Welcome to another installment of Duke Emergency Medicine’s newsletter, PERIGEE. We have achieved many important milestones over the past year, and we look forward to another year of exciting accomplishments.

In this issue we will focus on our people and programs that are making Duke Emergency Medicine’s “moonshot” possible. We will introduce you to our new faculty, residents, and advanced practice providers, and highlight our Residency Program Coordinator, Kimberly Brown. We invite you to share in our extracurricular activities and close friendships when you see our photos from our social nights. These interpersonal relationships serve as an important aspect of our team and help build a sense of community within our group.

On the research front, we will introduce Dr. Stephanie Eucker’s research into non-opioid analgesia, opioid dependence, and preventing the transition from acute to chronic pain. We will take a “deep dive” into Dr. Bruce Derrick’s hyperbaric research for the Department of Defense, and share Dr. Julian Hertz’s seminal cardiovascular research in Tanzania. As is always the case with emergency medicine, our many accomplishments are unfortunately achieved with the sobering backdrop of tragedy and catastrophe for others. This was especially true during the natural gas explosion in Durham as well as our response to regional natural disasters. We will present our efforts on this front and describe the cohesion of our community while we pay our respects to our patients and the families of those who lost their lives. We will also present how the emergency department, Duke University Hospital, and the Duke University Health System are approaching patient harm reduction by “committing to zero.”

Lastly, we know you will be pleased with both the quantity and quality of our numerous publications, awards, and grants over the past year. Of special note, Dr. Samuel Francis was awarded the Society of Academic Emergency Medicine (SAEM) Foundation Career Development Award, which will fund three-quarters of his time to engage in basic science research into coagulation. Additionally, Dr. Catherine Staton was awarded a National Institutes of Health R01 Award to study alcohol, injury, and the impact of a brief negotiational intervention in Tanzania. As the first ever NIH R01 for Duke Emergency Medicine, this is a seminal achievement for her career and the division’s growth. Likewise, Dr. Alex Limkakeng was awarded an NIH U24 award for pain research, which is the first U award obtained by a Duke Emergency Medicine faculty member. These faculty and others continue to demonstrate the truth of Dr. Limkakeng’s favorite saying, “Our time is now.” I couldn’t agree more. As we embark on projects that have impacts well beyond the walls of the local emergency room, we take an outward perspective.

It is equally exciting to consider the next steps in our journey as it is to reflect on how far we have come in the last 50 years since the first moon landing. We hope you enjoy reading about our recent efforts and are inspired to share in our journey as “we choose to go to the [metaphorical] moon.”

Sincerely,

Charles J. Gerardo, MD, MHS
Chief, Division of Emergency Medicine
Duke University Hospital
per·i·gee (n.)
the point in the Moon’s orbit at which it is nearest to Earth

A total lunar eclipse seen through the spires of the Duke Chapel on January 21, 2019. Photographed by Jared Lazarus. © Duke University, all rights reserved.
The smoke plume as seen from West Main Street, Durham, several minutes after the explosion. Photo by Scott Behm.

Right: Members of the Emergency Medicine team gather in the ambulance bay to await the first patients.
At 10:08 am on April 10, the typical Wednesday morning grind of the Emergency Department (ED) was interrupted with unusual Emergency Medical Services radio traffic: “There’s been an explosion and a building collapse in downtown Durham! Expect multiple casualties!” Within 13 minutes of the notification, as the on-duty ED staff were gathering to discuss the appropriate response, the first patient rolled into triage, and the ED activated their mass casualty incident (MCI) plan.

Initial reports indicated that up to 50 inbound patients with unknown injuries would soon inundate the already busy ED. The ED team knew exactly how to respond internally, as they had recently trained on the updated MCI plan, but a key element to a successful large-scale disaster response was still in the pre-planning phases: hospital-wide multi-departmental integration to facilitate rapid ED decompression. To create ED capacity for the inbound explosion victims, emergency providers relied heavily on their inpatient colleagues in the Departments of Medicine and Surgery to rapidly admit the existing patients needing admissions despite having incomplete work-ups. Hospital Incident Command and the on-duty Operations Administrator facilitated less restrictive in-patient bed assignments, and Transportation Services and floor nursing staff helped wheel ED patients to various units. Additionally, the Pediatric ED cleared patients from their area, SPEED rapidly discharged their patients, and ED Psychiatry consolidated all behavioral health patients currently in the department into the Psychiatric Evaluation Unit. Existing patients throughout the entire ED were consolidated into Pod C, the Clinical Evaluation Unit, and hallways. Through these combined efforts, the ED opened 36 beds within 15 minutes.

