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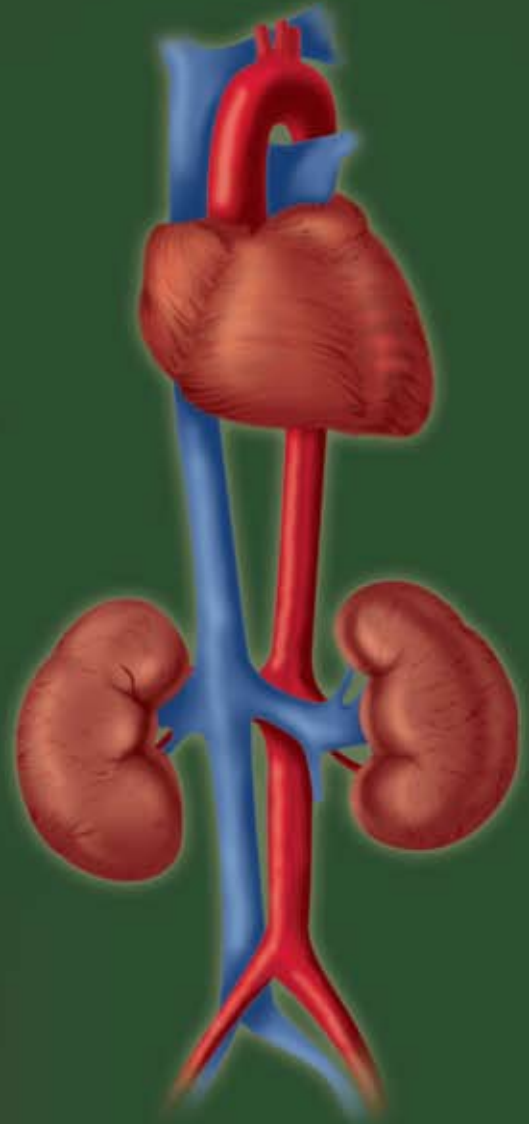
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# Comprehensive Kidney Program



### The University of Michigan Comprehensive Kidney Program

Over the past year the Division of Nephrology has begun to consolidate its myriad basic science, translational research and clinical programs under one umbrella, with a single goal: To support research endeavors and enhance patient care through the U-M Comprehensive Kidney Program. The program will encompass numerous clinical initiatives that span divisions and departments, including multidisciplinary clinics with Pediatrics, Urology and Surgery.

The Comprehensive Kidney Program will also serve to coordinate basic, translational and clinical kidney disease research programs. One aspect of this coordination will be via the newly established Kidney Clinical Research Unit, or KCRU, under the leadership of **Akinlolu Ojo, MD, PhD** (*below left*). The division will take its basic science advances—as well as proteomic and genetics research findings—and through the KCRU, more rapidly translate them into clinical research projects. The unit will integrate both research and training, and focus on the development of novel therapeutic agents for preventing several kidney disorders, including diabetic nephropathy, hypertensive nephrosclerosis and glomerulosclerosis.



### The O'Brien Renal Center Receives New Five-Year Funding

A research cornerstone of the U-M Comprehensive Kidney Program is the George O'Brien Renal Center, led by **Roger Wiggins, MB, BChir** (*below right*). The center recently received a \$3.8 million grant from the National Institutes of Health. It has been continuously funded by the National Institute for Diabetes and Digestive and Kidney Diseases since 1988, and is one of only eight renal centers in the United States.

The center's mission is to facilitate translational research—from bench to bedside and back again. It provides investigators with the infrastructure and research tools to apply discoveries in basic science, genetics and systems biology to patients with kidney disease and use clinical observations and outcomes to further inform research directions. These focused efforts will hasten the development of effective diagnostic methods and treatments, as well as strategies to one day prevent some kidney diseases altogether.

Dr. Wiggins co-directs the center with **Frank Brosius, MD**, Nephrology Division chief. Prominent research faculty from the Medical School and other University departments including Bioinformatics, Computational Biology, Statistics and the Life Sciences Institute also participate. Collaborations with other institutions include: Wayne State University, St. John Hospital and the University of Illinois-Chicago. "The center is an emblem of our research strengths but also a service to the research community and, ultimately, to patients," says Dr. Brosius. The renewal funding, the result of a highly competitive process, extends through 2013.



### Understanding the Link Between Kidney Disease and Cardiovascular Disease

Another large research initiative, which is now entering its second phase, has also received renewal funding from the National Institutes of Health (NIH). The Nephrology Division is one of the main sites of the Chronic Renal Insufficiency Cohort, or CRIC. CRIC is the largest study of chronic kidney disease (CKD) in the United States. Kidney disease affects 26 million Americans and even more are at significant risk for CKD. This population also has an extraordinarily high rate of cardiovascular disease. The CRIC study, a longitudinal study of over 3,900 patients with CKD, is exploring the relationship between kidney disease and cardiovascular disease in order to better understand and treat patients with CKD and hopefully prevent the high cardiovascular disease burden.

**Crystal Gadegbeku, MD** (*below left*), serves as co-investigator of CRIC in Michigan and co-chairs the retention and publications subcommittees for the national study group. She, along with CRIC principal investigator, Akinlolu Ojo, MD, (*see sidebar*) coordinates research activities at St. John Hospital and Wayne State University as well as U-M.



