

Dialysis in Infants: Survival Rates on the Rise

Historically, infants with end-stage renal disease who received dialysis in the first year of life have been less likely to survive or receive a kidney transplant compared with those who started dialysis later in childhood.

In a study published in the September 2015 issue of *Pediatrics*, Dr. Bradley Warady and colleagues looked at recent NAPRTCs data and found that survival and transplant rates have improved in recent years.

While the provision of chronic peritoneal dialysis to neonates and infants is by no means free of potential complications, improvements in medical and surgical care have resulted in greater patient survival on dialysis and greater access to successful kidney transplantation, according to Dr. Warady.

Dr. Warady is here to discuss dialysis in infants and how survival rates are on the rise.



Featured Speaker:

Bradley Warady

Dr. Warady is Director of the Division of Nephrology at Children's Mercy and Director of Dialysis and Transplantation. In spring 2015, Dr. Warady was presented with the Henry L. Barnett Award for outstanding teaching and clinical care for children with kidney disease by the American Academy of Pediatrics Section on Nephrology. Dr. Warady's previous awards include the National Kidney Foundation's 2013 J. Michael Lazarus Award for enhancing the clinical care of patients on dialysis or with chronic kidney disease (CKD) and the Patrick and Virginia Clune Award of Excellence by the National Kidney Foundation of Kansas and Western Missouri. Dr. Warady is Professor of Pediatrics at the University of Missouri-Kansas City School of Medicine. His major areas of research are chronic kidney disease and end-stage renal disease (ESRD) management of children. He is the senior editor of two leading books in the field, "Pediatric Dialysis" and "Pediatric Dialysis Case Studies." He is also Co-Principal Investigator of the NIH funded "Chronic Kidney Disease in Children (CKiD) Study", the largest study of CKD in children ever conducted in North America.

[Learn more about Dr. Warady](#)

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Transcription:

Dr. Michael Smith (Host): Welcome to *Transformational Pediatrics*. I'm Dr. Michael Smith and our topic is "Dialysis in Infants: Survival Rates on the Rise." My guest is Dr. Bradley Warady. Dr. Warady is Director of the Division of Nephrology at Children's Mercy and Director of Dialysis and Transplantation. Dr. Warady, welcome to the show.

Dr. Bradley Warady (Guest): Hi, Michael. Thanks.

Dr. Smith: So, how often do infants require dialysis?

Dr. Warady: You know, it's really quite uncommon. In fact, many people don't even realize that very young infant babies can actually have kidney failure. If you look at children—these young infants—who actually require long-term dialysis, it's about 7 patients for every million population. So, it's really a rare disorder.

Dr. Smith: Now, traditionally speaking—historically speaking—the survival rates for infants on dialysis is pretty low. Why do you think that was the case?

Dr. Warady: Well, that's true. We look at children, many of whom are born with kidney disease, and historically, maybe only 50% of children with kidney failure lived as long as two years. I think, in the past, the technology to perform dialysis in young infants really wasn't there and we also didn't have as much knowledge about nutrition and other factors that influenced the overall well-being of these very young and very complex children.

Dr. Smith: Now, in your recent study that was published in *Pediatrics*, you and your colleagues found that we have made improvements; that survival is on the rise. Tell me a little bit about that research and why you think things are getting better

Dr. Warady: Well, we have a database which collects information on children of all ages who have kidney disease across North America. What we had the opportunity to do was to compare the outcomes of neonate—those children that are less than 30 days of age; or older infants, up to 2 years of age, compare those kids between 2000-2012, their experience with the experience of kids of the same age in the prior decades. We're looking at two different eras, if you will, to see if we've seen an improvement. Indeed, we have where now a neonate who is born with kidney failure can expect about an 80% survival as long as three years or more and then an older child, again, an infant under a year of age, about an 85% survival at three years. Those are about 10-15% improvements over the past decade. I think that the improvements in the overall outcome of these children is probably due to better technology. We're able to actually perform dialysis, clearing the blood, removing fluid from these children, in the very smallest child. And, we're much better apt to address their nutrition and give them excellent nutrition so they can grow and develop like a normal child.

Dr. Smith: Also, in your study, in your review of that database, you found that when a child does have to go on to transplantation, that there's an improvement in graph survival now, too. Why do you think that is?

Dr. Warady: Yes. So, if you look at these young infants, the success of transplantation now of these very young infants is very comparable to older children. I think we better understand the medications that we're using to prevent rejection of organs. Again, we better understand the importance of nutrition and I think we better understand how we can limit risks for these children; risks of infection that historically have led to significant complications in these children if they receive too much medication to retain that transplant. So, I think we're all more knowledgeable about how to care for these young children. Again, the medications and the technology we have available to us now lend themselves to a

much better long-term outcome for these very complex children that are born or early in life have significant kidney failure.

Dr. Smith: What does all this mean in your opinion, Dr. Warady? In terms of treatment decisions for clinicians who are seeing patients with end-stage renal disease?

Dr. Warady: Well, it's a great question. You know, these kids generally present either to their pediatrician in utero when they're developing or in to their ob/gyns and these young children are, again, detected early on with ultrasound as having kidney disease. So, I think what this information does is provide more data to the general pediatrician or family practitioner or to the ob/gyn, make them understand that having kidney disease early in life is not a death sentence for these children. They can have a very positive long-term future. So, what we hope is that when those initial clinicians in the front lines, if you will, detect a child with kidney disease, that they refer them to a center like Children's Mercy where the families can get the appropriate education about the kidney disease and, hopefully, the necessary intervention so these kids can have a positive future.

Dr. Smith: Now, in your study, it says here that you have evaluated the outcomes of 628 children who initiated dialysis. When you're comparing, how far back did you go to make the comparisons? You've got 628 kids that you looked at now. How far back did you go to look at the other cohort to make the comparison? How many years?

Dr. Warady: 1992. So, we compared kids, again, who were cared for between 1992 and 2000 and then the more recent cohort was 2000 and 2012. So, really not that long ago. Again, 1992-2000, from that group there, we saw already a significant improvement. So, I think, ideally, we'll continue to see improvement in these young children as we even get better at understanding how to promote a positive outcome but it wasn't comparing kids back in the '70's. In fact, back in the '70's, early '80's the survival was only about 50%. So, we've seen a marked improvement and we need to continue to do so in the future, hopefully.

Dr. Smith: So, it's interesting. In that short period of time from 1992 to the present, I mean, this increase in survival, has technology really improved that dramatically over that short period of time or are we looking at other things like better nursing care for dialysis? Just better education of the doctors? I mean, do you think it's just a combination of different things that are helping to improve survival?

Dr. Warady: It's no question that it's a combination of things. Without a doubt. I think your point is really well taken about the nurses because the nurses do an exceedingly important job. Interestingly, the vast majority of infants that are on chronic dialysis are actually care for at home. What our nurses do at Children's Mercy and other children's centers around the country is they actually train the parents to conduct the dialysis called "peritoneal dialysis" at home. So, when we sort of congratulate ourselves for this improved survival, I always tell the families that really it's a partnership. I congratulate them on the great work that they do to care for their children and to conduct the dialysis and all the other things that these kids need to have a successful survival and really grow and develop normally. So, the medical team is critical but the family team is as critical for the outlook for these kids.

Dr. Smith: Well, Dr. Warady, I want to thank you for the work that you're doing and the research that you've done and will do. Thank you for coming on this show. You're listening to *Transformational*

Pediatrics with Children's Mercy – Kansas City. For form information, you can go to ChildrensMercy.org. That's ChildrensMercy.org. I'm Dr. Michael Smith. Have a great day.

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