More work needed on models to predict risk of chronic kidney disease

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Models used for predicting the likelihood of individuals developing chronic kidney disease and for predicting disease progression in people who already have the condition are useful tools but not yet robust enough to help inform clinical guidelines, according to a study published in this week's *PLOS Medicine*.

Chronic kidney disease is a common but serious condition which can lead to kidney failure. The condition cannot be cured but progression of the disease can be slowed by controlling high blood pressure and diabetes, both causes of chronic kidney disease, and by adopting a healthy lifestyle. Identifying people who are at risk of developing chronic kidney disease is therefore of utmost importance and researchers are currently using "risk models"—a method to assess the risk of developing the condition—as currently, there is no screening test for chronic kidney disease.

Justin Echouffo-Tcheugui from Emory University in Atlanta, Georgia, and Andre Kengne from the South African Medical Research Council in Capetown reviewed published studies to test the accuracy and suitability of existing risk models for chronic kidney disease. They found that although the risk models were able to separate people with chronic kidney disease from those without the condition (discriminatory ability) not all of the models checked whether the proportion of the population predicted to develop chronic kidney disease (based on the average predictive risk calculated by the models) actually developed the condition (calibration).

The authors also found that few studies tested the risk model in other groups (other than the specific study group) and most of the models were only tested in Caucasian populations.

The authors say: "This review suggests that risk models for predicting chronic kidney disease or its progression have a modest-to-acceptable discriminatory performance, but would need to be better calibrated and externally validated—and the impact of their use on outcomes assessed—before these are incorporated in guidelines."

In an accompanying Perspective article, Maarten Taal (uninvolved in the study) from the Royal Derby Hospital in the UK stresses the importance of a potential screening test for chronic kidney disease but says: "Efforts to develop risk prediction tools to target screening towards those at higher risk are likely to improve the efficiency of screening programmes, but as noted by Echouffo-Tcheugui and Kegne, published risk prediction formulae require further development and external validation."

Taal continues: "In the absence of evidence showing benefit from population screening for chronic kidney disease most guidelines recommend that testing should be directed to people with known risk factors, but in light of improved diagnostic tests and novel risk prediction tools, further research is required to establish the most cost-effective approach."

More information: Echouffo-Tcheugui JB, Kengne AP (2012) Risk Models to Predict Chronic Kidney Disease and Its Progression: A Systematic Review. PLOS Med 9(11): e1001344. doi:10.1371/journal.pmed.1001344