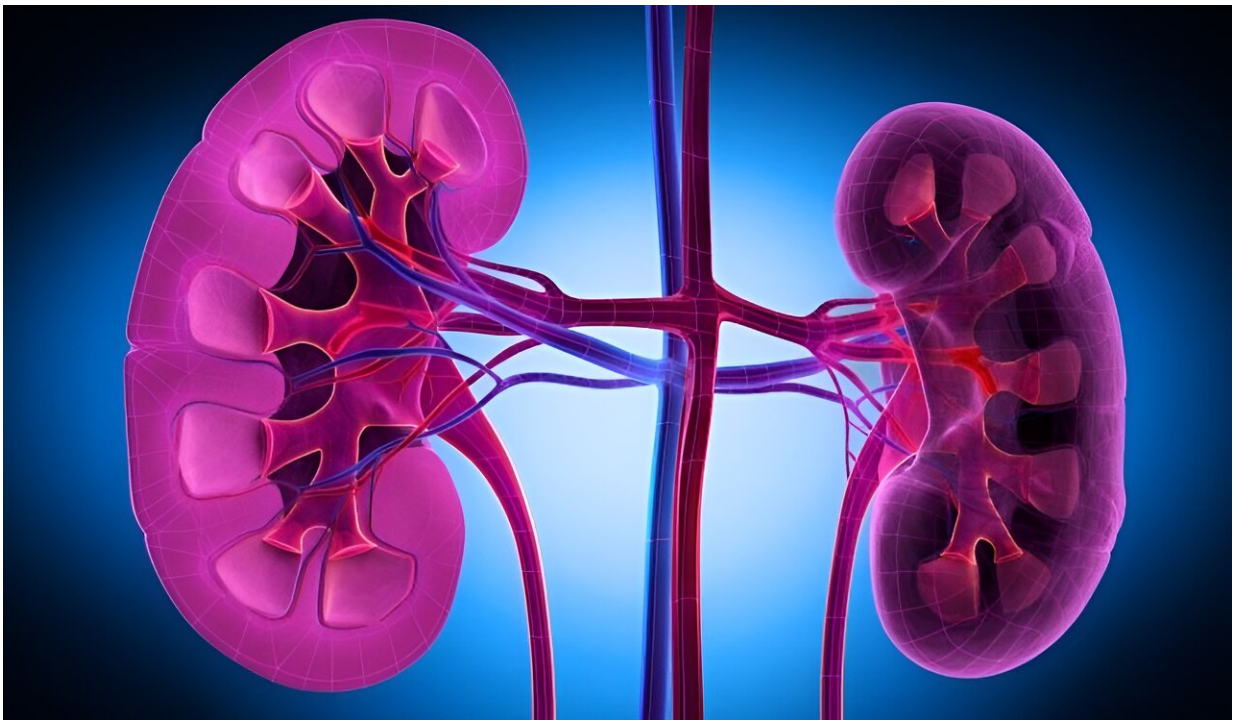
Researchers say risk prediction model offers accurate predictions for chronic kidney disease

April 19 2024, by Elana Gotkine



For individuals with moderate-to-severe chronic kidney disease (CKD),

a model, KDpredict, can accurately predict the risk for kidney failure and death, according to a study published online April 15 in *The BMJ*.

Ping Liu, Ph.D., from the University of Calgary in Alberta, Canada, and colleagues conducted a population-based cohort study involving people with newly recorded CKD at stage G3b to G4 (estimated glomerular filtration rate, 15 to 44 mL/min/1.73 m^2) to train and test a super learner strategy for risk prediction of kidney failure and mortality.

The algorithm selected the best performing regression models or machine learning algorithms based on their predictive ability for kidney failure and mortality, with minimized cross-validated prediction error. KDpredict was compared to the benchmark model of kidney failure risk equation using the index of prediction accuracy.

Data were included for 67,942 Canadian, 17,528 Danish, and 7,740 Scottish residents with CKD. The researchers found that the rates for kidney failure and death were 0.8 to 1.1 per 100 person-years and 10 to 12 per 100 person-years, respectively. In prediction of kidney failure risk, KDpredict was more accurate than the kidney failure risk equation: five-year index of prediction accuracy, 27.8 versus 18.1% in Denmark and 30.5 versus 14.2% in Scotland.

Predictions differed substantially for KDpredict and the kidney failure risk equation, potentially yielding different treatment decisions. For both outcomes, individual risk predictions from KDpredict with four or six variables were accurate.

"This study details a new method of decision support for CKD by providing both mortality and kidney failure risk predictions," the authors write.

One author disclosed ties to Baxter Corporation and co-owns a Canadian patent.

More information: Ping Liu et al, Predicting the risks of kidney failure and death in adults with moderate to severe chronic kidney disease: multinational, longitudinal, population based, cohort study, *BMJ* (2024). DOI: 10.1136/bmj-2023-078063

Andre Pascal Kengne et al, Predicting the outcomes of chronic kidney disease in older adults, *BMJ* (2024). DOI: 10.1136/bmj.q749