Outside the ED, Duke University Campus Police shut down Emergency Drive and restricted access to patient transport while MCI triage was set up in the ambulance bay. Clean, empty stretchers from throughout the hospital were amassed in the ambulance bay, ready to accept incoming casualties by EMS, private vehicle, or walk-in. Within 1 minute of arriving to the triage area, patients were rapidly assessed by a physician and nurse for injuries and acuity level, and the ED patient flow coordinator assigned a treatment area. The ambulance bay and department were brimming with a small army of Emergency Medicine providers, including 16 attendings, 3 physician assistants, and 13 residents, who joined the on-duty staff from administrative meetings, resident conference, and home to care for the injured. Duke Life Flight nurses and paramedics and off-duty ED nurses quickly arrived to help.

Trauma Surgery took charge of the most critically injured patients in the resuscitation area, assisted by multiple specialist teams, including Neurosurgery, Orthopedic Surgery, Ophthalmology, and EM. All elective surgeries in the hospital were put on hold to free up operating room space and staff for critically injured patients.

Within 32 minutes of the explosion, 6 critically injured patients arrived at the ED, including 2 patients who required CPR. Fortunately, after the initial bolus of critically injured, all victims had been transported off the scene by EMS, and activity subsided. Mass casualty response operations were deactivated about two-and-a-half hours after they were initiated, and the Duke University Hospital employees tried to return to normal operating status. Additional patients sought medical care for blast-related symptoms within the days following the incident.

In total, by the end of 2 days, 22 patients were seen at DUH, 5 at Duke Regional, and 4 at Duke Urgent Care Centers for a total of 31 injured patients. April 10, 2019, was anything but typical for the Duke Emergency Department and Durham, but thanks to the entire hospital coming together as a unified, coordinated group, we were ready to serve our community and minimize the tragic loss of life that day.
Our Advanced Practice Provider (APP) group works closely with the Duke University Physician Assistant Program, which has been consistently recognized as a top graduate program by U.S. News & World Report and ranked the number one program in 2019. In 1965, the first formal PA educational program was founded by Dr. Eugene A. Stead Jr., Chairman of the Department of Medicine at Duke University. He used his experience with America’s accelerated physician training program during World War II as a model for this curriculum. What started with 3 graduates in 1967 has grown to 90 graduates in the class of 2019. The American Academy of Physician Assistants reports that more than 131,000 PAs are working in the US, where PAs practice in every specialty, with approximately 13% working in Emergency Medicine.

In the Duke University Hospital Emergency Medicine division, our PAs practice in all areas of the department, including the main department, the Clinical Evaluation Unit, Medical Screening Examination and SPEED. In addition to being highly skilled practitioners, Duke Emergency Medicine PAs are dedicated educators. The vast majority of Duke PA students rotate in our department during their training. Our PAs instruct these students during their rotation. Additionally, our PAs collaborate with Duke PAP instructors by teaching in the clinical skills laboratory, providing ultrasound training, facilitating small group problem solving, and assessing patient presentations. They also function as faculty advisors in Duke’s Inter-professional Education Program, where PA, MD, NP, and PT students learn essential collaborative practice skills to provide excellent patient-centered health care.

DEAN T. HARRISON, MPAS, PA-C, DFAAPA

In addition to his role as Duke Emergency Medicine’s Advanced Practice Provider

Joel Stoia (center) precepts trainees from the top-ranked Duke Physician Assistant Program.
Director, Physician Assistant Emergency Medicine Residency Program Director, and Director of the Clinical Evaluation Unit, Dean T. Harrison is a well-known national speaker considered an expert in observation management and patient flow management. Most recently, he was appointed to a National Advisory Board on Observation Management and to a National Patient Flow Management Advisory Board. He was an expert panel member in a recent Observation Management conference in Chicago, Illinois. Along with Dr. Joseph Borawski, Dean was an invited speaker at the World Congress Observation Management Summit in April. He was also a featured speaker at February’s Observation Patient Management Forum held in Las Vegas. He has been invited again to speak on Patient Flow Management in an Emergency Medicine forum held in Nevada.

JOEL STOIA, PA-C

Joel Stoia, one of our senior PAs, is the PA educator liaison between Emergency Medicine and the Duke PA Program. He is actively involved in teaching PA students in both the pre-clinical and clinical phases of their education. He delivers multiple lectures in Emergency Medicine to the PA students in addition to serving as a consultant toward unit redesign on topics related to the practice of Emergency Medicine. In 2017, Joel was inducted into the Duke PAP chapter of the Pi Alpha National Honor Society in recognition of his academic achievements, teaching skills and educational leadership.

