Improving the accuracy of chronic kidney disease monitoring using postal finger prick iohexol measured GFR

Blood tests taken in kidney clinics are not always accurate because they estimate rather than precisely measure kidney function. As a result, treatments may be delayed if kidney function is estimated to be better than it is. There is also now evidence that people of certain ethnicities are particularly likely to have incorrect estimates of kidney function using standard blood tests. This can contribute to health inequality.

The very best way to measure kidney function (the “gold standard” test) is to give an injection of a molecule into a vein and then measure the level of the molecule a number of hours apart to tell how quickly it is leaving the body in the urine. Unfortunately, blood tests need to be taken for up to 6 hours after the injection. This makes the test very challenging for many patients and impractical for regular use by renal departments.

However, a blood test for one of the molecules used in the gold standard test (called iohexol) can now be done using a small finger prick sample. This is like when people with diabetes check their own blood sugars and the “newborn blood spot test” used on babies to look for rare disorders shortly after birth. Like these two tests, the iohexol microsampling test could be done by people at home.

In the proposed study, researchers and patients will perform a gold standard test of kidney function together by giving an injection of iohexol when patients attend the kidney clinic for planned outpatient appointments. We will show them how to use the fingerprick test kits and provide them with a kit, instructions, and return envelope so that they can do the tests at 3, 4, and 6 hours whilst at home later in the day and post the samples back to us .