Her CRIC involvement complements Dr. Gadegbeku's research, which focuses on understanding mechanisms of hypertension and accelerated cardiovascular disease in patients with CKD. Currently she is exploring the interplay between endothelial nitric oxide and adrenergic neurovascular systems in blood pressure regulation and their role in hypertension associated with CKD. In addition to CRIC and her vascular biology research, she is co-leading development of a clinical

and translational research core within the Michigan O'Brien Renal Center, the Clinical Phenotype Resource and Biobank (C-PROBE). The goal of this core is to assemble a CKD cohort of over 1,000 patients along with their blood, urine and kidney biopsy samples to link molecular information and clinical characteristics in an effort to improve understanding and management of CKD. This breadth and depth of analysis has never before been done for kidney disease.

Dr. Gadegbeku also brings her experience to the ambulatory clinical setting with the recent establishment of an outpatient Kidney Function Laboratory in the Taubman Center. One of the challenges for the nephrology community is to identify kidney disease early through precise measurement of kidney function. The U-M Nephrology Division has a longstanding reputation for technical expertise in renal function measurement for NIH-funded research including the CRIC study. Knowing the level at which the patient's kidneys are functioning can help the physicians determine the best therapeutic treatment modalities. The new Nephrology Kidney Function Laboratory provides patients a convenient location for accurate assessment and results within a few days.

### National Chronic Kidney Disease Surveillance at the U-M Kidney Epidemiology and Cost Center

The Kidney Epidemiology Cost Center, or KECC, has been engaged in the study of end stage renal disease (ESRD), including dialysis and kidney transplantation, for over 20 years. A number of national studies related to solid organ transplantation also are conducted at the KECC. The organization is a multidisciplinary enterprise in which a number of nephrology faculty oversee outcomes and economic studies related to the entire spectrum of CKD. Investigators from the departments of Internal Medicine, Surgery and Biostatistics, along with a number of administrative, programmatic, analytic and coordinating staff, manage the center's projects. A group leadership structure has recently been established, with **Rajiv Saran, MBBS** (*below right*), as co-director.



Dr. Saran is the U-M principal investigator for the multinational Dialysis Outcomes and Practice Patterns Study (DOPPS). The DOPPS, a prospective cohort study of hemodialysis practice patterns in 12 countries, has been ongoing since 1996. The research goal is to identify best practices in hemodialysis. The Data Coordinating Center for the DOPPS is at Arbor Research Collaborative for Health, a private, not-for-profit health research organization that works closely with the KECC.

Dr. Saran is also the principal investigator on the National Chronic Kidney Disease Surveillance Initiative, with **Vahakn Shahinian, MD, Bruce Robinson, MD, and Eric Young, MD,** as co-investigators. This project is sponsored by the Centers for Disease Control and Prevention (CDC) following a congressional mandate to create a comprehensive CKD surveillance system for the United States. The long-term goal of the project is to provide a national picture of CKD over time, with a view to informing optimal strategies in prevention and management. The hope is to eventually prevent its onset as well as complications, including progression to ESRD.

Data from a variety of representative national and regional sources is being collected and analyzed. The first comprehensive report from the project was submitted to the CDC in the fall of 2008. The project is currently in its third year and likely to be extended. A project web site is under development, and several publications are being generated from the initial findings.

This national CKD surveillance system will pave the way toward increasing awareness and developing evidence-based guidelines for early detection and management of CKD, a condition that has only recently begun to receive the attention it deserves. Only 0.2 percent of CKD patients progress to ESRD. "We haven't been doing a good job of keeping track of the other 98.8 percent of CKD patients," says Dr. Saran. "It's vital to focus on prevention, early detection, and optimal disease management to stop this major silent epidemic in its tracks."



FROM LEFT: *Akinlolu Ojo, MD*  
*with James Woolliscroft, MD,*  
*Dean of the Medical School*

### **It's A Match: New Donor Exchange Program**

**Alan Leichtman, MD,** professor of Internal Medicine and medical director of transplantation, has received a \$1.26 million award to establish a Kidney Paired Donation Program for the U-M Kidney Transplant Program. One of only a few nationwide, the U-M paired donation program uses an algorithm that allows donors who are incompatible with their intended recipient to donate their kidney to another patient; the intended recipient then receives a kidney from an alternate donor within the U-M Kidney Transplant Program.

More than 70,000 people are awaiting a kidney transplant, and such matching programs make it possible for a larger number of patients to receive organs from living donors. The first transplant was successfully performed under the new initiative this year, and several more are scheduled. The new matching program is already using a second-generation algorithm that not only matches donors and recipients, but sets priorities based on clinical criteria. Funding to create the program was provided by the U-M Health System Clinical Innovation Fund.

### **Dr. Akinlolu Ojo Appointed Florence E. Bingham Research Professor of Nephrology**

This year **Akinlolu Ojo, MD** was named the Florence E. Bingham Research Professor of Nephrology. This prestigious professorship is the division's first endowed chair and was created from an estate gift from U-M alumnus the Rev. Parley Bingham and his wife Florence, who established this fund to support medical research in kidney disease.

Dr. Ojo joined the faculty after completing a fellowship in clinical nephrology and post-fellowship research in the division. He also earned a PhD in epidemiology from the U-M School of Public Health. His clinical research spans outcomes, epidemiology and clinical trials, and he currently serves as principal investigator of four research programs funded by the NIH. He is a sought-after mentor, and has made notable strides in recruiting African American subjects into clinical studies of kidney disease. African Americans are disproportionately affected by kidney disease and also are underrepresented in trials. He serves as a principal investigator of the multi-institutional, NIH-funded CRIC study. In addition, he serves as co-principal investigator of the large, multi-institution African American Study of Kidney Disease, also funded by the NIH.

"Dr. Ojo's appointment to the Bingham Research Professorship really speaks to his substantial clinical and translational research leadership and vision," says Dr. Brosius, division chief.