Perspectives on eGFR reporting from the Interface between Primary and Secondary Care

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The introduction of estimated GFR (eGFR) reporting based on the Modification of Diet in Renal Disease (MDRD) equation has caused much debate regarding its value in the wider community. In particular, automated reporting of eGFR by laboratories has led to concern that it is being used as a “covert” screening tool, in populations in which the MDRD equation has known inaccuracies. There is a fear of creating a population of “worried well,” with potential impact on patients and implications for the use of resources. It is established that in certain groups, chronic kidney disease confers a greatly increased risk of cardiovascular disease, yet risk factors remain inadequately managed. We believe that eGFR reporting allows the opportunity to stratify risk and improve outcome among a wide population.

We read with interest the articles regarding eGFR reporting published in a previous issue of Clinical Journal of the American Society of Nephrology (1-3).

Since the introduction of the National Kidney Foundation Kidney Disease Outcomes Quality Initiative (KDOQI) guidelines in 2002, chronic kidney disease (CKD) has been highlighted as a public health concern. Despite increased awareness, CKD remains underdiagnosed, and its complications are poorly recognized in primary care (4). Almost one in four patients in the United Kingdom present to nephrology care within 3 mos of requiring renal replacement therapy (RRT) (5), with poor outcomes in terms of morbidity and mortality, as well as compromised ability to make timely plans regarding access, modality, or appropriateness of RRT (6). The vast majority of patients with CKD are treated solely through primary care, with one study finding that less than 4% of patients with CKD, identified from routine blood tests, were receiving nephrology care (7).

We argue that reporting of eGFR improves recognition of CKD and allows risk stratification and timely management of its complications.

A key question that remains is how to best identify those at highest risk of cardiovascular disease (CVD) and progression of renal disease. It is apparent that a large proportion of patients with CKD will die from CVD rather than progress to end stage renal disease (ESRD; 8). Many others have a low risk of both these complications, comparable to those without CKD. Since their introduction in 2002, the KDOQI guidelines have been embraced globally. However, with their emphasis on eGFR, there is concern that proteinuria may be overlooked (9). It is now established that proteinuria is an important predictor of decline in GFR and development of ESRD (10). Data from the European community-based PREVEND (Prevention of Renal and Vascular Endstage Disease) study showed that patients with CKD stages 1 to 2 and urine albumin excretion >30 mg/dl had a greater risk of CVD and accelerated loss of renal function compared to those without CKD, after adjusting for age and gender (11). Importantly, patients with CKD stage 3 and absence of overt proteinuria had no increased risk of cardiovascular events compared to those without CKD (11), comparable to similarly adjusted findings from a general population cohort (12) and from patients with pre-existing coronary disease (13).

It should be noted that the number of patients with an eGFR less than 45 ml/min/1.73 m² in these studies was small. Indeed, the risk of CVD in patients with an eGFR above 45 ml/min/1.73 m² appears modest, but increases greatly once eGFR falls below this level (14).

Recent guidelines in the United Kingdom published by the National Institute for Health and Clinical Excellence (NICE) may address these points. They differ from the KDOQI guidelines by recommendations to subdivide CKD stage 3 into stages 3A and 3B (eGFR 45 to 59 ml/min/1.73 m² and 30 to 44 ml/min/1.73 m², respectively), and the addition of the suffix “p” to CKD staging for significant proteinuria (15). There is concern that increasing the complexity of CKD staging could obscure guidance for primary care physicians, who may find current guidelines confusing (16). However, we believe that the addition of proteinuria to CKD staging emphasizes its importance alongside eGFR, serves as a prompt for it to be checked, and highlights important risk groups for potential therapeutic intervention.

The introduction of financial incentives (Quality and Outcomes Framework; 17) to primary care physicians in the United Kingdom to meet targets for creating registries of patients with CKD, BP monitoring, and angiotensin converting enzyme inhibitor/angiotensin receptor blocker (ACE-I/ARB)
use in proteinuria may also act as a stimulus, although this remains to be proven.

