

NEPHROLOGY UPDATE

Division-Wide COVID-19 Response

More than six months into the COVID-19 pandemic, and the Division of Nephrology continues to respond in innovative and flexible ways to offer premier patient care, safe work environments, and critical fellowship training.

Early in 2020, hospitals across the country recognized that patients with end-stage kidney disease were at higher risk for developing more serious complications from COVID-19. To minimize risk of exposure to attending physicians and staff, the Division established an attendings-only voluntary COVID-19 nephrology response team, which went into effect on March 20th when the first COVID-19 patient was hospitalized and had to be treated for renal complications. “We had four teams of two attendings each covering any renal issues related to COVID-19 patients,” says Division Chief Benjamin Humphreys, MD, PhD. “At times throughout the spring and summer months, the number of patients we saw in the ICUs climbed significantly, but we had protocols in place to handle the load and dedicated faculty who stepped up to the challenge.”

Anitha Vijayan, MD, medical director for Acute Dialysis Services at Barnes-Jewish Hospital, was part of a team of physicians and administrators within the medical center identifying and implementing guidelines for the management of COVID-19 patients. Working with the hospital’s dialysis nurse manager, Vijayan created a rapid response protocol for renal consults, COVID ICU rounds, AKI management, renal replacement therapy, daily rounds, and management of end-stage renal disease patients.

In the outpatient dialysis centers, there was an immediate need to screen patients for COVID-19 exposure. As patients came multiple times a week, the division was part of a herculean effort to use the medical center’s electronic medical records system, EPIC, to rapidly and easily share testing information among physician offices and outpatient sites.

“We had a unified goal in all of our efforts,” says Jodean Baldauf, nephrology’s senior director of business operations & business development. “We wanted to continue to deliver superb clinical care while taking all available and reasonable measures to protect the patients and staff from COVID-19.”

When identified, symptomatic patients were isolated from other patients, and if a center had more than one COVID-19 positive patient, those patients were grouped on the same shift for dialysis. Baldauf also initiated a weekly call with representatives from local St. Louis DaVita and Fresenius offices as well as transportation companies to keep communication channels open about COVID-19 precautions in effect for dialysis patients.

“In the beginning, patients were a little frightened,” admits Teresa Tamburello, RN, nurse administrator at Chromalloy Dialysis Center. “But spirits are a better now and we have a set routine, which makes everyone more comfortable.”

She adds, “I can’t commend our staff enough. We don’t stand out like the more high-profile front-liners like the EMTs, ICU



Forest Park Home Modalities Team in full PPE.

and ER personnel, but we are here on the front line, too, working very long hours, doing our jobs and doing them well!”

Staff also worked long hours from home, handling everything from administrative duties to setting up a new nephrology telehealth service. In addition, the majority of academic and staff meetings were pushed to virtual platforms. Researchers in the division also held team Zoom calls. “It’s a way for all of us to remain engaged, stay sharp and keep somewhat sane during this pandemic lockdown,” explains Jeffrey Miner, PhD, director of basic research in the division.

Fellowship program leadership also increased communications to engage trainees while maintaining training opportunities. “We receive text messages, emails, lunch, PPEs and most of all, our education has not been compromised in any way,” says fellow Blessing Osondu, MD.

Adds Dr. Vijayan, “It is a privilege to work with such generous and brave colleagues and staff. We come to work every day with the attitude that we are all in this together.”

Message from the Chief



As we went to press in the spring we were still in the early stages of the COVID-19 pandemic, unaware of what lay ahead. Since then I have been so proud of how our faculty, fellows and staff have come together to carry out our core missions of patient care, education and research under drastically different circumstances than normal. Our basic science team manufactured hand sanitizer (“Wash You”) and distributed it throughout the medical campus at a time when supplies were short. Our clinical

attendings selflessly volunteered for the COVID-19 inpatient service as well as to cover general medicine. Our fellows got through the early scare and have adapted to the new reality with grace.