ASHLEY BRITT, PA-C

Another rising star in our department is Ashley Britt. She received the prestigious Henry “Buddy” Lee Treadwell Award last year, presented on behalf of the graduating PA class to instructors and preceptors who have significantly impacted the education and growth of Duke PA students during their training. Additionally, Ashley was a member of a collaborative team who were invited to visit Cuba to evaluate the country’s unique healthcare delivery system.

Our PAs serve as educators, role models, and mentors in the field of Emergency Medicine.
Chronic pain is an increasingly large health and economic burden, and improving treatment requires understanding and preventing the transition from acute to chronic pain. The biopsychosocial model explains pain as the integration of biological with psychological and social factors and is established in the literature, but has seen limited implementation in medical management.

Dr. Stephanie Eucker’s research seeks to understand the biopsychosocial factors affecting acute pain and predicting chronic pain. She seeks to improve pain management by integrating multiple treatment modalities, including physical, psychological, complementary, and alternative therapies.

After graduating summa cum laude and Phi Beta Kappa from Washington University in St. Louis, Dr. Eucker entered the Medical Scientist Training Program at the University of Pennsylvania, where she completed her MD training as well as a PhD in bioengineering, studying traumatic brain injury (TBI). This research experience undoubtedly played an instrumental role in her desire to pursue a career in Emergency Medicine. She chose the field of bioengineering for her doctoral research because she was able to merge her interests in biology, physics, engineering, and medicine to study the combined effects of biomechanical and vascular mechanisms in TBI. For this research, she worked with mechanical and biomedical engineers, pediatric critical care physicians, animal research technicians, and applied physicists. She was able to synthesize their individual expertise to develop a model of pediatric brain injury describing the dysfunction that results from both mechanical tissue deformation and ischemic blood flow, leading to several publications. During residency, she worked with mechanical engineers and emergency medicine physicians on a project to characterize mechanisms of TBI from different types of car crashes.

As an Emergency Medicine researcher, Dr. Eucker has already rapidly expanded her portfolio to include collaborations across multiple departments and institutes including Orthopedics, Duke Clinical Research Institute's Musculoskeletal Research group,....
Psychology, Anesthesiology, Geriatrics, and Urology. She has grown a robust research group of residents and medical and undergraduate students, and she directs and motivates these various learners with different levels of experience and time constraints.

Dr. Eucker is currently undertaking multiple clinical research projects focused on addiction and pain. These include a retrospective analysis of ED low back pain patients to identify predictors of long-term opioid use, an analysis of low back pain and depression screening factors to identify ED patients at higher risk of long-term disability, and an assessment of patient expectations for treatment and recovery outcomes during ED visits for musculoskeletal pain. She has also recently completed a systematic review showing improved pain outcomes when non-pharmacologic strategies are incorporated into the ED management of pain.

Dr. Eucker is involved in the Durham Joins Together to Save Lives initiative, a Durham County-wide task force developed to address substance and medication misuse. She is the Emergency Department liaison to the Mental and Behavioral Health subcommittee of this task force, and she collaborates with mental health professionals from across the county, including medical and behavioral health providers, Department of Public Health officials, and Durham County Criminal Justice. They have initiated a state-funded project to bring peer support specialists to patients in the ED for opioid overdose to facilitate transition into treatment.

Dr. Eucker has been involved in several ED-based implementation projects. These projects include EQUIPPED: Enhancing Quality of Prescribing Practices for Older Adults Discharged from the Emergency Department, a multi-institutional project funded by the Agency for Healthcare Research and Quality to improve prescribing patterns among ED providers with an overall goal to reduce medication-associated adverse events in older patients. Dr. E Tucker and collaborators implemented electronic health record interventions, including a new discharge order set, to facilitate correct medication choices, educational interventions, and peer benchmarking-based provider feedback, which successfully decreased the prescription rate of potentially inappropriate medications. Furthermore, she leads a multi-professional effort of physicians, nurses, pharmacists, and other ED staff to improve naloxone prescribing for patients discharged from the ED for opioid overdose, using implementation science to study the results of our efforts. She recently expanded this effort into a Duke Endowment-funded project to integrate improved naloxone prescribing throughout the health system, as well as decrease opioid and benzodiazepine co-prescribing from the ED through behavioral psychology-based approaches.
Although oxygen is essential for life, too much oxygen can actually be problematic. The potential for exposure to toxic levels of oxygen is a risk to military, commercial, and recreational divers alike. In the military setting specifically, mission performance may be compromised and warfighters’ safety jeopardized if symptoms of oxygen toxicity develop.

