

Department News | Summer 2019

New clinic bridges inpatient, outpatient addiction care

Originally published in the VUMC Reporter on May 2, 2019

By Kelsey Herbers

Vanderbilt University Medical Center is launching a Bridge Clinic for patients with substance use disorder who are leaving Vanderbilt University Adult Hospital (VUAH) and require followup care for their addiction.

The clinic, which opens May 17 in the Village at Vanderbilt, will manage patients for a three-month transitional period to ensure they continue receiving care for their addiction in hopes of preventing future hospitalizations, morbidity and mortality.

The clinic services will prioritize patients who are caught in the hospital system without a safe or timely discharge option. Because they're often not linked

Continued on page 2



The Addiction Bridge Clinic will be staffed by a multispecialty team, including, from left, David Edwards, MD, PhD, David Marcovitz, MD, William Sullivan, MD, MEd, Cody Chastain, MD, Katie White, PhD, MD, and Jason Ferrell, LCSW. Photo by Frederick Breedon

Addiction Care Clinic | 1

ICU Handoffs | 1

Department Achievements | 4 New Department Members | 6

Head KRNA | 7

Recent Publications | 8

Department of Anesthesiology at Vanderbilt University Medical Center Office of the Chair 1211 21st Avenue South, 722 MAB Nashville, TN 37212 | 615-936-1595

Weaver, Liberman contribute to new patient handoff standardization

Vanderbilt University Medical Center rolled out a new process for patient handoffs on Wednesday, April 17, 2019. It is intended to improve patient care and safety. Members of the Department of Anesthesiology Sheena Weaver, MD, and Justin Liberman, MD, were a part of helping roll out and develop this process.

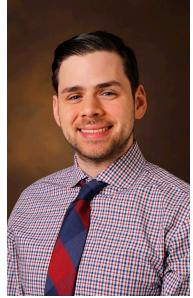
This perioperative process involves standardizing patient handoffs to reduce medical errors, adverse events, and communication errors as the patients are transported from the OR to the ICUs. The handoffs will communicate the patient's medical history, operation performed, key operative findings and issues, as well as other important data points.

According to an article titled "Sentinel Event Alert" published in *The Joint Commission*, failed handoffs are a longstanding, common problem that is compounded by the high frequency of handoffs. Teaching hospitals can experience more than 4,000 handoffs a day.

The publication further states that in 2016 a study estimated that communication failures in healthcare were responsible, in part, for at least 30 percent of all malpractice claims.



Sheena Weaver, MD



Justin Liberman, MD Continued on page 3

Message from the Chair



Warren Sandberg, MD, PhD Chair, Department of Anethesthesiology

The heat waves of summer have arrived and, along with them, the new fiscal year.

We are excited to welcome our new fellows to their respective programs.

Speaking of fellowships, we are happy to announce a new Neuroanesthesiology Fellowship program. This one-year fellowship is focused on providing extensive academic, educational, and research opportunities to prepare the fellow for an academic career or leadership in nonacademic practice.

David Edwards, MD, PhD, played a role in the opening of a new Bridge Clinic, which serves patients with substance use disorder who are leaving Vanderbilt University Adult Hospital and require follow-up care for their addiction. This clinic will provide three-month transitional care to help manage patients and ensure that they continue to receive care for their substance use disorder. Opening this clinic is a significant milestone for VUMC, and the fact that the department was involved showcases our leadership in, and commitment to, improving the health of the community.

Further examples of our department's commitment to improving the health of the community are the contributions of Sheena Weaver, MD, and Justin Liberman, MD, to the new ICU hand-off standards. These standards will improve patient safety for VUMC ICUs.

I believe you will enjoy reading this quarter's newsletter. It captures well many of the great things our department is doing, from working with an excellent new team of fellows to improving the health of the community in significant ways.

Addiction

to follow-up care, these vulnerable patients have longer lengths of stay and high rates of readmission locally and nationally.

"The Bridge Clinic is intended to expand access to a state-of-the-art addiction treatment model using an integrated care team that is designed around the individual's needs and will facilitate successful hospital transitions into long-term wellness in recovery and engagement in a personalized care plan," said Jameson Norton, MBA, Chief Executive Officer of Vanderbilt Psychiatric Hospital and Executive Director of Vanderbilt Behavioral Health.

"VUMC is uniquely capable of building these innovative, person-centered solutions by bringing together a multidisciplinary team of specialists to achieve better outcomes on behalf of those we serve."

According to David Marcovitz, MD, assistant professor of Psychiatry and Behavioral Sciences and medical director of the Bridge Clinic and the VUAH Addiction Consultation Service, the integrated approach will leverage collaboration by psychiatry, internal medicine and pain medicine.

The approach will be especially helpful for patients who require intravenous (IV) antibiotic therapy to treat injectionrelated infections, most often from opioid use disorder. These patients are typically held in the hospital or referred to a skilled nursing facility throughout the therapy's six-week duration to avoid the potential risk of the patient injecting into the central line.

"Through the Addiction Consultation Service, we've been observing that patients with infectious complications from IV drug use are getting stuck in the hospital when there's no empirical evidence to suggest they can't be managed as outpatients with a PICC (peripherally inserted central catheter) line. These prolonged lengths of stay generate frustration for patients and providers alike at times," said Marcovitz.

"Based on preliminary data from other national leaders in this field, we believe these patients can be safely discharged once their acute medical issues are resolved to an outpatient clinic where they can receive medications for addiction treatment and regular followup. If we can make sure these patients don't fall through the cracks, maybe we can make it safer for them to leave the hospital."

