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Bridging the gap of referral to nephrology care

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Optimal referral of patients who are at risk of kidney failure to nephrologists could improve their long-term outcomes. Various strategies, including the inclusion of kidney failure risk equations in electronic medical records and the active dissemination of clinical practice guidelines, could help to reduce the gap between optimal referral and what currently happens in clinical practice.

Timely and appropriate referral of all adults with chronic kidney disease (CKD) from primary care physicians to nephrologists is a laudable goal, but one that is difficult to achieve. The development of kidney failure risk equations (KFREs) — an extensively externally validated tool that is widely used to identify patients at risk of kidney failure in more than 30 countries[1,2] — has unmasked an enormous gap between optimal referral and what happens in clinical practice. In 2022, a US study with 156,733 adult participants (average age 72 years; 17% African American; all Medicare Advantage enrolees), highlighted the magnitude of the nephrology referral gap for patients at risk of kidney failure[3]. In this study, nearly half of patients did not visit a nephrologist within 1 year of being identified as at high risk of kidney failure using the 5-year KFRE. The timely visit rate (within 1 year of being identified) among patients in the highest-risk groups (5-year KFRE of 80–100%) was approximately 60%, suggesting inadequate delivery of nephrology care even when dialysis might be imminent. This gap in referral for nephrology care is far from desirable for patients who are at risk of kidney failure. The reasons for this gap and potential approaches to minimize it may differ according to the health-care systems that are used in different countries.

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Many nephrologists in medium- to high-income countries might only see the 'healthiest' older patients with CKD in their clinics, as those with severe comorbidities, advanced cancer or dementia are usually not referred. However, approximately one-third of patients who are candidates for dialysis do not have an appropriate period of observation before initiation of this therapy, suggesting that changes to referral pathways are needed[4]. Delayed referral is influenced by economic barriers that are unique to the prevalent health-care system[5]. These barriers can be difficult to overcome, but the actions of primary care physicians are pivotal. These physicians, who are not kidney specialists, must identify the correct moment to refer complex patients. Their knowledge of the progressive behaviour of kidney disease, their awareness of clinical practice guidelines and their capacity for supportive management of diverse patients with CKD have an important impact on timely referral.

The majority of patients with CKD are managed in primary care settings, which are ideal for those at low risk of progression. However, patients with intermediate or high risk of progression to kidney failure require more disease-modifying therapies than do patients at low risk, suggesting the need for active dissemination and implementation of nephrology practice guidelines in primary care. Early intervention in patients with CKD stages G1–G3 might be crucial in determining more-favourable long-term outcomes and reducing the lifetime risk of kidney failure. Improved awareness of disease-modifying interventions among primary care physicians is needed to improve the care of patients with CKD[6].

Clinical practice guidelines need to be more explicit and accompanied by a mechanism for catalysing a change in the behaviour of primary care physicians in the crucial task of referral. Important indications for referral, other than risk of progression determined by KFREs, include red blood cell casts in urinary sediment, substantial albuminuria with a normal estimated glomerular filtration rate (eGFR), persistent serum potassium abnormalities, severe CKD-associated anaemia or hypertension, and hereditary CKD. Achieving optimal referral for patients who are likely to develop kidney failure should not have a negative effect on the referral of patients with CKD stages G1–G5, who require nephrology care for other reasons such as haematuria, nephrotic syndrome or electrolyte disorders, or to determine CKD aetiology. Harmonization of referral criteria between clinical guidelines is required and must be adapted to the needs of the health-care system[5].

The use of KFREs for determining referrals requires greater attention to the evaluation of patients with CKD by primary care physicians, particularly in the assessment of albuminuria[7], which in mathematical terms is the most important component of the KFRE equation. Despite guideline recommendations, rates of albuminuria testing are worryingly low among patients who are at high risk and have hypertension or diabetes[8]. Careful consideration should be given to the use of automated laboratory reminders that alert primary care physicians to the need to assess albuminuria in patients who are thought to be at risk of progressive CKD. Such reminders might be the only way to achieve a meaningful improvement in albuminuria testing rates.

A proactive approach to the implementation of goal-directed improvements and simplification of the referral process is needed. Colleagues in clinical laboratories should be encouraged to include a calculation of KFREs in blood test reports (Table 1). Automated calculation of KFREs (using age, gender, eGFR and albuminuria) can be easily included in most electronic medical records. If this task is not automated, external calculation of individual KFREs could represent

Table 1 | Interpretation of KFRE values

KFRE	Risk of progression	Action and/or interpretation
5-year KFRE for primary care		
<5%	Low	Referral not recommended; review other referral criteria and treat CKD appropriately.
>5%	Intermediate or high	Consider referral to a nephrologist.
2-year KFRE for specialist care		
10–20%	Intermediate	If the patient has stable confirmed CKD, they may require dialysis or transplantation in the future; consider referring to multidisciplinary care clinics and educating about treatment options.
20–40%	High	If the patient has stable confirmed CKD, they may require dialysis or transplantation in the next 2 years; consider confirming the treatment modality (dialysis, transplantation or conservative care); begin early planning for preemptive transplantation and determine the optimal dialysis access.
>40%	Very high	If the patient has stable confirmed CKD, they may require dialysis or transplantation within a short timeframe; consider referring for insertion of a dialysis access or plan timing of preemptive transplant surgery.

The KFRE can be downloaded as an Excel risk calculator[1]. CKD, chronic kidney disease; KFRE, kidney failure risk equation.

a barrier to timely referral. Inclusion of KFREs in electronic medical records might incentivize more-frequent albuminuria testing and thereby help to enable an optimal multidisciplinary approach to CKD, with improved planning for dialysis initiation or preemptive kidney transplantation. Such approaches could also promote the use of reno-protective and cardioprotective strategies to reduce the risk of adverse outcomes. The KFRE metric can be built into electronic medical records in primary and nephrology care settings to provide tailored alerts and prepopulated order sets based on current evidence-based, clinical practice guidelines. Such proactive steps would enable improvements in upstream risk-based care and treatment as well as promote individualized patient-centred care[9]. The use of automated laboratory reminders to assess albuminuria — for example, when Hb1Ac is ordered or when patients who are at risk have not undergone proteinuria (albuminuria) testing in the past year — could be helpful. Other action plans may include programmes in which blood test results trigger a recommendation for referral to a nephrologist and programmes of 'eConsults' in which primary care physicians can discuss patients with nephrologists to advance or delay their referrals.

> "Inclusion of KFREs in electronic medical records might incentivize more-frequent albuminuria testing"

Importantly, the KFRE is a laboratory-based equation and the two key measures (eGFR and albuminuria) have day-to-day and measurement variability. The predictive accuracy of the KFRE can be improved by use of several confirmatory eGFR values. KFRE values that exceed decision thresholds should be repeated and action should only be taken when a confirmatory value has been obtained. Such confirmation might help to reduce the referral gap for patients who require nephrology follow-up, as well as reduce the unnecessary referral of older patients with CKD who are unlikely to experience disease progression[10].

These suggestions and action plans are likely to help to bridge the nephrology referral gap and improve patient care. In addition, prospective studies are needed to demonstrate that risk-based, timely referral to nephrologists can lead to meaningful improvements in patient centred outcomes.

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Competing interests

The authors declare no competing interests.