

Dialysis before pediatric kidney transplant makes organ failure more likely

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The longer a child is on a dialysis while awaiting a kidney transplant, the greater the likelihood he or she will experience graft failure and organ rejection following surgery, a comprehensive nationwide study by researchers at UC Davis Children's Hospital has found.

The study's authors said the findings suggest that, as is the case in adults, whenever possible, children should not be placed on a certain type of dialysis prior to transplantation.

"Children who face [kidney transplant](#) fare best when they receive the organ without undergoing dialysis," said Lavjay Butani, professor of pediatric nephrology in the UC Davis School of Medicine and chief of pediatric nephrology at UC Davis Children's Hospital. "The longer the dialysis prior to the operation, the worse is the survival of the kidneys."

The study, "The Effect of Pre-transplant Dialysis Modality and Duration on Long-term Outcomes of Children Receiving Renal Transplants," is published online in the journal *Transplantation*. It is one of the largest ever on outcomes in children whose kidney transplants took place prior to dialysis, known as pre-emptive transplants.

The study examined the effects of hemodialysis, a method for removing waste products such as creatinine and urea, as well as free, water from the blood when the kidneys are in [renal failure](#). It has been a part of the medical arsenal for well over 50 years.

The study did not identify such negative outcomes for other types of dialysis given to children prior to surgery, such as peritoneal dialysis, which uses the patient's peritoneum in the abdomen as a membrane across which fluids and dissolved substances, including electrolytes and urea, are exchanged with the blood. While peritoneal dialysis generally has been considered to be less efficient at removing wastes than hemodialysis for acute purposes, it's widely used for less acute cases.

For the study, Butani and his colleagues examined data from 3,606 pediatric kidney transplants during the five-year period from 1995 through 2000 from the Organ Procurement and Transplantation Network, a public-private partnership that links professionals involved in the donation and transplantation system.

Of the transplants, 28 percent were pre-emptive, 38 percent involved pre-transplant hemodialysis and 34 percent involved peritoneal dialysis. The study found that for living-donor recipients, the use and duration of pre-transplant hemodialysis adversely affected graft survival, whereas no such effect was seen with pre-transplant [peritoneal dialysis](#).

"This study should increase awareness among health professionals and parents alike that it's very important to try to avoid hemodialysis at all costs in children who have kidney disease that's getting worse," Butani said. "If they can't avoid dialysis, then they need to minimize length of dialysis and to expedite transplantation as quickly as possible."

The study's coauthor, Richard Perez, professor of surgery in the UC Davis School of Medicine and chief of transplant surgery at UC Davis Medical Center, agrees.

"These findings are consistent with what we have learned from studies in adults with kidney disease. It is always best to minimize the time on dialysis prior to kidney transplantation," Perez said.

Provided by University of California

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