Central nervous system (CNS) oxygen toxicity can manifest as mild symptoms, such as headache, nausea, tinnitus, lip twitching, or tingling of the limbs, which may impair mission performance. More concerning, however, is the possibility of loss of consciousness or convulsion, which could result in death.

A number of physiological factors, such as elevated oxygen partial pressure in the blood, elevated arterial carbon dioxide, immersion, exercise, and water temperature, have been investigated and found to increase the risk of oxygen toxicity. Currently, diver safety is maintained through training and adherence to maximum inspired oxygen and time limits. Aside from adhering to these prescribed limits, no practical therapeutic intervention is currently used to prevent the development of CNS oxygen toxicity. The United States Navy has an urgent need for better methods to prevent or delay the onset of CNS oxygen toxicity and to safely expand the scope of diving operations.

Dr. Bruce Derrick of Duke Emergency Medicine, Drs. Jonn Freiberger and Richard Moon from Duke Anesthesiology, and the team at the Duke Center for Hyperbaric Medicine and Environmental Physiology are working on a novel approach to these problems. Induction of ketogenesis through a diet with a high fat-to-carbohydrate ratio (ketogenic diet) can reduce the frequency and severity of epileptic seizures in humans, and a recent animal study has shown that nutritional ketosis also delays the onset of CNS oxygen toxicity. The study team has devised a method to safely investigate the possible role nutritional ketosis could play in delaying or preventing CNS oxygen toxicity.

The Navy also has a need to better understand the physiologic principles involved in the onset of CNS oxygen toxicity, and the narcotic effects that
high oxygen may have on cognitive performance. This understanding could lead to development of monitoring systems or devices which could further improve diver safety.

Unfortunately, very little human research has been conducted on CNS oxygen toxicity in the past three decades. The Duke Center for Hyperbaric Medicine & Environmental Physiology is uniquely equipped to safely investigate human physiology in austere environments through modulation of ambient pressure, gas partial pressures, temperature, immersion, exercise, and electrophysiologic and invasive hemodynamic monitoring while conducting mission-relevant cognitive testing. Subjects’ physiologic responses to these environmental changes are monitored carefully with the subject seated on a cycle ergometer, immersed to the shoulders and breathing from a specially designed apparatus capable of monitoring inspired and expired gas partial pressures with continuous mass spectrometry and respiratory volumes. The system also has the capacity to quickly switch from one breathing gas to another at hyperbaric pressures.

Dr. John Freiberger, study co-principal investigator, previously validated the use of NASA’s Multi-Attribute Task Battery-II cognitive testing flight simulator software as a means of administering a continuous, mission-relevant cognitive test to a working diver. The software tests the subjects’ ability to pilot a vehicle on a straight course with random (second to second) variability in difficulty, while simultaneously responding to a random sequence of warning lights, gauges, and radio calls. The multiple tasks, which may occur simultaneously, evaluate the subjects’ overall attention, level of concentration, attention to peripheral vision, and multitasking ability, and help the research team measure the overall narcotic effects of various gases. This technique is being used in the current study to further evaluate effects of “oxygen narcosis” detected in the previous work conducted by Drs. Freiberger, Derrick, and Moon.

This complex study is a $1M project funded by Naval Sea Systems Command (NAVSEA) and is scheduled to complete in October 2020. It is being conducted by a large multidisciplinary, multi-departmental and multi-institutional team. In addition to Dr. Derrick, Emergency Medicine residents Dr. Baha Al-Jarani and Dr. Sara Gonzalez are involved in data collection and are critical in maintaining diver safety during the experiments, along with new Emergency Medicine faculty member and hyperbaric medicine fellow Dr. Peter Sayers. Dr. Matthew Luedke (Neurology) leads the neurophysiology team in collecting and interpreting electroencephalogram data. Ketone metabolism expert Dr. Dominic D’Agostino from the University of South Florida and ketogenic dietitian Candy Richardson oversee the subjects’ diet modification and analysis. Duke Professor of Biostatistics and Informatics Dr. Maragatha Kuchibhatla serves as the study statistician. Michael Natoli from the Duke Hyperbaric Center expertly leads the team of chamber operators, laboratory technicians, and research coordinators, including Emergency Medicine research staff members Michelle Griffin and Andrew Bouffler, along with Kristi Romero from the Duke Office of Clinical Research.