Marcovitz believes the approach will decrease patients' length of stay and rate of readmission while freeing inpatient beds for more acute care needs.

The Bridge Clinic will operate one day per week with an eventual capacity of up to 200 patients once all new providers have been onboarded. Patients will be followed in clinic for up to three months, starting with weekly visits for six to eight weeks after discharge, followed by biweekly visits.

Patients will then be referred to VUMC's longitudinal programs or to community providers to continue addiction treatment with appropriate medications and psychological support.

The clinic's staff will include an addiction psychiatrist, primary care physician, infectious disease doctor, pain anesthesiologist, nurse practitioner, social worker and recovery coach to cover all aspects of the patient's care.

"With so much stigma and limited availability of reliable treatment for some of the most economically and socially vulnerable of our patients, we haven't been able to treat the underlying disease that is ultimately responsible for their admission to our medical center: their substance use disorder," said William Sullivan, MD, MEd, Hugh J. Morgan Chief Resident in the Department of Internal Medicine, who will be providing primary care services in the clinic.

"With regular follow-up with the same treatment team, we will be able to make a real impact not only on the medical complications of opioid use disorder, but also on the psychological, interpersonal and familial consequences of opioid use as we develop trust between patients and providers," he said.

Weaver continued from front

Weaver, as the lead faculty for the Basics of Quality Improvement Curriculum for Anesthesiology interns, started this quality initiative back in 2017.

It was a small-scale intern-led initiative based on OR-to-ICU handovers, specifically in the Neurological ICU. Preliminary observational data showed that ICU providers themselves were only notified or present for handover about 82 percent of the time.

When ICU providers were surveyed, they felt the handover was subjectively adequate only 78 percent of the time. She said they began to track a lot of the data points that these handover strategies used and found they were only completed 60 to 82 percent of the time in the Neurological ICU.

In February 2018, a version of handoff standardization was made mandatory for all Neurosurgical cases coming to the ICU from the OR. It required all team members to be present during the huddle, all information to be given in a standard fashion, and all members to stay until the huddle was completed.

Weaver commented that it was important to make sure the team huddle didn't take up too much time, as time is a significant commodity when there is a focus on OR efficiency. "The average time for huddle in pilot was three and a half to four minutes, so not too much time when it was truly standardized. This was a big draw for both the anesthesia and the surgical providers."

Over the course of the first eight months of the initial pilot, Weaver said compliance was good. "Our biggest challenge was that the process was not standard for everyone outside of the Neurosurgical ORs. Nights and weekends saw non-Neuro staff providing handovers in the ICU. These individuals were commonly not aware of the full process. "There was no way to standardize it across so many providers when the process was so variable from unit to unit."

Weaver found that other ICUs were ultimately struggling with the same handover issues, and as each got wind of the new strategies in the Neurological ICU, they ended up working together in a combined effort to standardize handovers and the post-operative time out process in all surgical ICUs.

To help the ICUs work together, Executive Medical Director of Critical Care Services Tim Nunez, MD, assisted with soliciting buy-in from the different ICUs. The biggest challenge was getting the information out to so many people, from nurses to anesthesiologists to the surgical teams.

Weaver developed a very in-depth set of online educational modules that helped to inform more than 1,500 staff of the nuances of the new process. With Nunez's leadership at the ICU and Surgical Sciences level, and Liberman's close relationship with perioperative clinical staff leaders and nurse managers, this alignment of leadership efforts provided a unique opportunity to relay a lot of information to a significant number of clinicians, clinical leaders, and front-line staff in an efficient and successful manner.

Weaver got involved with developing this handover process because quality improvement has always been her interest. "Quality improvement is my niche here. I like everything in its place and organized." She has been working with Neuro ICU leadership to make quality, process, and patient safety improvements since she became the founder and co-Chair of the Neurological ICU Quality Improvement Committee in 2012. Making sure things are standardized is part of what anesthesiologists do, and patient safety goes hand in hand with anesthesiology.

Weaver said she hopes that this standardization continues to promote a culture of patient safety, which she said is something VUMC has always tried to foster. "It would be nice if this was a refreshing reminder that we can implement large-scale quality improvement initiatives that can be successful and sustainable," she said.

Another goal with this project is to knock down the silos. According to Weaver, institutions are commonly divided by silos, or sections, many of which will have differing philosophies. "Each ICU had a different way of doing handoffs. This project was a way to knock down those silos, bring everyone together to collaborate, and make sure that this is a safe and sustainable success. Developing meaningful working relationships between units is a great way to continue to achieve future successes."

"I firmly believe that variability in healthcare is bad," Nunez said. "If you can take care of patients the same way, over and over again, because it's the right thing to do, you do better for patients." He further explained there is no logical argument against this new process, and the hope is that by eliminating variability, error will be eliminated.

Weaver has gotten a lot of emails thanking her for the implementation, which she feels has been encouraging. "It makes us feel like we are doing something right, that it is something that people think needed to happen," she stated. Nunez noted, while it is too early to get back the numbers on how the ICU handoffs are affecting VUMC, he has been told anecdotes about how well the new process is going.

Weaver said the hope is to make a lot of this handoff process automated in Epic, so providers have even less work to do and fewer tasks to remember, which could further reduce the risk for errors.

"So far, this process has been very successful," Liberman said. He explained that there are rare instances of the new protocol not being followed, and these instances usually occur only when staff are unsure of the process.

