composite of fatal or nonfatal cardiovascular outcomes were similar between groups.

This clinical trial finds a survival benefit of high-dose hemodiafiltration compared with conventional, high-flux hemodialysis in patients with kidney failure. The effects on survival may vary according to comorbidity and other patient characteristics [Blankestijn PJ, et al. Effect of hemodiafiltration or hemodialysis on mortality in kidney failure. *N Engl J Med*, published online ahead of print June 16, 2023. doi: 10.1056/NEJMoa2304820; https://www.nejm.org/doi/10.1056/NEJMoa2304820]. ■

Does Normothermic Machine Perfusion Improve Kidney Transplant Outcomes?

A period of normothermic machine perfusion (NMP) is feasible and safe before deceased-donor kidney transplantation but does not reduce the rate of delayed graft function (DGF) compared with standard static cold storage (SCS), reports a trial in *Nature Medicine*.

The randomized trial included 338 patients at four U.K. centers who were undergoing kidney transplantation from donation after circulatory death (DCD) donors. All kidneys underwent SCS, with a total cold ischemic time of approximately 800 minutes. After SCS, kidneys in the intervention group underwent a 1-hour period of NMP.

Intention-to-treat analysis included 147 kidneys assigned to SCS only and 143 to SCS plus NMP. DGF, defined as the requirement for dialysis within 7 days after transplantation, was the main outcome of interest.

The rate of DGF was almost identical between groups: 58.5% with SCS alone and 60.7% with SCS plus NMP. Patient and graft survival, acute rejection, and 12-month kidney function were similar as well. There were no significant differences

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in adverse events, including transplant thrombosis or infectious complications.

Kidneys from DCD donors are an important source of organs for transplantation but are susceptible to cold ischemic injury, which may lead to DGF. In the emerging NMP technique, donor kidneys are perfused with a warmed, oxygenated, red cell-based solution, producing a near-physiologic state that enables functional testing. To date, the new report is the first randomized, multicenter trial comparing NMP with conventional SCS in DCD kidney transplantation.

The results show no reduction in DGF with a period of NMP before transplantation of DCD kidneys. The researchers write, "Nonetheless, we have demonstrated that this new technology for kidney preservation is feasible, safe and suitable for clinical application" [Hosgood SA, et al. Normothermic machine perfusion versus static cold storage in donation after circulatory death kidney transplantation: A randomized controlled trial. *Nat Med* 2023; 29:1511–1519. doi: 10.1038/s41591-023-02376-7]. ■

Model Predicts Kidney Failure Risk After Nephrectomy

A validated, six-item equation performs well in predicting the 5-year risk of kidney failure in patients undergoing surgery for localized kidney cancer, according to a study in the *American Journal of Kidney Diseases*.

The model was developed in a population-based cohort of 1026 adults in Manitoba, Canada, who underwent partial or radical nephrectomy for non-metastatic kidney cancer from 2004 through 2016. All patients underwent at least one measurement of estimated glomerular filtration rate (eGFR) both before and after surgery. Models were created to identify factors associated with the 5-year risk of incident kidney failure, defined as dialysis, transplantation, or eGFR less than 15 mL/min/1.73 m^2.

The resulting Kidney Cancer Risk Equation (KCRE) comprised six readily accessible variables: age, sex, eGFR, type of nephrectomy, diabetes, and urine albumin-to-creatinine ratio. In the development cohort, the equation showed good predictive performance, with an area under the curve (AUC) of 0.85. The KRCE performed similarly well in a validation cohort of 12,043 patients undergoing kidney cancer surgery in Ontario, Canada, between 2008 and 2018: AUC, 0.86. The findings were consistent in sensitivity analyses, and the model showed excellent calibration after adjustment of the baseline hazard.

Nephrectomy is an effective treatment for kidney cancers but carries a risk of later decreased kidney function or kidney failure. The KCRE was developed to meet the need for pre-operative tools to predict the long-term risk of kidney failure after surgery for localized kidney cancer.

The new study describes the KCRE as a simple, validated model to predict the risk of developing kidney failure after nephrectomy for kidney cancer. "The KCRE is an easy-to-use tool for urologists and nephrologists to apply in the pre-operative period for risk stratification and patient-centric counselling to identify those at risk of developing post-operative kidney failure in the next 5 years," the researchers write. They call for further validation in diverse patient samples [Harasemiw O, et al. A predictive model for kidney failure after nephrectomy for localized kidney cancer: The Kidney Cancer Risk Equation. *Am J Kidney Dis*, published online ahead of print June 30, 2023. doi: 10.1053/j.ajkd.2023.06.002; https://www.ajkd.org/article/S0272-6386(23)00695-9/fulltext]. ■

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