

PROVIDING EXCEPTIONAL OUTCOMES THROUGH RESEARCH

CHILDREN'S MERCY DIVISION OF PEDIATRIC NEPHROLOGY

The Division of Pediatric Nephrology at Children's Mercy Kansas City provides a comprehensive, individualized approach to care rooted in the latest medical developments that lead to optimal outcomes. Led by Bradley A. Warady, MD, who is internationally recognized for clinical care and research, the program partners with families to improve care in practical and meaningful ways.

The program consistently achieves outcomes that are above national averages. One-year and three-year transplant patient and allograft survival rates are 100 percent. The program also is a national leader in collaboratives focused on reducing infections related to peritoneal dialysis and hemodialysis, developing treatment guidelines, and improving outcomes for patients with chronic kidney disease (CKD).

With the vast majority of CKD patients living into adulthood, Children's Mercy and the Division of Pediatric Nephrology emphasize the lifetime of care for their patients and serve as leaders in defining best practices for managing the patients' transfer to adult care. Their multidisciplinary team has partnered with adult medicine providers, along with patients and their families, to develop and implement a robust transition education curriculum designed to promote successful self-management.

Children's Mercy is the Midwest clinical coordinating center for the National Institutes of Health (NIH)-funded Chronic Kidney Disease in Children (CKiD) study, which has produced more than 110 peer-reviewed articles and is changing the way treatment is provided to children with CKD around the world.



A TOP-RANKED PROGRAM

One of the top seven nephrology programs in the nation, according to *U.S. News & World Report*.

FISCAL YEAR 2019 STATISTICS

14,427	Outpatient visits and consultations
3,317	Inpatient visits and consultations
4,021	Peritoneal dialysis treatments
2,251	Hemodialysis treatments
14	Transplants



In 2018, Children's Mercy and Dr. Warady received \$4.8 million in funding from the NIH for an additional five years of CKiD, making 20 consecutive years of funding.

TRANSPLANT OUTCOMES

Children's Mercy is home to the largest pediatric kidney transplant program in Missouri and Kansas, performing 14 transplants in FY19. The transplant program's outcomes exceed national averages with one and three-year allograft survival rates of 100%, and one of the nation's best three-year graft failure hazard ratios at 0.45.

CHILDREN'S MERCY VS. NATIONAL AVERAGES

Overall Pediatric Kidney Transplant Graft Survival Percentage		
	Children's Mercy	National
1-Month Survival	100%	98.86%
1-Year Survival	100%	98.07%
3-Year Survival	100%	92.59%

Graft Survival After Transplant. <http://www.srtr.org>. January 2020

Overall Pediatric Kidney Transplant Patient Survival Percentage		
	Children's Mercy	National
1-Month Survival	100%	99.73%
1-Year Survival	100%	99.61%
3-Year Survival	100%	99.02%

Patient Survival After Transplant. <http://www.srtr.org>. January 2020

0.45 3-YEAR GRAFT FAILURE
HAZARD RATIO ESTIMATE

DIALYSIS AND INFECTION PREVENTION

The Division of Pediatric Nephrology is an internationally recognized leader in pediatric dialysis and infection prevention. Dr. Warady has served as the senior editor of two leading textbooks, Pediatric Dialysis and Pediatric Dialysis Case Studies, and has led the development of peritonitis prevention and treatment guidelines, as well as the soon-to-be published guidelines on the provision of high-quality peritoneal dialysis in children. The division's hemodialysis blood stream infection rate and peritoneal dialysis peritonitis rate consistently rank among the best in the country. In addition to improving the quality of care for their own patients, Children's Mercy is a leader of the Standardizing Care to Improve Outcomes in Pediatric End-Stage Renal Disease (SCOPE) Collaborative. With 51 centers participating in the collaborative, SCOPE has successfully decreased the peritonitis rate in their peritoneal dialysis population by 38%.

CHILDREN'S MERCY VS. NATIONAL AVERAGES

Hemodialysis Catheter-Related Infection Rates		
	Children's Mercy	SCOPE
Episodes/100 patient months	0	1.9

Children's Mercy data, 2019

Peritonitis Infection Rates		
	Children's Mercy	SCOPE
Infections per calendar year	0.18	0.43

Children's Mercy data, 2019

EXPANDING THE SCOPE OF CKID

In 2018, the Chronic Kidney Disease in Children (CKiD) study was approved for an additional \$4.8 million of funding by the NIH to Children's Mercy over the next five years, making 20 years of continuous funding for this seminal research effort. The new phase of the study is focusing on the entire spectrum of disease, with enrollment of children with chronic kidney disease during infancy, as well as continued study of those children who progress to kidney failure, requiring dialysis and transplantation. Over the next five years, a major goal of the study is, in turn, to find ways to change the course of CKD and its complications on both ends of the disease spectrum. In addition to the efforts of Dr. Warady who serves as Co-Principal Investigator of CKiD, Darcy Weidemann, MD, has investigated the role of suPAR in CKD progression in the CKiD cohort, the results of which were recently published in the American Journal of Kidney Diseases. Tarak Srivastava, MD, also has complemented the clinical research with his NIH-funded bench research focused on hyperfiltration-mediated injury and the progression of CKD.

