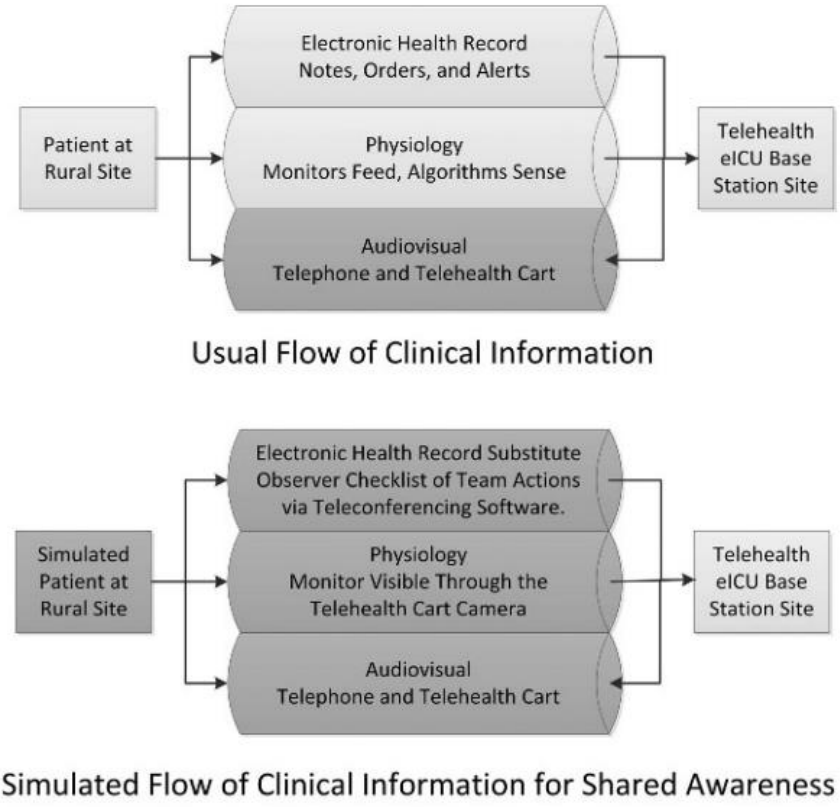


Figure 5. A schematic representation of the real clinical data streams and the substitute data streams we create to accomplish inter-professional in situ simulation that engages the eICU in the care of the rural ED patient.

Did any of your results surprise you?

Honestly, I was looking for a bigger impact with respect to telehealth uptake (we only saw telehealth use in 5% of cases after training) and I truly believed we would be able to move the needle on mortality.

What challenges did you face?

Research is difficult! Health services research and trying to impact care in the real clinical environment is especially challenging as so much is out of your control. Other operational interventions took place during our study period that certainly could have impacted results. In addition, we were dealing with practicing nurses and physicians– real people– and needed to impact culture and their actions later on down the road when we were not standing in front of them and encouraging them to use telehealth or complete the sepsis bundle.

Conducting research in the rural environment is very valuable, but certainly carries its own challenges. In setting up this study, we had to set up all the research processes that would normally already be in place at a larger institution such as Northwestern. No one had conducted studies in these hospitals before: IRB, consent processes, effort reporting systems, data collection systems, etc. did not exist. I learned so much, but it was a challenge!

Media Watch

James Adams, MD, CMO and EM Department Chair, discusses the increase of the flu during the holiday season.

Dr. Adams chats about the “current CBD craze” with WGN radio.

Matthew Klein, MD, MPH, was featured on NBC discussing opoid overdoses in relation to Juice WRLD’s death.

Howard Kim, MD, talks about his research and acute pain management in the ED.

Danielle McCarthy, MD, MS, FACEP and Vice Chair of Research, discusses her AHRQ grant and safe opoid use.

Faculty and Fellow Focus

Andrew Berg, MD (current Innovation fellow), and James Adams, MD, are part of a multidisciplinary team of collaborators competing in the CMS Artificial Intelligence Health Outcomes Challenge. The project, “Northwestern Medicine's Human-Machine Solution to Enhance Delivery of Relationship-Oriented Care”, was one of 25 chosen from over 300 entries to advance in the challenge. They seek to use AI to predict unplanned admissions and adverse events. Stage 2 finalists will be announced in April.

Amy Kontrick, MD, was recently selected to participate in the Advanced Research Methodology Evaluation and Design (ARMED) course by SAEM. ARMED is an annual course with a competitive application process hosted by SAEM each year and is considered the best research course for faculty. Throughout the year, ARMED participants learn from leading experts in academic emergency medicine (with both in-person sessions and online learning) and work to gain fundamental knowledge and skills to design a high quality research project and grant proposal.

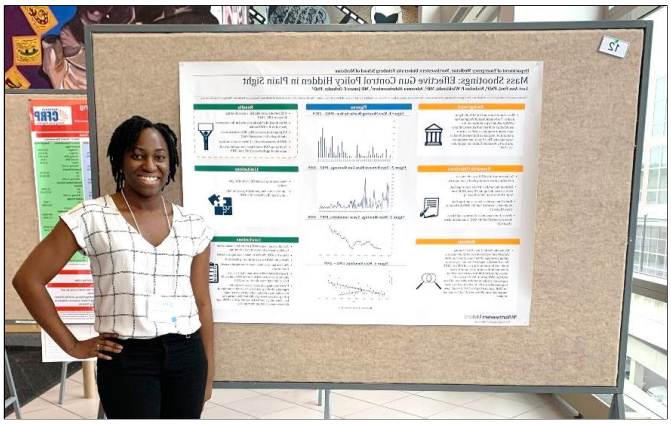
Resident Spotlight

Jason Chodakowski, (’20)
Awarded funding through the NUCATS Pilot and Voucher program for his application “Diagnostic performance of the Bova score as a tool for pulmonary embolism risk stratification: a retrospective cohort study”. Dr. Chodakowski is working with Patrick Lank, MD, on this project to determine the Bova Score's sensitivity and specificity using data from the Northwestern EDW.

