**Section of Nephrology FY20 Highlights**

Under the direction of Arlene Chapman, MD, the Section of Nephrology continues its tripartide mission of excellence in clinical care, education and scholarly activity. The FY20 academic year was an outstanding year for the Section with many accomplishments including recognition by *US News and World Report*, new research funding, and new educational initiatives.

Within the clinical programs, Nephrology moved to #23 from #31 in the *U.S. News & World Report* 2020-21 survey of best hospitals. The six University of Chicago Medicine (UCM)-led DaVita-owned dialysis units continue to deliver excellent patient care. The Kenwood outpatient dialysis unit led by Bharathi Reddy, MD, received 4 out of 5 stars on the CMS created star-rating system for quality of patient care.

In FY20, the Nephrology Ambulatory Clinic transitioned to a new Medical Director, Bharathi Reddy, MD, working to build a comprehensive multidisciplinary kidney care program that brings social workers, nutritionists, pharmacists, nephrologists and advanced practitioners together to optimize care for patients with advanced chronic kidney disease. Our newest faculty member, Dr. Sam Gunning will be building a multidisciplinary advanced chronic kidney disease program as University of Chicago Medicine builds its Kidney Care First model with CMS. Educational programs that encourage pre-emptive kidney transplantation, appropriate nutritional therapies to slow progression of chronic kidney disease and the preferred choice of home dialysis are provided for patients in-person as well as virtually.

Dr. Hammes coordinates two monthly vascular access multi-disciplinary conferences that includes Nephrology, Surgery, and Interventional Radiology. Her efforts and focus help to improve patient outcomes and facilitate communication among disciplines. “Access” conferences include case presentations at Vascular Surgery Grand Rounds with discussion to determine the best approach personalized for each patient.

The Section of Nephrology is proud of its innovative bench, translational and patient oriented investigations in polycystic kidney disease, acute kidney injury, epithelial transport, growth, and gene expression, and the pathophysiology of kidney stone formation. Dr. Koyner and colleagues have developed artificial intelligence and machine learning approaches to predict who will develop acute kidney injury 72 hours prior to its occurrence. This ground-breaking work has led to a clinical trial that will determine whether early intervention with nephrology input for those identified as high risk for acute kidney injury impacts patient outcome.

The section has two centers of excellence: one in hereditary kidney diseases, focusing on autosomal dominant polycystic kidney disease (ADPKD) and one in nephrolithiasis and idiopathic hypercalciuria. Dr. Chapman has received an NIH U54 award “Biomarkers” PKD Research and Translational Core Center grant in conjunction with Kansas University Medical Center. Hatim Hassan, MD, PhD, has received an R01 award from NIDDK for his project “Oxalobacter Formigenes-derived Factors Impact Hyperoxalemia, Hyperoxaluria, and Related Kidney Stones” as well as an NSF Phase I STTR grant to test new therapies for hyperoxaluria. Peili Chen, PhD, received pilot funding NIH/NIDDK award through Northwestern University for the project “Modeling Metabolomic Features of ADPKD in Induced Pluripotent Stem Cells (iPSCs).” Mary Hammes, DO, received external funding for her project “Use of an intermittent pneumatic compression device to promote vein dilation in patients with kidney disease to enable creation of arteriovenous fistulas.”

The Nephrology Fellowship Program continues to be successfully led by Anna Zisman, MD. We have four outstanding fellows starting with us in FY21 coming from Loyola/MacNeal Hospital, Mercy Medical Center, MedStar Georgetown University Hospital, as well as our own University of Chicago Medical School. A monthly multidisciplinary pathology conference is part of the Renal Grand Rounds curriculum in conjunction with the Department of Pathology, directed by Drs. Anthony Chang and Kammi Henriksen. Under the direction of the Associate Program Director Ben Ko, MD, the second year of the fellowship program provides 4 intensive training tracks leading fellows to become subject matter experts in subspecialized areas of Nephrology. Dr. Ko is preparing for our third year of the national TREKS award (Tutored Research and Education for Kidney Scholars) program, the second grant of its kind ever awarded by the American Society of Nephrology. Through the TREKS program, medical students interested in nephrology from all over the country spend one week every summer at the University of Chicago participating in an integrated experience in both clinical and research nephrology to foster careers as future nephrologists.