This project would not be possible without support from NAVSEA and the countless physicians, researchers, and support staff involved. The study has the potential to inform institutional policymakers responsible for the safety and performance of divers and warfighters, and to improve our knowledge of undersea medicine and human physiology.
Through the Society for Academic Emergency Medicine (SAEM) Foundation Research Training Grant, Dr. Samuel Francis has the opportunity to accelerate his research skills at an exponential rate previously not possible. With the support of this grant, Dr. Francis is able to devote three-quarters of his time to the basic and translational research lab of Dr. Gowthami Arepally, Professor of Medicine and Pathology at Duke. Dr. Francis has worked with Dr. Arepally, a foremost world expert on heparin-induced thrombocytopenia and platelets, to conduct pilot studies examining platelet biomarkers, particularly platelet factor 4 (PF4), in both healthy and disease states. For the next two years, Dr. Francis aims to further our understanding of platelet biomarkers through several different avenues.

Preliminary data from this collaborative lab's experiments demonstrate that PF4 levels are elevated in patients with venous thromboembolism (VTE) when compared with controls. Drs. Francis and Arepally intend to enroll a prospective cohort of patients with suspected VTE in the Emergency Department for platelet biomarker analysis. The study team will follow up whether the patients are ultimately VTE-positive or -negative and assess the predictive values of their biomarkers as a result.

Another aspect of this research will involve quantification of platelet biomarker release ex-vivo, at the bench of Dr. Francis’s nascent lab. Human thrombi will be generated from both healthy control and patient samples to thoroughly examine the biomarker kinetics over time. Factors examined will include potential clotting disorder effects on thrombus generation and breakdown, anticoagulation effects, and healthy donor variability.

By working with Adamas Nanoscience, a biotechnology company, Dr. Francis and colleagues will be able to use antibody-labeled nanodiamonds to bind to specific antigens expressed on activated platelets within thrombi. Nanodiamonds allow unique micro-visualization of thrombi over time that will bring a unique aspect to thrombus evaluation. The use of confocal microscopy and scanning electron microscopy to evaluate thrombi will further enhance our understanding of both normal and abnormal thrombus generation.

Finally, these researchers intend to use murine models of venous thrombi to evaluate the biomarker release in an inferior vena cava thrombus model. This will allow our investigators to more easily trend biomarker release over time in multiple potential experiments.

It is due in great part to the support of the SAEM Foundation that Dr. Francis can continue the exciting progress he has made in understanding thrombus formation and associated platelet biomarkers. The basic science and translational research conducted with this grant will lay the groundwork for important clinical advances in the near future.
JINNY YE, MD

Jinny Ye’s long-term career goal is to be a global health researcher with a primary focus in international health services and systems. To achieve this goal, she has sought out career-building opportunities. One such opportunity is collaborating with Dr. Marcus Ong, Director of Research at the Department of Emergency Medicine at Singapore General Hospital, and his colleagues at Duke University-National University of Singapore Medical School. In 2009, Dr. Ong and his colleagues developed and implemented the Pan-Asian Resuscitation Outcomes Study (PAROS), an international, multicenter, prospective registry of out-of-hospital cardiac arrest (OHCA) across the Asia-Pacific region. She will apply the funds awarded with the Society of Academic Emergency Medicine Foundation Resident and Medical Students Research Grant to evaluate the performance of Advanced Life Support Termination of Resuscitation (ALS-TOR) rules with dispatcher-assisted CPR (DA-CPR) compared to bystander-initiated CPR using Singapore Emergency Medical Services data. Singapore’s prehospital system is unique in that a dispatcher-assisted CPR protocol was implemented in 2012, allowing a comparison between the performance of ALS-TOR pre- and post-implementation of DA-CPR. The support of this grant will allow Dr. Ye to grow a budding collaboration with Dr. Ong and his colleagues in Singapore. This collaboration is not only supported by both institutions, but also will allow her to develop her career as a global health systems researcher. The team of experts in cardiac arrest, prehospital systems, and international collaborations, will be key in the successful implementation of this project. Her early career experience in researching and publishing a peer-reviewed paper on the screening of a voice disorder as well as in implementing smaller projects in HIV care in Mozambique, snake envenomations in Brazil, and interpersonal violence in Brazil have provided Dr. Ye with the appropriate level of training to successfully complete the proposed research project as a principal investigator. During her recently completed research fellowship, she completed two classes in the Clinical Research Training Program (Introduction to Statistical Methods and Principles of Clinical Research) and the Society of Academic Emergency Medicine Foundation Advanced Research Methodology Evaluation and Design (ARMED) Course. Dr. Ye also received a scholarship to attend ARMED in recognition for her potential to contribute to science and research. Her advanced training and motivation, in addition to the guidance of expert mentors, are necessary to establish a new international research collaboration between Duke and Duke-National University of Singapore.