Peter Serina, (’22)
Recently awarded funding through the NUCATS Pilot and Voucher program for his application “Development and validation of the Admission for Geriatric patients in the Emergency Department (AGED) score: A cohort study”. Dr. Serina is working with Drs. Dresden and Lo to use Northwestern EDW data to develop a new score that incorporates frailty measures with clinical data to predict which patients would be best targeted by GEDI interventions.

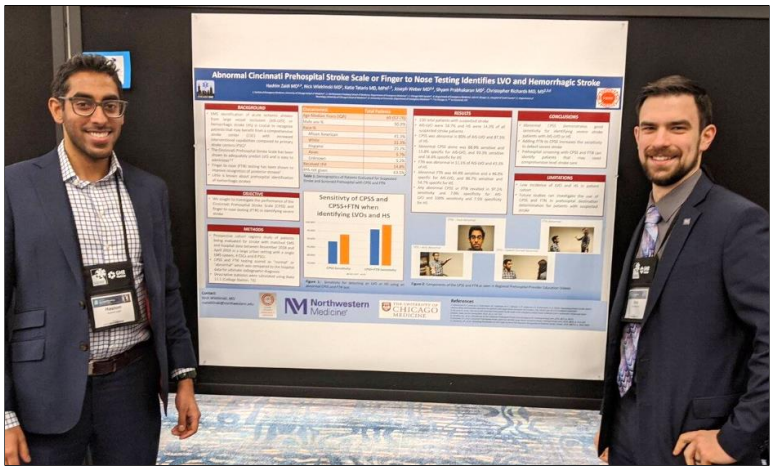
Congratulations to Vidya Eswaran, (’20)! She has accepted a position with the National Clinical Scholars Program at the University of California, San Francisco. The NCSP grew out of the Robert Wood Johnson Foundation Clinical Scholars program and teaches rigorous research design while also emphasizing outcomes and the impact of policy-relevant research. Dr. Eswaran will be in the first class of Scholars at UCSF.

Adesuwa Akhetuamhen, (’21), at the Firearm Safety Among Children and Teens (FACTS) consortium, during the inaugural research symposium at the University of Michigan. The consortium is organized to bring awareness to the current science and evidence-based preventative solutions of firearm injuries in children and teens. During this event, Dr. Akhetuamhen presented research in mass shootings. Other contributors to this research from our department included: Drs. Lori Post and Nick Wleklinksi.



Recent Graduate Success

Danielle Miller, MD, (’19), was awarded the SAEM Education Research Grant. In addition to funding a Master’s in Education, the $100,000 award will fund an education research project entitled: Development of a Simulation Curriculum and Web-Based Modules to Teach Core EPA 10. In 2013, the Association of American Medical Colleges (AAMC) created thirteen core entrustable professional activities (EPA) to define a common core set of behaviors expected of all medical students graduating from medical school. Core EPA 10 outlines an objective for graduating medical students to: “recognize a patient requiring urgent or emergent care and initiate evaluation and management.” The project will create a curriculum to teach Core EPA 10 using simulation cases and asynchronous online web based modules.



Dr. Hashim Zaidi ('19) presented his research along with two of our current residents, Nick Wleklinski (’22) and Andra Farcas (’21), at the 2020 National Association of EMS Physicians in January, titled “Abnormal Cincinnati Prehospital Stroke Scale and Finger to Nose Testing Identifies LVO and Hemorrhagic Stroke” and “On the EMTrack® Towards Success: Implementing a Patient Tracking Platform Across a Large Urban EMS System”.

9 of the 34 articles (more than 25%) published in the CORD edition of the Western Journal of Emergency Medicine were coauthored by NUEM graduates and faculty See the list of authors below:

Past Residents: Katie Colton ('19), Allison Marshall ('18), Logan Weygandt ('17), Bill Burns ('17), Aaron Kraut ('15), Kristen Grabow-Moore ('15), Nicholas Hartman ('13), Kelly Williamson ('11), Andrew Ketterer ('17), Simiao Li-Sauerwine ('18), Brian Patterson ('13)

Past Fellows: Ben Schnapp ('16)

Current Resident: Priyanka Sista ('20)

Current Faculty: Abra Fant, Danielle McCarthy ('10), Patrick Lank ('10) and Howard Kim

Research Update and Resources

Congratulations to Drs. Vidya Eswaran ('20), Howard Kim and Patrick Lank for their work on the Chicago-wide Hospital Opioid and Treatment Response Learning Collaborative through the Illinois Public Health Institute/Alliance for Health Equity. After the collaboration, NMH was one of three sites chosen as a MAT/Naloxone demonstration site, the grant funded X-waiver training to the full faculty and residents in December [as seen above, a packed house for X-Waiver training] and helped develop infrastructure for ED initiation of buprenorphine for opioid use disorder.

From Galter Library

In addition to the self-guided resources available through the library, our research librarian, Annie Wescott, can assist with:

- Offering expertise in bibliometrics, data visualization, continuous improvement, information systems and alternative metrics through the Metrics and Impact Core.
- Assisting with questions on linking your grants to publications in My NCBI, populating the RPPR with publications, and the new NIH biosketch format.
- DigitalHub, a way to easily share your research with others and make it more discoverable. You can also track views and downloads of your scholarship and research.
- Conducting literature searches and systematic review collaboration and support
- Bioinformatics support and collaboration

Annie Wescott

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*For more information and access to the full presentation please contact Kate Bruni or Annie Wescott.