Weaver did emphasize the fact that it is a very large team that is helping make this a successful culture change. "There are dozens of people that made this happen, from Tenisha Preston at the perioperative level to each of the ICU nurse managers to the clinical staff dedicated to protocol compliance. We have so many people to thank."

Department Spotlight: Celebrating Departmental Accomplishments

On Friday, April 12, 2019, the department hosted its 2nd Annual Parkbench Positioning Workshop, a Patient Safety initiative to prevent pressure injuries and nerve injuries during neurosurgical procedures.

On Thursday, April 25, 2019, several members of our department participated in the 2nd Annual Tennessee Pediatric Pain Management Symposium.

A new Neuroanesthesiology Fellowship has been approved by the Graduate Medical Education Committee.

Nathan Ashby, MD, Christopher Canlas, MD, Susan Eagle, MD, Jane Easdown, MD, Jesse Ehrenfeld, MD, MPH, Raj Gupta, MD, Koffi Kla, MD, Justin Liberman, MD, Puneet Mishra, MD, Dorothee Mueller, MD, and Matt Weinger, MD, were thanked by the Vanderbilt School of Medicine for their participation in the admissions process.

Peter Chin, MBBS, in his role as Sedation Committee Chair, was recognized along with a large multidisciplinary team by Wright Pinson, MD, for their decisive and crucial work in revising sedation policies and implementing new engineered safety systems in response to a critical event involving sedation.

Chief CRNA Brent Dunworth gave a poster presentation at the Nursing Research Symposium in Light Hall on Friday, May 17.

On Thursday, April 11, 2019, **Jesse Ehrenfeld, MD, MPH,** presented Grand Rounds at Massachusetts General Hospital. The title of his Ground Rounds was "Using Technology to Improve Reliability and Safety in the Operating Room."

Jesse Ehrenfeld, MD, MPH, had the opportunity to meet with Centers for Medicare and Medicaid Services Administrator Seema Verma to discuss the improvement of affordability in healthcare.

Matt Fosnot, CRNA, and **Buffy Lupear, CRNA,** partnered with Perioperative Nursing on Friday, May 17, to deliver two posters on noise in the OR, presented by Glendyle Levinskas, RN. The posters won second prize at the Nursing Research Symposium.

Raj Gupta, MD, chaired the American Society of Regional Anesthesia and Pain Medicine (ASRA) Annual Regional Anesthesia and Acute Pain Medicine meeting this year in Las Vegas, Nevada, from Thursday, April 11 to Saturday, April 13, 2019.

Heather Jackson, MSN, RN, APRN-BC, received the Nancy Wells Research and Evidence Based Practice Award at the VUMC Nursing Honors Event.

Jen Jayaram, Periop Service Lead NP, and Chelsea Banks, Medical Student Research Intern, presented on "The Effect of an ERAS program on Reducing Opioid Prescriptions at Discharge" at the 2019 Annual Congress of Enhanced Recovery and Perioperative Medicine.

Donna Kenney, MS, CRNA, has been promoted to Lead CRNA in the Division of Ambulatory Anesthesiology.

Avinash Kumar, MD, and a team of six students won the Arnold Award for Best Design in Biomedical Engineering 2019 as part of the Senior Design Day for the Vanderbilt School of Engineering. Kumar was the faculty mentor on the project.

Ryan Lefevre, MD, a fellow from our Cardiothoracic Anesthesiology Division, received a Best of Meeting Oral Abstract Award for "Venous Harmonics are More Sensitive than Central Venous Pressure for Detecting Acute Right Heart Failure in a Rat Model of Respiratory Arrest" at the recent conference of the Society of Cardiovascular Anesthesiologists.

Matt McEvoy, MD, and **Chris Hughes, MD**, presented at the 2019 Annual Congress of Enhanced Recovery and Perioperative Medicine in Washington, DC.

Kelly McQueen, MD, MPH, presented at the 7th annual ERAS World Congress in Liverpool, England. The topic was "Challenges for ERAS in LMICs."

Naeem Patil, MBBS, PhD, received the Shock Society Faculty Research Award.

The Riess Lab presented eight posters at Experimental Biology 2019 from Thursday, April 4, through Sunday, April 7, 2019.

Joseph Schlesinger, MD, was featured in the podcast "Sound and Health: Hospitals" on Thursday, May 23, 2019.

Ed Sherwood, MD, PhD, received the Shock Society Scientific Achievement Award at the 42nd Annual Conference on Shock in San Diego, CA.

Amanda Stone, PhD, received the 2019 International Association for the Study of Pain (IASP) Early Career Research Grant for her project titled "The influence of childhood chronic pain history on parenting and pain-related risk in offspring: A longitudinal cohort study."

Amanda Stone, PhD, gave a presentation in a workshop at the 12th International Symposium on Pediatric Pain in Basel, Switzerland, on Wednesday, June 19. The workshop was titled "It takes two to tango: Evaluating the role of parents in psychological interventions for pediatric chronic pain." She participated alongside colleagues from Stanford University, Karolinska Institute, and Maastricht University.

Jackie Woodruff, CRNA, has been promoted to Adult CRNA Manager.



CHESTNUT'S OBSTETRIC ANESTHESIA PRINCIPLES and PRACTICE



The sixth edition of *Chestnut's Obstetric Anesthesia: Principles and Practice* was published in April. David Chestnut, MD, is the lead editor on the textbook, which is regarded as the principal textbook of the obstetric anesthesiology specialty. It is important to note that the cover pictures a maternalfetal image to draw attention to the fact that obstetric anesthesiology is about the simultaneous care of both the mother and her unborn child(ren).