More recently we have had division-wide dialogues concerning the Black Lives Matter movement and how we as a division can adopt anti-racist practices. We have all grown accustomed to telehealth visits (and the attendant Zoom fatigue) and our fellowship leadership team has done a magnificent job designing an engaging virtual fellowship recruitment season.

Despite the challenges that remain, including our concerns about the coming

flu season and the possibility of a third wave, I am incredibly heartened by the resilience, creativity and commitment shown by the entire division. I have every confidence that we will all continue to rise to the challenge and emerge from this pandemic as a stronger community.

Ben

Benjamin D. Humphreys, MD, PhD
Joseph P. Friedman Professor and Chief
Division of Nephrology
Washington University School of Medicine

Fellowship Notes



By Frank O'Brien, MD
Associate Program
Director, Curriculum
Development

It takes a collaborative team approach to educate and train fellows in our Nephrology Fellowship program. Earlier this year, I joined Program Director Steven Cheng, MD, and Associate Program Directors Seth Goldberg, MD, and Tingting Li, MD, MSCI, on an expanded leadership team in order to enhance all aspects of the program and ensure that we continuously evolve education, research and clinical care opportunities for all fellows.

In my role overseeing curriculum development, my primary focus is to enable fellows to obtain a broad and thorough education. Since joining the Division of Nephrology in 2017, I have

had a specific interest in enhancing educational opportunities and have created specific curricula for some of the cornerstones of our Nephrology Training Program. These changes ensure that our fellows will continue to leave our program as among the best trained in the country.

For example, our home modalities program is the largest in the country. To take advantage of this, we created a specific program that emphasizes the interdisciplinary nature of dialysis, harnessing the expertise of our home nurses, dietitians and social workers. By the time fellows leave our program, not only will they be experienced with multidisciplinary collaborative care approaches, they also will be experts in the fields of peritoneal dialysis and home hemodialysis. Because of this, they are well positioned to serve in leadership roles in a wide variety of dialysis settings as they move forward in their career paths.

We also have a large in-center hemodialysis program, serving approximately 350 patients. This is a huge educational resource for our fellows. The in-center curriculum, which I developed, focuses on the practical aspects of hemodialysis management. This involves shadowing the dialysis nurses, learning how to cannulate fistulas, and becoming an expert at water treatment management.

I have more ideas to put into action as we further enhance and expand our core curriculum. There is a reason why we are considered among the best nephrology fellowship programs in the United States — It is because of our dedication and commitment to ensuring we provide the most comprehensive and diverse training and curriculum in a truly collegial environment that is centered around excellence.

Thank You!

The Division of Nephrology thanks the following individuals who have generously donated to our division from February 2020 through September 23, 2020:

Mr. and Mrs. Albert J. and Patricia A. Anderson
Dr. John E. Buerkert
Dr. Feng Chen
Dr. and Ms. Arvind and Dipika Garg
Dr. Seth Goldberg
Dr. Sanjay Jain
Dr. Anuja Java
Dr. Charbel Khoury

Dr. Meei-Hua Lin
Ms. Patricia M. McKevitt
Mr. Vichu Menon
Dr. Anubha Mutneja
Ms. Christina Sakho
Dr. Sadaf Sheikh
LaNese Vahdat
Dr. Anitha Vijayan

Support the Division of Nephrology

If you would like to support our research and teaching mission or contribute to the Division of Nephrology's programs and services, please send your contribution to:

Washington University in St. Louis
Office of Medical Alumni and Development
Attn: Rachel A. Hartmann
7425 Forsyth Blvd.
Campus Box 1247
St. Louis, MO 63105

You may also contact Rachel A. Hartmann directly at 314-935-9715 or by email at rachel_hartmann@wustl.edu if you are considering supporting the Division through appreciated stocks, deferred giving, beneficiary plans or other assets.

Virtual Recruitment Expands Number of Applicants

With COVID-19 forcing medical schools across the country to move to virtual recruitment for residencies and fellowships, the Division of Nephrology went full steam ahead with innovative ways to connect with applicants to its nationally recognized Nephrology Fellowship Training Program.