On behalf of the Section of Nephrology, Dr. Hatim Hassan received funding for 7 summer research fellowships from the BSCD (Biological Sciences Collegiate Division). The fellowships support students to conduct 10 weeks of full-time research in Pathophysiology, Biology, and Bioenergetics of Renal Diseases under the supervision of a faculty mentor.

**Highlights and Accomplishments**

* Arlene Chapman, MD - received the Lillian Jean Kaplan International Prize for excellence and leadership in Polycystic Kidney Disease.
* Hatim Hassan, MD - selected as one of the Illinois Science and Technology Coalition’s “Researchers to Know” under the category of “Fighting Disease” for his research on oxalate and kidney stone formation in relation to gut bacteria.
* Tipu Puri, MD, PhD - named UCM’s Associate Chief Medical Officer for Clinical Operations.
* Bharathi Reddy, MD - elected to the Board of Directors for ESRD Network 10.
* Michelle Josephson, MD - ASN Chair of Policy and Advocacy Committee; member of ASN COVID response team and chair of Transplant sub-committee; Chair of AST CEOT Planning Committee for Cutting Edge of Transplant meetings 2020 and 2021

**Innovations and Discoveries**

* Bakris GL, **Josephson MA**. Improvement of Cardiovascular Functional Reserve After Kidney Transplant—Has the CAPER Been Solved? JAMA Cardiol.
* Hoste et al, **Koyner J** - Help develop a novel biomarker of acute kidney injury that predicts recovery (versus progression) in those with severe forms of acute kidney injury. *Intensive Care Medicine.*

Dr. Koyner was also Senior Author on a multicenter study validating the furosemide stress test as a clinical tool to detect severe acute kidney injury in ICU patients (Rewa et al – *Journal of Critical Care*).

* Arvans, D., Alshaikh, A., Bashir, M., Weber, C., **Hassan, H.A.** Activation of the PKA Signaling Pathway Stimulates Apical Oxalate Transport by Human Intestinal Caco2-BBE Cells. *Am. J. Physiol. Cell Physiol.* This article is highlighted by an editorial comment in the Journal of Urology.
* Prasad, P., Li, L., Thacker, J., Li, W., Hack, B., **Kohn, O**., Sprague, S. Cortical Perfusion and Tubular Function as Evaluated by Magnetic Resonance Imaging Correlates with Annual Loss in Renal Function in Moderate Chronic Kidney Disease. *Am J Nephrol.*
* **Zisman, A**., **Coe, F.**, Cohen, A., Riedinger, C., **Worcester, E**. Racial Differences in Risk Factors for Kidney Stone Formation. *CJASN ePress*.

This paper was the subject of an ASN podcast by Dr. Zisman and is the first description of a unique stone risk in black patients.

**COVID**

We are extremely proud of our Section’s response to the COVID pandemic. Several of our faculty and fellows volunteered for inpatient floor and ICU COVID coverage with privileges being given to advanced fellows. Special attention was given to the care of transplant patients and the placement of patients requiring dialysis. Updated best practices for renal ICU patients and urine microscopy were detailed and quickly communicated. The stress of COVID is not lost on our outpatient dialysis providers who work directly with patients who come to their units from the community three times a week and cannot afford the luxury of undergoing 14 days of quarantine. This has required frequent testing, moving infected patients to different dialysis units and working carefully with patients, their families and the dialysis unit staff. We are currently seeing patients at a greater rate than before the COVID pandemic began using both in-person and virtual visits.

**FY21 Goals**

With the beginning of our new clinical faculty, energy and attention is now on expanding our research portfolio. Plans are underway to implement the Kidney Care First model at UCM.

**Professors:**

Arlene Chapman, MD (Chief)

Fredric Coe, MD

Michelle Josephson, MD

Jay Koyner, MD

Elaine Worcester, MD

**Associate Professors:**

Patrick Cunningham, MD

Mary Hammes, DO

Benjamin Ko, MD

Orly Kohn, MD

Rita McGill, MD

Tipu Puri, MD, PhD

Bharathi Reddy, MD

Nicole Stankus, MD

Anna Zisman, MD

**Assistant Professors:**

Samantha Gunning, MD+

Hatim Hassan, MD, PhD

Sambhavi Krishnamoorthy, MD+

Yousuf Kyeso, MD+

**Instructor:**

Megan Prochaska, MD

**Clinical Associate:**

John Asplin, MD

**Section Administrator:**

Matthew Lagen

 +New FY21 faculty