The first edition of the textbook was published exactly 25 years ago in 1994, with subsequent editions published every five years. It has been translated into Chinese, Portugese, and Vietnamese.

Chestnut's goals with the publication of the first edition were to collate the most important information that anesthesia providers should know about obstetrics and to prepare a thorough and user-friendly review of anesthesia care for obstetric patients. Those goals remain intact with the publication of the sixth edition. Reviews of the previous editions have noted that the content is comprehensive, the material is current and relevant, and the writing is clear.



Send us your news for inclusion in department publications: Weekly Update, Anesthesia Monitor & Blog anesthesiology.communcations@vumc.org

2019 Research Symposium

2019 Winners:

Charles Bernard Pittinger Prize - Basic Science Research: Brandon Turner

Charles Bernard Pittinger Prize -Clinical Translational Research: Christopher Hughes, MD

Charles Bernard Pittinger Prize - Health Services and Informatics Research: Jason Slagle, PhD

> Best Oral Presentation: Marcos Lopez, MD

Best Poster Presentation: Eric Figueroa

Roger England Research Award for Excellence in Support of Basic and Clinical Science: Karen McCarthy

The Bradley Smith Mentorship Award: Jonathan Wanderer, MD, MPhil



Warren Sandberg, MD, PhD (left) and Ed Sherwood, MD, PhD (right) present an award to Y.S. Prakash, MD, PhD (center). Prakash was the featured speaker at the Research Symposium held on Friday, May 3, 2019. His topic was "Cellular Senescence, Mitochondria and Lung Diseases: Aging at Birth?"

Prakash is a physician-scientist at Mayo Clinic, where he has studied, taught, researched and practiced for almost 29 years. He is professor of anesthesiology and physiology at Mayo Clinic College of Medicine and Science and chair of Mayo Clinic's Department of Physiology & Biomedical Engineering.

NEW DEPARTMENT MEMBERS



Todd Bohling Certified Registered Nurse Anesthetist

EDUCATION: MSN, Anesthesiology,

University of Alabama, Birmingham, AL (2017) BSN, University of Northern Colorado, Greeley, CO (2013)

FUN FACT:

I deployed to Baghdad in 2006.



Mary Ruth Brewer Lead Administrative Assistant Pediatric Anesthesiology

FUN FACT: I returned to Nashville and to VUMC and am excited be back. I enjoy yoga, meditation and design.



Caroline Campbell Certified Registered Nurse Anesthetist

EDUCATION: MSN, Anesthesiology, Middle Tennessee School of Anesthesia, Madison, TN (2018) BSN, University of Alabama, Birmingham, AL (2009)



Akhil Choudhary Research Assistant Center for Research and Innovation in Systems Safety

EDUCATION: BA, Anthropology, University of Connecticut, Storrs, CT

(2019)

FUN FACT: I am a certified scuba diver and former bartender.



Jacob Clifton Associate Statistical Analyst Vanderbilt Anesthesiology & Perioperative Informatics Research

EDUCATION:

BS, Mechanical Engineering, University of Tennessee, Knoxville, TN (2016)

FUN FACT: My uncle is a Hall of Fame NFL lineman.



Matthew Danley, DO Fellow Cardiothoracic Anesthesiology

EDUCATION:

Residency, Anesthesiology, Texas A&M, Temple, TX (2019) DO, University of North Texas, Fort Worth, TX (2015)

FUN FACT:

I love to scuba dive. I spent 2 weeks in Africa teaching KRNAs.



Elizabeth Edge Senior Administrative Assistant Center for Research and Innovation in Systems Safety

FUN FACT:

I love to play bingo. I enjoy the thrill that I get when playing as well as the anticipation each time they yell a number out.



Ali Elsayes, MD Fellow Anesthesiology Critical Care Medicine

EDUCATION:

Residency, Anesthesiology, Tufts Medical Center, Boston, MA (2019) MD, Ain Shams University, Cairo, Egypt (2012)

FUN FACT:

I have yet to spend more than a few years in a single country/continent; probably why I am very fond of learning languages, cultures, and the interplay between them.



Christina Gray Administrative Manager Administration

FUN FACT:

I like photography, sports (Predators, UT, Red Sox, Titans, and Texans), and travel. My dream vacation would be to visit Iceland. I have completed 10 half marathons.



Brandon Keener Certified Registered Nurse Anesthetist

EDUCATION:

MSN, Anesthesiology, Middle Tennessee School of Anesthesia, Madison, TN (2018) BSN, Arkansas State University, Jonesboro, AR (2013)

FUN FACT:

I grew up in a small town in Arkansas. My first degree is in English and worked as a teacher before pursuing nursing/anesthesia.



Sameer Lakha, MD Fellow Anesthesiology Critical Care Medicine

EDUCATION:

Residency, Anesthesiology, Mount Sinai Hospital, New York, NY (2019) MD, Icahn School of Medicine at Mount Sinai, New York, NY (2015)

FUN FACT:

I was a huge Model UN nerd in high school and college. I have since moved on to board games.



Emily McDonald Certified Registered Nurse Anesthetist

EDUCATION:

MSN, Anesthesiology, Middle Tennessee School of Anesthesia, Madison, TN (2012) BSN, Auburn University, Auburn, AL (2006)

FUN FACT:

I have done four ironman races (so far).



Seth Stever

Business Intelligence Analyst Vanderbilt Anesthesiology & Perioperative Informatics Research

EDUCATION:

BS, Management Information Systems, Michigan Technological University, Houghton, MI (2013)

FUN FACT:

I am a military kid born in Germany, but don't remember anything outside the U.S.