The unusual benefit of the pandemic was that applicants no longer had to weigh the economic costs of traveling to multiple fellowship programs, which meant that they could apply to more programs than applicants had in years past. Programs across the country, including at Washington University School of Medicine, have been reporting record numbers of applicants.

“Our program leadership team thought long and hard about how to give applicants a ‘taste’ of St. Louis and our extraordinary program without having them set foot on our campus,” says Program

Director Steven Cheng, MD. “So we decided that if they couldn’t come here to see all that we had to offer, we would go to them.”

That means invited applicants were each sent a Nephrology Fellowship “care package,” complete with magazines, articles and brochures showcasing St. Louis. They also received information about the fellowship program, including this division newsletter and a custom photo book highlighting all of the unique attributes of the training program. “And yes, we also sent them some swag,” laughs Cheng. “Socks, T-shirts, pins. It was all a way to remind them of who we are.”

A professional fellowship recruitment video was developed, which focused on a virtual day in the life of one of the nephrology fellows, complete with a tour of the facilities. Face-to-face Zoom virtual interviews were conducted with Cheng, Division Chief Benjamin Humphreys, MD,

PhD, and three other faculty. Zoom meetings also were scheduled between applicants and current fellows. “We went the extra mile in setting ourselves apart from other programs,” says Cheng. “The care package and the carefully curated experience during their interview date provided an incredibly strong picture of our division’s strengths. I think it’s gone extraordinarily well despite not having in-person interviews.”

Check out our new recruitment video at nephrology.wustl.edu.



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Alumni Connections

Aubrey Morrison, MBBS, MACP, FASN

Professor Emeritus, Washington University School of Medicine Nephrology Clinical Research Fellow, 1973-1975
Research Fellow in Pharmacology, 1976-1978

Ask Aubrey Morrison, MBBS, to characterize his 45-year career at Washington University School of Medicine, and he punts to a draft of his memoirs that he's working on titled, "Reflections of a Naïve Trainee."

Morrison, who retired from the Division of Nephrology in early October 2020, flew to St. Louis in 1970 after graduating from the Royal College of Surgeons in Dublin, Ireland. "A professor of medicine in Dublin was a nephrologist and he took a special interest in me as a student, which kindled my interest in nephrology," says Morrison. "One of my classmates, who had a father on the faculty at Johns Hopkins, said that his father suggested I apply to the rotating internship program at Barnes Hospital. The program was in its last year before being phased out and I knew nothing about St. Louis, Barnes Hospital, or Washington University but I decided to fly across the ocean to take the position. If one thinks this naivete was bordering on stupidity, I would understand."

But he jumped into the role. As he did, he couldn't help noticing that all of the physicians around him were white. "All the attendings, residents, and my peer interns were white. I stood out as the only black person," he says. He recalls, vividly, how some physicians mistook him as a transporter, requesting stretchers and other equipment before realizing he was a

physician himself. "Frankly, my presence as a black intern in the surgical suites was a significant departure from the norm, and that forced a rethinking of attitudes at a time when St. Louis had a colorful segregational history."

Complicating his career path was the fact that only three prior rotating interns were accepted as residents in medicine. After an unexpected office conversation with then-chair of the Department of Medicine, Carl Moore, MD, Morrison applied for and was later accepted as an internal medicine resident. Again, he noted, all the attending physicians and the majority of house staff were white and he was the only black resident.

What is indelibly marked in memory is the time in 1972 when a white patient refused to be examined by Morrison, who by then was senior assistant resident. The attending physician learned about the refusal and told the patient that if she refused to be examined by Dr. Morrison, she needed to find another doctor. "At that moment," Morrison says, "I was very reassured that the program was committed to supporting house staff and confronting acts of racism on the service."

As he moved on through a clinical research fellowship in nephrology and a postdoctoral research fellow in pharmacology, however, overt and subtle forms of racism occurred. At every level, Morrison rose above it all and had champions by his side, both for clinical care as well as for research efforts. In the Division of Nephrology, he served for awhile as researcher in the lab of Saulo Klahr, MD. He discovered that the kidney cortex could metabolize arachidonic acid through a NADPH-dependent pathway of cytochrome P450, a finding that was published in the Proceedings of the National Academy of Science. For this and several other research findings, Morrison became the first black physician elected to the American Society for Clinical

Investigation in 1982. When he was promoted to Professor of Medicine in 1987, he was the first black at the School of Medicine to achieve a full professorship. "The door opened a crack and I went through, which has allowed others to follow," he notes.

