Accuracy of glomerular filtration rate estimation using creatinine and cystatin C for identifying and monitoring moderate chronic kidney disease: the eGFR-C study

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Plain language summary

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Plain language summary

What is the problem?

Chronic kidney disease, which affects approximately 14% of the adult population, often has no symptoms but, in some people, may later develop into kidney failure. Kidney disease is most often detected using a blood test called creatinine. Creatinine does not identify everyone with kidney disease, or those most likely to develop more serious kidney disease. An alternative blood test called cystatin C may be more accurate, but it is more expensive than the creatinine test.

What did we do?

We compared the accuracy of these two tests in more than 1000 people with moderate kidney disease. Participants were tested over 3 years to see if the tests differed in their ability to detect worsening kidney function. We also wanted to identify risk factors associated with loss of kidney function, and how much the tests normally vary to better understand what results mean. We compared the accuracy and costs of monitoring people with the two markers.

What did we find?

Cystatin C was found slightly more accurate than the creatinine test at estimating kidney function when comparing the baseline single measurements (95% accurate compared to 90%), but not at detecting worsening function over time. This means that the additional cost of monitoring people over time with cystatin C to detect kidney disease progression could not be justified. Kidney test results could vary by up to 20% between tests without necessarily implying changes in underlying kidney function – this is the normal level of individual variation.

What does this mean?

Cystatin C marginally improved accuracy of kidney function testing but not ability to detect worsening kidney function. Cystatin C improves identification of moderate chronic kidney disease, but our results do not support its use for routine monitoring of kidney function in such patients.

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