Jeremy Walker, MD Assistant Professor of Clinical Anesthesiology Pain Medicine

EDUCATION:

Fellowship, Pain Medicine, Vanderbilt University Medical Center, Nashville, TN (2016) Residency, Anesthesiology, Northwestern University, Chicago, IL (2015) MD, University of Tennessee College of Medicine, Memphis, TN (2011)

FUN FACT:

I appeared on the game show Jeopardy! while a senior at Vanderbilt University.



Clark Weber Project Manager Administration

EDUCATION:

MA, Business, University of Louisville, Lousiville, KY (2018)
BA, Government and Sociology/Anthropology, Centre College, Danville, KY (2014)

FUN FACT: I have visited over 25 countries.



Shelby Woltjen Certified Registered Nurse Anesthetist

EDUCATION:

MSN, Anesthesiology, University of Alabama, Birmingham, AL (2017) BSN, University of Alabama, Tuscaloosa, AL (2013)

FUN FACT:

I have a furbaby named Nala. She is a one year old goldendoodle who, in my opinion, is the cutest girl in the world.



Jing Zhou Staff Scientist Research

EDUCATION:

MS, Marine Biology/ Aquaculture, Ocean University of China, Qingdao, China (1985) BS, Biology/Marine Biology,

Ocean University of China, Qingdao, China (1982)

FUN FACT:

I like to watch basketball games and play computer games.

Head KRNA recaps her experience at VUMC, VIA fundraiser

Mary Mungai, head Kenyan Registered Nurse Anesthetist (KRNA) at AIC Kijabe Hospital, visited Vanderbilt University Medical Center from Saturday, March 30 through Saturday, April 13. While here she was the special guest speaker at the Vanderbilt International Anesthesia Fundraiser on Saturday, April 6, 2019.

"It was truly inspiring to hear Mary Mungai's personal story," said Claire Posey, associate program manager of VIA. She grew up in a rural village in Kenya, became one of the first KRNAs under the tutelage of Mark Newton, MD, at Kijabe, and is now serving as a leader helping to shape anesthesia education for her country. "Through her own powerful example, Mary showed us the importance of investing in education and what a huge difference it can make," Posey said.

Mungai said her time at VUMC was spent on learning as she observed and interacted with practitioners in the institution. "It was great and at the same time humbling for me to be involved in talking to cadres that are, in my opinion, more educated and experienced in their career than myself."

She said the medical providers at VUMC probably learned about how medical providers in Kijabe manage difficult situations in low resource settings. She also learned from VUMC.

"I learned and benefited the most from the interactions and observations and am in the process of putting into practice what I learned from them." She spent time in the operating rooms following different services and said it was very helpful to observe. "I had great time with the CRNA leaders and they talked me through how they do their work, management, continuous education and mentorship of the students who rotate through the institution. It was humbling how everyone I came across was supportive of enabling me to achieve my goals during the time," she said.

Newton said many CRNAs attended Mungai's talk and were humbled by her commitment to patient care in a very low resource setting. "They left these meetings inspired and encouraged to do more here at VUMC."

Posey said it was really special to have Mungai at the fundraiser this year. "In inviting Mary, we wanted to both honor her achievements and also give the VUMC community an opportunity to learn from her and see the impact of VIA's efforts in Kenya first-hand. I'm so glad we were able to do that."

She said she hopes that those who attended the fundraiser as well as those who spent time with Mary during her twoweek visit to VUMC gained a better appreciation for what it's like to practice medicine in a low-resource setting and the enormous inequality that exists between healthcare providers and patients in high-income countries and those in lowincome countries.

Mungai stated she had a great time with the families that hosted her and they went the extra mile to make her comfortable. "I am forever grateful to all that facilitated my coming over and organized my schedule. The trip will be helpful to my department here in Kijabe."

Recent Publications

Agarwala AV, Lane-Fall MB, Greilich PE, Burden AR, Ambardekar AP, **Banerjee A**, Barbeito A, Bryson TD, Greenberg S, **Lorinc AN**, Lynch IP, Pukenas E, Cooper JB. Consensus Recommendations for the Conduct, Training, Implementation, and Research of Perioperative Handoffs. Anesth Analg. 2019 May;128(5):e71-e78. doi: 10.1213/ANE.000000000004118. PubMed PMID: 30995210.

Anacker AMJ, Moran JT, Santarelli S, Forsberg CG, Rogers TD, Stanwood GD, Hall BJ, **Delpire E**, Veenstra-VanderWeele J, Saxe MD. Enhanced Social Dominance and Altered Neuronal Excitability in the Prefrontal Cortex of Male KCC2b Mutant Mice. Autism Res. 2019 Apr 12. doi: 10.1002/aur.2098. [Epub ahead of print] PubMed PMID: 30977597.

Anders S, Aaron H, Jackson GP, Novak LL. Supporting Caregivers in Pregnancy: A Qualitative Study of Their Activities and Roles. J Patient Exp. 2019 Jun;6(2):126-132. doi: 10.1177/2374373518785570. Epub 2018 Jul 16. PubMed PMID: 31218258; PubMed Central PMCID: PMC6558945.

Bansal VK, Dobie KH, **Brock EJ.** Emergency Response in the Ambulatory Surgery Center. Anesthesiol Clin. 2019 Jun;37(2):239-250. doi: 10.1016/j.anclin.2019.01.012. Epub 2019 Mar 16. Review. PubMed PMID: 31047127.