What to do in retirement? Morrison says he'll travel and keep his ties to the Division of Nephrology and the Department of Internal Medicine for as long as he can. And he'll remember the remarkable patients and advocates he met while forging an amazing career path at Washington University School of Medicine.

On Morrison's bucket list is spending more time with his grandchildren and traveling.



Program Spotlight

Nephrology Telehealth Services

The benefit of launching a nephrology telehealth program became visibly apparent during this year's COVID-19 pandemic.

"Patients were anxious about coming on campus and doing in-person clinic visits, especially as the number of COVID cases were increasing," says Jodean Baldauf, senior director of business operations and business development for the division. "Telehealth allowed them to get questions answered and the care they needed from the comfort of their homes."

With a tight turnaround time for implementation to ensure patient care continued, the division launched audio and video telehealth services in mid-March for evaluation and disease management services, education services and home dialysis visits. Technology challenges quickly became apparent.

"Some patients didn't have computers or weren't tech-savvy, so video visits were not really an option for them and we used phones instead," explains Baldauf. "We also had to react and adapt to federal regulations related to telehealth as well as address

medical licensure issues when handling calls between our providers and out-of-state patients."

In addition, the staff had to quickly learn new technology while teaching it to their patients. "Our team worked very hard and they quickly developed a new workflow to implement telehealth," says Barbara Schmaltz, BSN, RN, renal outpatient nurse manager. "There was a lot of collaboration between our team and the providers to get all of the needs of our patients met. We also did this while many of us were working remotely."

The School of Medicine and Barnes-Jewish Hospital also coordinated efforts to enhance telehealth services and support providers who needed secure access to medical charts. Physicians extended hours to accommodate both in person clinic visits and telehealth visits.

Over the past several months, hundreds of patients have accessed nephrology telehealth services. Says Baldauf, "The end result was that patients really seemed to like having the telehealth option to maintain their health so we are planning to keep it up and running going forward."

Adds Schmaltz, "I was amazed the amount of work everyone did from near and far. We had a very small support staff to assist with telehealth services and we made call after call to our patients to help them with instructions on how to call in or do video conferences, but we all came together so that we could provide the best care for patients. Our satisfaction is hearing from patients that they are pleased with the service and getting the help they need."



Dr. Charbel Khoury and home dialysis nurse coordinators Katie Keene and Cheryl Cress tele-greet a previous home hemodialysis patient who recently received a transplant.

New Nephrology Transplant Fellows

The division welcomes two new transplant fellows to its training program.



Wut Yi Hnnin, MBBS

earned her medical degree from the Institute of Medicine 1 in Myanmar.

Wut Yi Hnnin, MBBS, comes to the Division after completing a fellowship in nephrology at the University of Texas Health Science Center in Houston. She



Munis Mattu, MD

Munis Mattu, MD, earned his medical degree from Jawaharlal Nehru Medical College in India and completed a fellowship in nephrology at the University of Kansas School of Medicine.

The Division accepts two nephrology transplant fellows annually and, at times, a transplant research fellow. Washington University School of Medicine's kidney transplant program at Barnes-Jewish Hospital is one of the largest transplant centers in the country, averaging more

than 325 kidney transplants annually. That represents more than half of all kidney transplants in the state of Missouri. In 2019, the hospital celebrated its 10,000th transplant!

The program also has excellent outcomes, with short- and long-term organ rejection rates following transplant consistently below national averages. In addition to cadaver kidney donations, the center offers living kidney donor matching and transplant.