CE: Understanding the Complications of Sickle Cell Disease.

Design Considerations for UAV-Delivered Opioid Overdose Interventions.


ACR Appropriateness Criteria® Suspected Spine Trauma.

Knowledge of Myocardial Infarction Symptoms and Perceptions of Self-risk in Tanzania.

Emergency Department Interventions for Older Adults: A Systematic Review.

Curated Collections for Educators: Eight Key Papers About Feedback in Medical Education.

Does this Patient Have a Severe Snake Envenomation?: The Rational Clinical Examination Systematic Review.

Historical Comparison of Soft-Tissue Infections in a Division 1 Wrestling Team After Adoption of a Novel Ph-Barrier Product.


D-Dimer Levels in VTE Patients with Distal and Proximal Clots.

In Patients with Chest Pain, Heart Pathway-Guided and Usual Care Did Not Differ for MACE or Health Care Use.


The Phylogeography and Incidence of Multi-drug Resistant Typhoid Fever in Sub-Saharan Africa.


Injury Prevalence and Safety Habits of Boda Boda Drivers in Moshi, Tanzania: A Mixed Methods Study.


Toll-Like Receptor Activation as a Biomarker In Traumatically Injured Patients.


Damage-Associated Molecular Patterns in Critical Illness and Multi-Organ Failure.


Provocative Biomarker Stress Test: Stress-Delta N-Terminal Pro-B Type Natriuretic Peptide.


Toxic Megacolon Due to Severe Clostridium difficile Colitis.


Perinephric Hematoma Visualized on Bedside Ultrasound in the Emergency Department.


Unexpected Cardiac MRI Findings in Patients Presenting to the Emergency Department for Possible Acute Coronary Syndrome.


NHAMCS Validation of Emergency Severity Index as an Indicator of Emergency Department Resource Utilization.


Spontaneous Spinal Epidural Hematoma (SEH): A Rare Cause of Spinal Cord Compression.

Dr. Julian Hertz's interest in global health research was piqued while spending two years in East Africa performing clinical research under the National Institutes of Health Fogarty International Research Scholarship program.

While working in both Tanzania and Haiti, he developed an interest in myocardial infarction in low-income countries, which led him to conduct a systematic review of acute coronary syndrome (ACS) in sub-Saharan Africa (SSA).

This project highlighted how little is known about the burden of this disease in the developing world, a cause that prompted him to spend the past year in Tanzania as a Fogarty Global Health Fellow, conducting research on ACS in the emergency department (ED).

ACS is the leading cause of death worldwide. Although there has been a rapid rise in cardiovascular risk factors across SSA, ACS remains a very rare diagnosis across the region. The aim of Dr. Hertz’s research was to understand factors which may contribute to ACS underdiagnosis in Tanzania and to quantify the true burden of ACS in an ED.

First, Dr. Hertz conducted a retrospective chart review of adult admissions at Kilimanjaro Christian Medical Centre (KCMC), a referral hospital in northern Tanzania. He found that ACS was a very rare admission diagnosis. The ratio of ACS admissions to stroke admissions at KCMC was 1:23, compared to a ratio of 1:1 in the United States. This discrepancy suggested that either ACS is being underdiagnosed or that the epidemiology of cardiovascular disease in Tanzania is incredibly unique.

In order to understand patient-related factors which may contribute to ACS underdiagnosis, Dr. Hertz conducted a community survey in northern Tanzania. He found that less than 1% of adults associated the symptom of chest pain with ACS and only a minority of patients would present to a hospital for such symptoms. He also found that only 16% of respondents could identify any symptom of ACS and only 27% thought they had any chance of suffering ACS. These findings highlighted the possible role of patient knowledge and healthcare-seeking behavior in ACS under-detection.

