Sherwood Forest Hospitals NHS Foundation Trust

Nottingham University Hospitals NHS Trust

June 2016

Information for Primary care regarding switch from MDRD GFR calculation to CKD Epi

Dear Colleague

Re: Changes to estimated GFR

For a number of years now, laboratories around the UK have been reporting a calculated or estimated GFR based on the measured creatinine level. This gives an approximation of Glomerular Filtration Rate assuming that the patient resembles average patients of their age and gender (with an adjustment for Afro-Caribbean race) and has stable renal function.

The NICE CKD 2014 guidelines now recommend the use of the CKD Epidemiology Collaboration creatinine (CKD-EPI) equation to estimate the glomerular filtration rate (GFR). Most laboratories until recently have used the Modification of Diet in Renal Disease (MDRD) formula to automatically estimate the GFR. Several studies have shown that the MDRD equation systematically underestimates the GFR, particularly in low-risk patients with a high- normal serum creatinine level. This may result in the labelling of people with CKD who do not have significant kidney disease.

The CKD-EPI equation uses the same variables as the MDRD equation. However, the source studies for the CKD-EPI formula include both high risk and low risk populations. This makes the CKD-EPI formula more generalisable and more accurate compared with the MDRD equation, particularly, in the relatively high ranges of eGFR (GFR >60 mls/min).

From 1st July 2016 the clinical chemistry departments at both NUH and SFH will report eGFR using both the MDRD and CKI epi formula. This dual reporting will continue for a period of 2 years following which GFR will just be reported using the CKD-EPI equation. This dual reporting has been recommended nationally to allow a safe transition to the new reporting equation and mirrors the process undertaken for changes to HbA1C reporting.

Will it affect my practice?

The change of formula is expected to lead to some patients having their CKD stage reclassified. In patients with repeated eGFR over 60 ml/min and no other evidence of renal disease (either on imaging or urine testing or urine ACR or a measured rise in creatinine over time) NICE recommends that they should not be classified as having CKD at all.

Remember that the CKD-EPI eGFR still assumes ‘average’ muscle bulk for patients of that age and gender and needs adjustment for race. Thus no formula

will be accurate in patients with cachexia or limb amputations or unusual levels of physical fitness.

It is of course important to look at the reported creatinine measurement at the same time as the new eGFR, bearing in mind an analytical and biological variability of about 5% in creatinine measurements. If the creatinine has not changed significantly, then true renal function will not normally have changed and any eGFR change relates to the estimation equation. Equally a change in creatinine that is significant could be masked by a stable eGFR.

The Consultant Nephrologists are happy to be consulted regarding individual patients via the Advice and Guidance Service and our Consultant Chemical Pathologists / Clinical Biochemists are also contactable by email.

Dr Peter Prinsloo
Consultant Chemical Pathologist

Dr Melanie Griffiths
Consultant Clinical Scientist
clinical.chemistry@sfh-tr.nhs.uk

Dr Simon Roe
Consultant Nephrologist/Head of Service

Dr Charlotte Bebb
Consultant Nephrologist

Reference:
NICE (July 2014). Chronic Kidney Disease - Early identification and management of chronic kidney disease in adults in primary and secondary care. (CG182).