Bauchat JR, Weiniger CF, Sultan P, Habib AS, Ando K, Kowalczyk JJ, Kato R, George RB, Palmer CM, Carvalho B. Society for Obstetric Anesthesia and Perinatology Consensus Statement: Monitoring Recommendations for Prevention and Detection of Respiratory Depression Associated With Administration of Neuraxial Morphine for Cesarean Delivery Analgesia. Anesth Analg. 2019 May 9. doi: 10.1213/ANE.00000000004195. [Epub ahead of print] PubMed PMID: 31082964.

Boncyk C, Hughes CG. Delirium after Cardiac Surgery and Cognitive Change: Comment. Anesthesiology. 2019 May;130(5):857-859. doi: 10.1097/ALN.0000000000002698. PubMed PMID: 30994565.

Boncyk CS, Rengel KF, Pandharipande PP, Hughes CG. In the ICU - delirium post cardiac arrest. Curr Opin Crit Care. 2019 Jun;25(3):218-225. doi: 10.1097/MCC.0000000000000615. PubMed PMID: 30985357.

Bruehl S, Gamazon ER, Van de Ven T, Buchheit T, Walsh CG, **Mishra P,** Ramanujan K, Shaw A. DNA methylation profiles are associated with complex regional pain syndrome following traumatic injury. Pain. 2019 May 22. doi: 10.1097/j.pain.0000000000001624. [Epub ahead of print] PubMed PMID: 31145213.

Buckenmaier, III, CC, Kent M, Brookman JC, Tighe PJ, Mariano ER, **Edwards D,** eds. Acute Pain Medicine. New York: Oxford University Press; 2019.

Cai K, Wang J, Eissman J, Wang J, Nwosu G, Shen W, Liang HC, Li XJ, Zhu HX, Yi YH, Song J, Xu D, **Delpire E,** Liao WP, Shi YW, Kang JQ. A missense mutation in SLC6A1 associated with Lennox-Gastaut syndrome impairs GABA transporter 1 protein trafficking and function. Exp Neurol. 2019 Jun 6;320:112973. doi: 10.1016/j.expneurol.2019.112973. [Epub ahead of print] PubMed PMID: 31176687.

Chang MP, **Walters CB**, Tsai C, Aksamit D, Kateh F, Sampson J. Evaluation of a Neonatal Resuscitation Curriculum in Liberia. Children (Basel). 2019 Apr 8;6(4). pii: E56. doi: 10.3390/children6040056. PubMed PMID: 30965659.

Chen R, Prael F, Li Z, **Delpire E,** Weaver CD, Swale D. Functional Coupling of K+-Cl- Cotransporter (KCC) to GABA-Gated Cl- Channels in the Central Nervous System of Drosophila melanogaster leads to altered drug sensitivities. ACS Chem Neurosci. 2019 Apr 3. doi: 10.1021/acschemneuro.8b00697. [Epub ahead of print] PubMed PMID: 30942574.

Crockett CJ, Donahue BS, Vandivier DC. Distraction-Free Induction Zone: A Quality Improvement Initiative at a Large Academic Children's Hospital to Improve the Quality and Safety of Anesthetic Care for Our Patients. Anesth Analg. 2018 Oct 23. doi: 10.1213/ANE.000000000003879. [Epub ahead of print] PubMed PMID: 30973384.

Crothers G, **Edwards DA, Ehrenfeld JM,** Woo E, McCluggage L, Lobo B. Evaluating the Impact of Auto-Calculation Settings on Opioid Prescribing at an Academic Medical Center. Jt Comm J Qual Patient Saf. 2019 Mar 29. pii: S1553-7250(18)30435-5. doi: 10.1016/j.jcjq.2019.02.010. [Epub ahead of print] PubMed PMID: 30935884.

Del Rio JM, Abernathy Iii JH, Taylor MA, **Kertai MD.** What Makes a Team Work, a Specialty Work, and a Society Work: The SCA/STS Adult Cardiac Anesthesia Section of the STS Database for the SCA/STS Database Sub-Committee. J Cardiothorac Vasc Anesth. 2019 Mar 30. pii: S1053-0770(19)30316-7. doi: 10.1053/j.jvca.2019.03.056. [Epub ahead of print] PubMed PMID: 31047781.

Dorst MT, **Anders SH,** Chennupati S, Chen Q, Purcell Jackson G. Health Information Technologies in the Support Systems of Pregnant Women and Their Caregivers: Mixed-Methods Study. J Med Internet Res. 2019 May 9;21(5):e10865. doi: 10.2196/10865. PubMed PMID: 31094327.

Franklin AD, Llobet JR, Sobey CM, Daniels JM, Kannankeril PJ. Stellate Ganglion Catheter Effective for Treatment of Ventricular Tachycardia Storm in a Pediatric Patient on Extracorporeal Membrane Oxygenation: A Case Report. A A Pract. 2019 May 30. doi: 10.1213/XAA.0000000000001036. [Epub ahead of print] PubMed PMID: 31162228.

Fukuda S, Ihara K, **Bohannon JK, Hernandez A, Patil NK, Luan L,** Stothers C, Stark R, Prough DS, Herndon DN, **Sherwood ER,** Enkhbaatar P. Monophosphoryl Lipid A Attenuates Multiorgan Dysfunction During Post-Burn Pseudomonas Aeruginosa Pneumonia In Sheep. Shock. 2019 Apr 26. doi: 10.1097/ SHK.00000000001364. [Epub ahead of print] PubMed PMID: 31045990.