In order to understand current patterns of ACS care, Dr. Hertz then conducted a prospective observational study of adults presenting to the KCMC ED with chest pain or shortness of breath. He found that large numbers of patients with multiple ACS risk factors presented with these symptoms. However, only half of these patients received an electrocardiogram (ECG), less than 3% underwent cardiac biomarker testing, and less than 1% received aspirin. These findings suggest that physician practices may be contributing to ACS under-diagnosis in Tanzania.
In the final phase of Dr. Hertz’s study, all adult patients presenting with chest pain and shortness of breath have undergone ECG readings and troponin testing. This study is ongoing, but preliminarily ACS appears to be remarkably common: 23% of these patients have had either a STEMI or NSTEMI.

Moreover, mortality among patients with ACS in the study is very high: 31% of these patients died within 30 days of hospital presentation. Dr. Hertz hopes these troubling findings will draw attention to ACS under-diagnosis and under-treatment in SSA.

With that final phase of his project wrapping up, Dr. Hertz was recently awarded a Research Pilot Grant by the Duke Center for AIDS Research (CFAR) to study myocardial infarction among people living with HIV in the same region of northern Tanzania. This population experiences a significantly greater risk of myocardial infarction than HIV-negative individuals, even when controlling for traditional cardiovascular risk factors. As such, Dr. Hertz hopes to understand the burden of myocardial infarction among HIV-positive patients in Tanzania and the barriers to evidence-based care for myocardial infarction among such patients.
NEW FELLOWS

Nathan McMurray, MD
Sport Medicine

Brandon Taylor Ruderman, MD
Emergency Ultrasound

Martin Sayers, MD
Undersea and Hyperbaric Medicine

PGY1 EM RESIDENT CLASS OF 2022

Jordan Chick, MD

David Conner, MD

Mary Claire Ellis, MD, MPH

Franklin Ewing, MD

Kathrine Giarra, MD

Angel Guerrero, MD

Patrick Kelly, MD

Chukwuemeka Onwuzurumba, MD

Timothy Peterson, MD

Gregory Prendergast, MD, MSc

Jessica Robertson, DO, MS

Mitchell Veverka, MD
It's 9:22 AM on Wednesday morning, and slowly a crowd gathers downstairs in the Commons of the Searle Center. As one peers around the room, it is easy to identify colleagues from across the institution. Vice presidents, medical directors, associate chief nurse officers, as well as senior and frontline staff members from almost every area of the hospital are congregating until one of the hospital's executives calls the group to order.

At most institutions, a gathering like this would signify either a response to a mass casualty incident or preparation for a visit from a regulatory commission. At Duke, this is just the way business is conducted these days. Everyone is in the room to participate in a daily Hospital Huddle, an incisive 15-minute meeting that serves to keep leaders across the institution updated on key safety and operational matters of the day. It is a critical part of Duke's Commit to Zero Campaign.

What may be even more amazing than the number and composition of those gathered, is the fact that this is one of dozens of similarly structured meetings that will occur that day and every day. Surprisingly, there has not been a single calendar invitation sent out. There is no attendance sheet or roll call. Those who gather do so because they have found value in the information disseminated and the ability to quickly and efficiently network with others from around the institution to effect change and make improvements for their respective units.

In early February 2019, Duke University Hospital launched an audacious initiative with which senior leadership challenged all who worked at the institution to "Commit to Zero." By recognizing that at Duke, just like at every healthcare institution, patients and sometimes staff incur injuries or "harms" that could have potentially been prevented, leadership wanted to empower everyone from frontline staff to the most senior executives to identify issues and learn to solve them to the point of origin (denoted "solve to root" in the campaign's new vernacular).

Through a three-tiered system of elegantly designed, escalating huddles, staff are asked to bring concerns to the attention of the greater group where they are assisted in solving problems immediately as well as identifying and eradicating the underlying causes to prevent future occurrences. In some cases, escalation from the smaller Emergency Department huddle to the Clinical Services Unit or full hospital huddle must occur to gain the assistance of appropriate leaders to properly solve the issue to root. This cascade of escalation ensures that everyone throughout the institution is responsible for identifying and solving issues, and affords immediate access to local and senior leaders for assistance on a daily basis.

It seems that gone are the old days of duct tape and workarounds for solving problems in the ED and elsewhere at Duke. The institution is holding itself, and everybody within it, to a higher standard by giving them the tools to effect change. That said, I still have one roll left in my desk drawer...just in case.
Tell us about how you started in this job.