NAVIGATING ETHICAL DECISIONS

While outcomes have improved, the complexity of caring for patients with pediatric kidney disease has continued to increase. As medicine advances, families are asked to weigh the harms and benefits of more elaborate treatment plans while balancing cultural, financial and other interests.

The Children's Mercy Bioethics Center, led by John Lantos, MD, collaborates with the Division of Pediatric Nephrology to help physicians, patients and families address difficult care decisions. In addition to working with the division on complex clinical issues, Dr. Lantos is also one of two pediatric bioethicists on the CKiD ethics advisory group who are helping address intriguing ethical issues regarding the sharing of research-derived genetic information with study participants and their parents.

PRESERVING VASCULATURE

Today, children with CKD and end-stage kidney disease (ESKD) are living into adulthood. Due to the intense nature of care, however, the vasculature available for surgically creating a fistula for blood access in patients who require hemodialysis in adulthood can be limited or even absent. This can have a substantial impact on long-term morbidity and mortality.

To address this potentially life-threatening situation, the Division of Pediatric Nephrology partnered with a variety of disciplines to design and implement a unique quality improvement initiative called Save the Vein. The program is aiming to improve patients' prospects for a longer life expectancy through vein preservation. Since implementation, the program has seen nearly 95% of all IVs placed in the preferred arm of patients with advanced CKD/ESKD — a significant improvement over the baseline 50%.

KIDNEY-PAIRED DONATION

Children's Mercy is actively collaborating with adult transplant nephrology to increase the likelihood that their patients receive a kidney transplant.

Collaboration between Children's Mercy and The University of Kansas Health System has resulted in successful kidney-paired donations as a means to increase the availability of organs for children and adults.

The collaboration first came to fruition in late 2018, with a six-way chain. That chain involved a Children's Mercy recipient and a Children's Mercy nurse who served as a donor. Since then, an additional paired exchange has taken place and a total of six patients have received a life-saving organ.

GENOMIC ANSWERS FOR KIDS

Children's Mercy is at the forefront of pediatric nephrology genomics, with Laurel Willig, MD, Pediatric Nephrologist, serving as Medical Director of the Genomic Medicine Center at Children's Mercy and Director of the Renal Genomics Clinic. Recently, the Children's Mercy Research Institute launched Genomic Answers for Kids, an initiative to build a first-of-its-kind pediatric data repository to facilitate the search for answers and novel treatments for pediatric genetic conditions. The goal is to collect genomic data and health information for 30,000 children and their families over the next seven years, creating a database of nearly 100,000 genomes.

LIFETIME ACHIEVEMENT HONORS

In 2019, Bradley Warady, MD, was presented with the American Society of Pediatric Nephrology (ASPN) Founders Award at the Pediatric Academic Societies (PAS) annual meeting in Baltimore. Dr. Warady also received the 2019 Karl D. Nolph Lifetime Achievement Award in Dialysis at the 39th Annual Dialysis Conference in Dallas.

2019 ACADEMIC LEADERSHIP BY THE NUMBERS

45 PEER-REVIEWED PUBLICATIONS

12 PUBLISHED BOOK CHAPTERS

68 INTERNATIONAL AND NATIONAL PRESENTATIONS

CHILDREN'S MERCY RESEARCH INSTITUTE

The Children's Mercy Research Institute (CMRI) at Children's Mercy Kansas City is an integrated research environment where no boundaries exist between science and medicine. Here physicians, scientists, academic colleagues and philanthropic partners are collaborating to change the future for children. CMRI areas of emphasis provide the supportive structure for all research conducted at Children's Mercy. Research may fall under one or more of these areas and include Genomics, Precision Therapeutics, Population Health and Health Care Innovation. To enhance its research endeavors, a new building, future home to the CMRI, is under construction. The institute has been carefully designed so research and clinical care work as cross-functional teams, aligned together, to find answers to pediatric medicine's most challenging questions.

LEADERSHIP

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LEARN MORE ABOUT THE DIVISION OF PEDIATRIC NEPHROLOGY.

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