Hardcastle C, Huang H, Crowley S, Tanner J, Hernaiz C, **Rice M**, Parvataneni H, Ding M, Price CC. Mild Cognitive Impairment and Decline in Resting State Functional Connectivity after Total Knee Arthroplasty with General Anesthesia. J Alzheimers Dis. 2019 May 16. doi: 10.3233/JAD-180932. [Epub ahead of print] PubMed PMID: 31104019.

Hernaiz Alonso C, Tanner JJ, Wiggins ME, Sinha P, Parvataneni HK, Ding M, Seubert CN, **Rice MJ**, Garvan CW, Price CC. Proof of principle: Preoperative cognitive reserve and brain integrity predicts intra-individual variability in processed EEG (Bispectral Index Monitor) during general anesthesia. PLoS One. 2019 May 23;14(5):e0216209. doi: 10.1371/journal.pone.0216209. eCollection 2019. PubMed PMID: 31120896.

Hester DL. Bacchus Listed for a Liver Transplant. Anesthesiology. 2019 Jun 10. doi: 10.1097/ ALN.00000000002844. [Epub ahead of print] PubMed PMID: 31205073.

Iwaki Y, Yashiro K, Kokubo M, Mori T, Wieting JM, McGowan KM, Bridges TM, Engers DW, **Denton JS**, Kurata H, Lindsley CW. Towards a TREK-1/2 (TWIK-Related K+ Channel 1 and 2) dual activator tool compound: Multi-dimensional optimization of BL-1249. Bioorg Med Chem Lett. 2019 Jul 1;29(13):1601-1604. doi: 10.1016/j.bmcl.2019.04.048. Epub 2019 Apr 29. PubMed PMID: 31072652.

Jackson HJ, Lopez C, Miller S, Engelhardt B. A Scoping Review of Acupuncture as a Potential Intervention for Neonatal Abstinence Syndrome. Med Acupunct 2019; 31(2):69-84.

Jackson HJ, Lopez C, Miller S, Englehardt B. Neonatal Abstinence Syndrome: An Integrative Review of Neonatal Acupuncture to Inform a Protocol for Adjunctive Treatment. Adv Neonatal Care. 2019;19(3):165-178.

Jaynes M, **Kumar AB.** The risks of long-term use of proton pump inhibitors: a critical review. Ther Adv Drug Saf. 2018 Nov 19;10:2042098618809927. doi: 10.1177/2042098618809927. eCollection 2019. Review. PubMed PMID: 31019676; PubMed Central PMCID: PMC6463334.

Kharade SV, Sanchez-Andres JV, Fulton MG, Shelton EJ, Blobaum AL, Engers DW, Hofmann CS, Dadi PK, Lantier L, Jacobson DA, Lindsley CW, **Denton JS.** Structure-activity relationships, pharmacokinetics, and pharmacodynamics of the Kir6.2/SUR1-specific channel opener, VU0071063. J Pharmacol Exp Ther. 2019 Jun 14. pii: jpet.119.257204. doi: 10.1124/jpet.119.257204. [Epub ahead of print] PubMed PMID: 31201216.

Marcinkiewcz C, Bierlein-De La Rosa G, Dorrier CE, McKnight M, DiBerto JF, Pati D, Gianessi CA, Hon OJ, Tipton G, McElligott ZA, **Delpire E,** Kash T. Sex-dependent modulation of anxiety and fear by 5-HT1A receptors in the bed nucleus of the stria terminalis. ACS Chem Neurosci. 2019 May 29. doi: 10.1021/acschemneuro.8b00594. [Epub ahead of print] PubMed PMID: 31140276.

Morandi A, Thompson JL, Bellelli G, Lucchi E, Turco R, Gentile S, Trabucchi M, MacLullich A, Meagher D, Ely EW, **Pandharipande P, Smith H.** Delirium in patients with dementia and in children: Overlap of symptoms profile and possible role for future diagnosis. Eur J Intern Med. 2019 May 28. pii: S0953-6205(19)30143-8. doi: 10.1016/j.ejim.2019.04.023. [Epub ahead of print] PubMed PMID: 31151748.

Pal N, **Kertai MD.** Bag-Mask Ventilation during Tracheal Intubation of Critically III Adults. N Engl J Med. 2019 Jun 20;380(25):2481. doi: 10.1056/NEJMc1905226. PubMed PMID: 31216408.

Qiu Y, **Freundlich RE**, Nelson S, **Clark C**, **Ehrenfeld JM**, **Wanderer JP**. Using a National Representative Sample to Evaluate the Integrity of the 30-Day Surgical Mortality Metric. J Med Syst. 2019 Apr 25;43(6):155. doi: 10.1007/s10916-019-1288-3. PubMed PMID: 31025119; PubMed Central PMCID: PMC6483956.

Shaffer BK, Cui Y, **Wanderer JP.** Validation of the LACE readmission and mortality prediction model in a large surgical cohort: Comparison of performance at preoperative assessment and discharge time points. J Clin Anesth. 2019 May 2;58:22-26. doi: 10.1016/j.jclinane.2019.04.039. [Epub ahead of print] PubMed PMID: 31055196.

Siegrist KK, Rice MJ. Point-of-Care Blood Testing: The Technology Behind the Numbers. Anesth Analg. 2019 Apr 3. doi: 10.1213/ANE.000000000004149. [Epub ahead of print] PubMed PMID: 30973383.

Umutesi G, **McEvoy MD**, Starnes JR, **Sileshi B**, Atieli HE, Onyango K, **Newton MW**. Safe Anesthesia Care in Western Kenya: A Preliminary Assessment of the Impact of Nurse Anesthetists at Multiple Levels of Government Hospitals. Anesth Analg. 2019 Jun 12. doi: 10.1213/ANE.000000000004266. [Epub ahead of print] PubMed PMID: 31206426.

