New tools can better predict successful kidney transplant outcomes

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Kidney transplants are the best available therapy for end stage renal disease. Because of the shortage of deceased organ donors, living donor transplantation is rapidly growing and has the advantage of improved outcomes over deceased donor transplants. In fact, a transplant candidate may now have several potential living donors and the clinician may need to identify which donor would yield the best results. In a study published in the March 2009 issue of *The Journal of Urology*, researchers report on the development and validation of three nomograms that can reliably predict long-term outcomes.

A nomogram is an objective tool that uses an algorithm or mathematical formula to predict the probability of an outcome. Nomograms have been shown to outperform clinicians in predicting oncological outcomes and may be of benefit in certain decision-making settings. Nomograms can sift through the multitude of donor and recipient parameters that impact transplant outcome and help transplant physicians to better counsel their patients.

Using records from over 20,000 living donor transplant cases taken from the United Network for Organ Sharing (UNOS) registry, investigators from the Renal Transplantation Program, Glickman Urological & Kidney Institute at the Cleveland Clinic identified 18 characteristics, such as donor and recipient ages, donor serum creatinine levels and the cause of the recipient's renal failure. By using the value of each factor to determine a point score and totaling all of the points, the nomograms were able to predict kidney function 1 year after transplant and 5-year

transplant survival. By adding 3 additional factors obtained 6 months after surgery, another nomogram was developed to refine the 5-year survival prediction.

Writing in the article, D. A. Goldfarb states, "Our work is consistent with the transplant physician community's efforts to develop better predictive tools...the nomograms developed in this study take this effort a step further by using a greater number of variables including early posttransplant information for better predictability and by attempting to predict specific outcome measures of renal function in addition to long term graft survival... These models can help to optimize the selection of living kidney donors. The prognostic information these models provide can help improve patient care."

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