Research Highlights

Treatment for Rare Complement Diseases Being Studied for COVID-19

Washington University School of Medicine is one of 50 sites across four countries participating in a clinical trial investigating the effectiveness of ravulizumab in treating critically ill patients hospitalized with COVID-19. Ravulizumab is a monoclonal antibody that inhibits the complement system and is already approved by the Food and Drug Administration to treat two rare genetic diseases, atypical hemolytic uremic syndrome and paroxysmal nocturnal hemoglobinuria, both of which cause life-threatening blood clots in small blood vessels. WashU nephrologist and co-investigator on the trial **Anuja Java, MD**, who specializes in treating rare complement diseases, says that atypical hemolytic uremic syndrome causes damage to the kidneys in ways that appear similar to kidney damage

sometimes seen in patients with severe COVID-19. “It is imperative to understand if complement plays a role in COVID-19 so we can modulate it using anti-complement drugs,” explains Java.

In a review article published online in the journal JCI Insight, Java, along with WU principal investigator Hrishikesh Kulkarni, MD, and other colleagues, outlined the potential role of the complement system in the pathophysiology of COVID. “We did a very comprehensive look at the many ways that an uncontrolled complement system could be implicated as the etiology for the many manifestations of COVID, including lung disease, acute kidney injury and strokes,” she says.

Already there is evidence that shows some patients who develop life-threatening COVID-19 complications fail to “dial



Anuja Java, MD

back” complement after the initial viral infection is under control. The researchers say uncontrolled complement activation could explain why some patients develop more severe complications after being diagnosed with COVID-19. Worldwide, investigators plan to enroll 270 adult patients into the study, which is sponsored by Alexion Pharmaceuticals, which manufactures ravulizumab under the brand name Ultomiris.



Monica Chang-Panesso, MD, received a five-year, \$752,858 K08 Mentored Clinical Scientist Research Career Development Award from the National Institutes of

Health to study tubular senescence and proliferative capacity of the aging kidney. Chang-Panesso, who will explore the mechanisms underlying the decreased repair response in an aging kidney after injury, scored a perfect “10” on her NIH application. KO8 awards allow young researchers protected research time under the mentorship of a senior scientist. Division chief Benjamin Humphreys, MD, PhD, serves as Chang-Panesso’s research mentor.



Ying Maggie Chen, MD, PhD, was awarded a Northwestern University George M. O’Brien Kidney Core Center (NU GoKidney) Pilot and Feasibility Grant.

Chen, who directs the division’s Nephrotic Syndrome Clinic and is a specialist in treating rare, protein-spilling kidney diseases, will use the funding to investigate targeted drug delivery to podocytes for the treatment of nephrotic syndrome.



Eirini Kefalogianna, PhD, is the recipient of a three-year, \$231,000 Career Development Award from the American Heart Association to fund research investigat-

ing the roles of cellular and circulating

Tumor Necrosis Factor Receptors 1 and 2 (TNFR1/2) in kidney disease. Her goal is to characterize the roles of these receptors in kidney injury, inflammation and fibrosis using unique pharmacological and genetic tools. The AHA, which offers career development awards to promising young investigators, ranked Kefalogianna’s grant application in the 0.21 percentile.



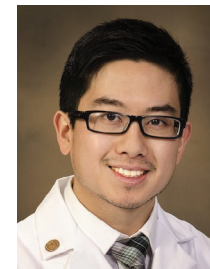
Moe Mahjoub, PhD, along with WU collaborators Susan Dutcher, PhD, professor of genetics, cell biology & physiology, and Steven Brody, MD, the Dorothy R. and

Hubert C. Moog Professor of Pulmonary Medicine, received a four-year, \$3.14 million RO1 renewal grant from the National Heart, Lung and Blood Institute to study the “Regulation of Motile Cilia Assembly in Lung Disease.”

Faculty News and Awards

New Faculty

The Division of Nephrology welcomes two new faculty:



Andy Chuu, MD, joins the division as assistant professor of medicine for WashU Nephrology and the Veterans Affairs (VA) St. Louis Health Care System. He earned

his medical degree from the University of Arizona College of Medicine. A fellow in our program from 2018 to 2020, Chuu’s interests include the study of cardiovascular complications in chronic kidney disease and end-stage renal disease.