Wanderer JP, Nathan N. Drug Calculation Errors in Anesthesia: Would You Pass the Test? Anesth Analg. 2019 Jun;128(6):1056. doi: 10.1213/ANE.0000000000004198. PubMed PMID: 31094764.

Wanderer JP, Nathan N. How Low Can You Go: Mechanical Ventilation Over Time. Anesth Analg. 2019 Jul;129(1):2. doi: 10.1213/ANE.000000000004245. Epub 2019 Jun 18. PubMed PMID: 31206442.

Wanderer JP, Nathan N. The Artificial Pancreas: Coming to an OR Near You? Anesth Analg. 2019 May;128(5):836. doi: 10.1213/ANE.000000000004162. PubMed PMID: 30994540. **Wanderer JP,** Rathmell JP. A Stress Test for the Brain: Sedation-induced Deficits. Anesthesiology. 2019 Jul;131(1):A17. doi: 10.1097/ALN.0000000002853. Epub 2019 Jun 21. PubMed PMID: 31219853.

Wanderer JP, Rathmell JP. Anesthesia without Surgery: Unconsciousness is Metastable. Anesthesiology. 2019 Jun;130(6):A17. doi: 10.1097/ALN.00000000002768. PubMed PMID: 31090604.

Wanderer JP, Rathmell JP. Monitoring Cardiac Output: A Big Problem for Little Patients. Anesthesiology. 2019 May;130(5):A19. doi: 10.1097/ALN.00000000002749. PubMed PMID: 30994552.

Weitzel NS, Twite MD, **Kertai MD.** Knowledge of the Present Is the Roadmap for the Future. Semin Cardio-thorac Vasc Anesth. 2019 Jun;23(2):145-147. doi: 10.1177/1089253219844628. PubMed PMID: 31064315.

Williams DL, Li C, **Sherwood ER.** Loss of monocyte metabolic plasticity in endotoxin tolerance: A model for understanding sepsis-induced immune paralysis? J Leukoc Biol. 2019 May 14. doi: 10.1002/JLB.4CE0319-100R. [Epub ahead of print] PubMed PMID: 31087702.

Wu CL, King AB, Geiger TM, Grant MC, Grocott MPW, Gupta R, Hah JM, Miller TE, Shaw AD, Gan TJ, Thacker JKM, Mythen MG, **McEvoy MD**, Argoff C, **Edwards DA**, Gordon DB, Gulur P, Hedrick TL, Holubar SD, Hurley RW, Jayaram J, Kent ML, Oderda GM, Sun E; Fourth Perioperative Quality Initiative Workgroup. American Society for Enhanced Recovery and Perioperative Quality Initiative Joint Consensus Statement on Perioperative Opioid Minimization in Opioid-Naive Patients. Anesth Analg. 2019 May 9. doi: 10.1213/ ANE.000000000004194. [Epub ahead of print] PubMed PMID: 31082966.

Xu Z, Jiang Y, **St Jacques P,** Scharfman K, **Wanderer JP.** Increase in carbon dioxide removal for early diagnosis of malignant hyperthermia: A retrospective study from a large medical center in North America. J Clin Anesth. 2019 May 17;58:73-74. doi: 10.1016/j.jclinane.2019.05.016. [Epub ahead of print] PubMed PMID: 31108278.

Department Leadership



Warren S. Sandberg, MD, PhD Chair, Department of Anesthesiology Vanderbilt University Medical Center

We provide uncompromising quality in clinical care, research and education. We are:

Compassionate: Offering exceptional perioperative care and pain management to a complex population.

Creative: Advancing the frontiers of science, healthcare and technology.

Committed: Equipping future leaders with solid education and training, both here and abroad.

Collaborative: Working across Vanderbilt University Medical Center and beyond to achieve measurable outcomes.

Executive Committee



Brian J. Gelfand, MD Associate Vice Chair, Educational Affairs



Matthew McEvoy, MD Vice Chair, Educational Affairs



Pratik Pandharipande, MD, MSCI Associate Vice Chair, Faculty Affairs Chief, Anesthesiology-Critical Care Medicine



Mark Rice, MD Executive Vice Chair, Anesthesiology



Amy Robertson, MD Vice Chair, Clinical Affairs



Edward Sherwood, MD, PhD Vice Chair, Research



Matthew Weinger, MD Vice Chair, Faculty Affairs

Division Chiefs



Jeanette Bauchat, MD Chief, Obstetric Anesthesiology



Stephen Doherty, MMHC

Department Administrator

Christopher Canlas, MD Interim Chief, Ambulatory Anesthesiology



Eric Delpire, PhD Director, Basic Science Research



Brent Dunworth, DNP, MBA, APRN, CRNA Chief CRNA



David Edwards, MD, PhD Chief, Pain Medicine



Alexander Hughes, MD Interim Chief, Pediatric Cardiac Anesthesiology



Jill Kilkelly, MD Chief, Pediatric Anesthesiology



Letha Mathews, MBBS Chief, Neuroanesthesiology



Michael Pilla, MD Chief, Multispecialty Adult Anesthesiology



Mias Pretorius, MBChB, MSCI Chief, Cardiothoracic Anesthesiology



Ann Walia, MBBS Chief, Veterans Affairs Anesthesiology Service



Liza Weavind, MBBCh, MMHC Associate Chief, Anesthesiology Critical Care Medicine