Another question that remains is how to best manage these patients’ treatment. Control of BP and use of ACE-I/ARBs in the presence of proteinuria are key to reducing cardiovascular and renal morbidity (18,19). However, studies from primary care are disappointing. Stevens et al. identified patients with CKD stages 3 to 5 from their primary care records, and found that a BP target of 130/80 mmHg was achieved in less than 10% of these patients (20). Patients with an eGFR less than 30 ml/min/1.73 m² were less likely to receive an ACE-I compared with those with an eGFR of 30 to 60 ml/min/1.73 m², with the authors concluding that an opportunity to practice preventive medicine was being lost. Evidence for treatment of other traditional cardiovascular risk factors is, at present, lacking. The role of lipid-lowering agents for primary prevention of CVD in the CKD population is unclear, but should be conclusively answered once the Study in Heart and Renal Protection reports in 2009 (21). At present it is recommended that patients should at least receive these agents if already indicated for other reasons (22).

Use of automated eGFR reporting has been shown to increase recognition of CKD in primary care (23,24), but without educational intervention, has made little impact on treatment goals such as BP control, ACE-I/ARB use, and urinalysis testing (24). Richards et al. used eGFR reporting to identify patients with CKD stages 4 to 5 in primary care from routine blood tests. They then enrolled the patients into a disease management program delivered by a multidisciplinary team of nurses, dietician, and social worker, and achieved significant improvements in lipid control and BP control, as well as a reduction in the rate of decline of renal function (25). Although encouraging, evidence that such use of eGFR reporting will lead to a definite improvement in clinical outcomes, including reduction in cardiovascular events or delay in the need for RRT, remains outstanding. Our own experience is that eGFR reporting has led to a reduction in late presentations for dialysis, at the expense of increased referrals to nephrology, some of which are inappropriate when local guidelines are stringently followed. These views have also been reported by others (26,27). eGFR reporting has resulted in a proportion of patients labeled with CKD who are at minimal risk of CVD or progressive renal disease, causing unnecessary concern for the patient as well as affecting resources, a scenario most commonly seen in elderly patients. The number of these patients will, of course, depend on how CKD is defined.

Our local guidance advises that a specialist opinion should be sought if it is felt that this would add value to the patients’ care, giving flexibility to primary care colleagues. As do others, we advise that patients should be referred, regardless of eGFR, in the presence of significant proteinuria, hematuria, suspected metabolic complications, or rapid decline in renal function. Although we agree with Glassock and Winearls that defining CKD according to a normal eGFR range (adjusted for age and gender) would reduce the number of inappropriate diagnoses, we fear that this practice may prove too complex to be of practical use (2). Locally, we ask our primary care colleagues to consider referral for patients whose eGFR is less than 45 ml/min/1.73 m², or less than 30 ml/min/1.73 m² if over the age of 70 yr. We find this cut-off a simple way to identify those patients at risk from complications.

Use of the MDRD equation to estimate GFR has inaccuracies which have been well described (2). We add that there is a demonstrated lack of ethnicity data in primary care, which often precludes the use of a correction factor (20). There will be improvements made in methods to measure renal function, for example Cystatin C may provide a more accurate biomarker, but is not yet widely available. Currently, we believe that eGFR has advantages over serum creatinine, providing an easier interpretation of renal function as long as its inaccuracies are appreciated, and allowing convenient monitoring of renal function over time because of its linear nature.

We agree with Melamed et al. that eGFR reporting must be paired with education to ensure that results are interpreted appropriately (3). As Glassock and Winearls highlight, patients with CKD are often already included in other primary care registries, for example, for hypertension and diabetes (2). However, these patients are often not treated optimally, with failure to meet targets in BP and glycemic and lipid control (20). Redefining CKD staging by subdivision of CKD stage 3 and emphasizing the importance of proteinuria should highlight those at greatest cardiovascular and renal risk. It is evident that patients seen in specialist care are in the minority, and reporting of eGFR provides the opportunity to increase recognition of CKD and to optimize management.

**Disclosures**

None.

**References**

8. Foley RN, Murray AM, Li S, Herzog CA, McBean AM,