My career path has typically been administrative. When I moved to the Raleigh/Durham area in October 2002, I knew that I wanted an administrative or executive assistant position. Initially, I was unsure about where to start. In January 2003, I uploaded my resume on Monster.com, a global employment website. At the end of that month, I received a call from Duke Human Resources asking whether I would be interested in interviewing for a staff assistant position in the Emergency Medicine Residency program. I was extremely excited because I had never worked in a hospital, especially one as prestigious as Duke. I immediately said "yes" without any thought about salary or job details. Later that day, I received a called from Dr. Susan Promes, the Program Director of the Residency program. She gave me a short description of the job details and we set up the interview for the following week. I interviewed with Dr. Promes and Dr. Charles Gerardo, who at that time was the medical student clerkship director. I felt great about the interview and the same week, I was offered the job. I started on March 3rd, just before match week.

How has this job changed you?

As a residency coordinator for 16 years at Duke, I've learned how to go with the flow and shift my mindset when changes occur. I needed to develop these coping mechanisms because my role continues to evolve, especially within the last 5 years due to the increasing regulatory demand in medical education. The biggest and most positive change I've encountered is moving from paper applications to an electronic application process. This change has made the process so much better.

What is your proudest accomplishment?

My proudest moment was in June 2005, when our first EM residency class graduated. I remember having mixed emotions as I arrived at the graduation venue. I looked at my residents' faces, and they were all beaming with pride and joy. I too was overwhelmed with joy, because as the coordinator, I was happy to have contributed to their reaching the end of their residency.
What is the hardest part about this job?

The hardest part is being pulled in many directions daily and setting priorities based on the needs of the Program Director, Assistant Program Directors, residents, faculty, Accreditation Council for Graduate Medical Education (ACGME) WebADS, Graduate Medical Education (GME), GME Track, and American Board of Emergency Medicine (ABEM). It takes lots of planning and effort to decide what must be handled first and coming up with a sequence or order for getting things done. Most days, my to-do list is overflowing with tasks, so I have to prioritize based on individual needs and annual residency program cycle, because throughout the year mandatory reports are required for organizations such as ACGME WebAds, GME Track, and ABEM.

Do you have a message to our current and future residents?

Current Residents:
Remember that you are in training, so get the wisdom, knowledge, and skill that is needed to become a good physician. Lean on your co-residents and attendings because they understand your life and can be your lifeline to help you through the highs and lows.

Future Residents:
Enjoy residency—don’t worry about finishing. Just about being your best self in everything you do. You will work hard during residency so expect that and meet the challenge. You will feel great about it, especially at graduation!

Our program and its directors truly have a genuine interest in your experience as a whole—both on an individual basis and the group as a team. Like you, we have continued to evolve throughout the years to meet your needs in the best way we can.

To everyone, be kind, patient, and humble. This is the right way to relate to others.
NEXT GENERATION EM
Emergency Medicine met the Resident Class of 2022 at a welcome party this summer.

CAMERON CRAZIES
The trainees defended their title, making them two-time champions in the EM Attending Versus Resident Basketball Game at Cameron Indoor Stadium.

BARK IN THE PARK
Duke Emergency Medicine faculty, staff, trainees, and their furry friends enjoy a Durham Bulls baseball game during a Bark in the Park event.

COME ON DOWN
Duke Emergency Medicine pressed their luck at “The Price is Right Live” when the show visited the Durham Performing Arts Center.

DISHING IT OUT
Attendees at the Society for Academic Emergency Medicine enjoy camaraderie and conversation over dinner.

DRIVING AMBITION
The 3rd Annual Duke EM Golf Tournament included fun play and funny costumes. Congratulations are in order to the team that won the day: Drs. Barrord, Eppenstiener, Nelp, and Painter.
OUR MISSION
To provide expert care for patients, to train the next generation of emergency medicine physicians to be leaders in the field of EM, and to conduct innovative research that improves patient care.

PERIGEE EDITORIAL STAFF

Editors
Ashley Phillips and Alexander Limkakeng, MD

Proofreader
Ashley Morgan

EM Contributors
Charles Gerardo, MD
Brenda Lanan, MD
Neel Kapadia, MD
Jason Theiling, MD
Dean Harrison, MPAS
Joel Stoia, MS, PA-C

Layout and Design
Scott Behm

Cover Photography and Design
Lauren Halligan

Stephanie Eucker, MD, PhD
Bruce Derrick, MD
Julian Hertz, MD
Kimberly Brown
Stephen Shaheen, MD
Lauren Siewny, MD

Click.
Like.
Follow.
Watch.
surgery.duke.edu/emergency-medicine
Duke Surgery
@DukeEmergency
Duke Surgery

© Copyright 2019 Duke Surgery