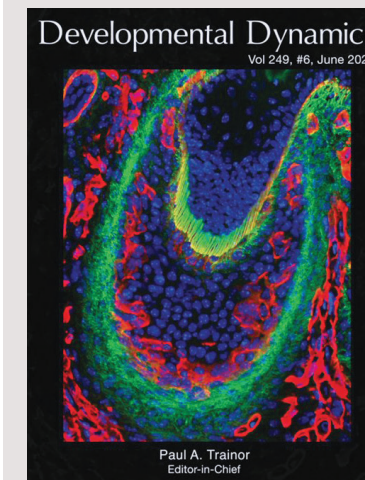
Massini Merzkani, MD, MSCTS, joins the division as an assistant professor of medicine. He earned his medical degree from Universidad Nacional Autonoma de Honduras. Following a fellowship in nephrology at Hofstra Northwell School



of Medicine in New York, he completed a fellowship in transplant nephrology at the Mayo Clinic in Rochester, NY. While at Mayo, he also earned a master’s degree in clinical and translational science. Merzkani’s interests relate to long-term renal allograft survival and complications that occur after kidney transplantation.

Research Publication Covers — 2 in 2 x 2!

Congratulations to two faculty who scored repeats for having research highlighted on the covers of two peer-reviewed publications within the past two years.



Paul A. Trainor
Editor-in-Chief

Meei-Hua Lin, PhD, a senior scientist in the research lab of Jeffrey Miner, PhD, is the first author of a research study published in the June 2020 issue of Developmental Dynamics titled, “Mammalian hemicentin 1 is assembled into tracks in the extracellular matrix of multiple tissues.” Her research also was on the cover of JASN in 2018 highlighting another published research effort titled, “Laminin-521 Protein Therapy for Glomerular Basement Membrane and Podocyte Abnormalities in a Model of Pierson Syndrome.”

Andrew Malone, MB, BCh, is first author of a research study published in the September 2020 issue of JASN, titled, “Harnessing Expressed Single Nucleotide Variation and Single Cell RNA Sequencing To Define Immune Cell Chimerism in the Rejecting Kidney Transplant.” A cellular image from the study appears on the cover. He and co-first author Haojia Wu, PhD, also had another cover illustration in the August 2018 edition of JASN for research into “Single-Cell Transcriptomics of a Human Kidney Allograft Biopsy Specimen Defines a Diverse Inflammatory Response.”



Morrison Receives Nathan Hellman Memorial Teaching Award

Aubrey Morrison, MBBS, MACP, FASN, received the 2020 Nathan Hellman, MD, PhD, Memorial Teaching Award. The award is given annually by nephrology fellows to a member of the faculty to recognize excellence in education. Over his more than 40 years as a faculty member at Washington University, Morrison has mentored a long list of fellows and research scientists. He is a former fellow in our program (1975) and is a recognized pioneer in the study of inflammatory processes in the body and how cytokine proteins and prostaglandins interact to control the body’s response to inflammation, injury, or illness, particularly in chronic kidney disease.

Aubrey Morrison, MBBS, MACP, FASN, accepts the Nathan Hellman Memorial Teaching Award from Division Chief Benjamin Humphreys, MD, PhD during a ceremony held outdoors.



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#nephSTRONG!

Let's stay strong during this COVID-19 pandemic! That's the message from WashU Nephrology, which distributed #nephSTRONG t-shirts to 180 faculty, staff, and trainees earlier this year.

The design was created by two children of faculty: Maya Menon, daughter of Anitha Vijayan, MD, and Nate Li, son of Tingting Li, MD. Their design shows two kidneys placed in the shape of a heart. Banners also were printed for distribution to dialysis units and office locations.

Do you want a T-shirt with the #nephStrong logo, too? Make a donation to our WashU Nephrology Dialysis Patient Assistance Fund of \$15 or more and you can receive one as a thank you gift!

Visit nephrology.wustl.edu and click on Giving at the bottom of the home page.



Drs. Anitha Vijayan (L) and Tingting Li hold up #nephSTRONG t-shirts designed by their children.

#nephSTRONG —

WashU Division of Nephrology —

better together