Diagnosing and treating chronic kidney disease: The role of primary and community care nurses

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The number of people affected by diabetes, heart disease and obesity continues to rise. As these conditions contribute to chronic kidney disease (CKD), its prevalence is also increasing. A health economic report on kidney disease published in 2023 predicted a staggering 400% increase in dialysis demand by 2033, declaring CKD a public health emergency (Farrimond et al, 2023).

On a positive note, modelling suggested that implementing four key interventions could save over 10 000 lives in this 10-year period, and in a cost-effective manner:

1. Earlier and improved diagnosis, achieved through expanded screening opportunities.
2. Optimal CKD management, including adequate blood pressure control.
3. Greater use of SGLT2 inhibitors, owing to strong evidence showing their ability to slow CKD progression.
4. Increased rates of transplantation, reducing the need for dialysis and its associated complications.

Advanced CKD is complex, and its management requires nephrology specialist input. Early detection and generic treatment optimisation, however, is the remit of primary care (NICE, 2021). General practices currently face significant challenges, including overwhelming demand, often beyond their capacity (NHS England, 2024). A potential solution to minimise avoidable duplication of work and pressure is to integrate CKD management into current activity (e.g. diabetes and hypertension). This may improve patient experience and minimise the pressure on general practices. Primary care and community nurses working in diabetes have, therefore, the privilege of opportunistically screening people with diabetes and initiating early CKD management, particularly as there is a significant overlay with diabetes management.

In my experience, a lack of confidence in diagnosing CKD is often reported by healthcare professionals working in primary care and community services. Restoring this confidence is crucial for achieving earlier diagnosis and treatment optimisation, which can significantly improve cardiovascular outcomes, including mortality prevention, and prevent progression to renal failure.

The asymptomatic nature of the disease means that CKD can progress unnoticed over several years, highlighting the importance of proactive screening of at-risk individuals. According to NICE guidelines, individuals with risk factors should be screened using the albumin-to-creatinine ratio (ACR) and estimated glomerular filtration rate (eGFR). For people with diabetes, this kidney health check should be conducted annually (NICE, 2021).

Approximately 40% of people living with diabetes develop CKD. For nurses to confidently discuss the need for a kidney health check as part of the diabetes annual review, it is important for them to understand what CKD is. According to KDIGO, CKD "is defined by the presence of kidney structural or functional abnormalities lasting for at least 3 months, with significant health risks."

Kidney function is commonly checked by eGFR and the most common marker to assess kidney damage is ACR; hence, CKD classification requires results from both tests (*Figure 1*). Additional markers of kidney damage include histopathology, imaging and haematuria. Abnormal eGFR and/or uACR results may represent CKD but, before making a diagnosis, it is important to confirm chronicity, which is defined by a minimum of 3 months, and exclude acute kidney injury that may lead to temporary renal dysfunction (Kidney Disease: Improving Global Outcomes (KDIGO) CKD Work Group, 2024).

Early CKD diagnosis: ACR is the key!

The phenomenon of glomerular hyperfiltration is commonly observed in the early phases of CKD, especially in conditions like diabetes. In

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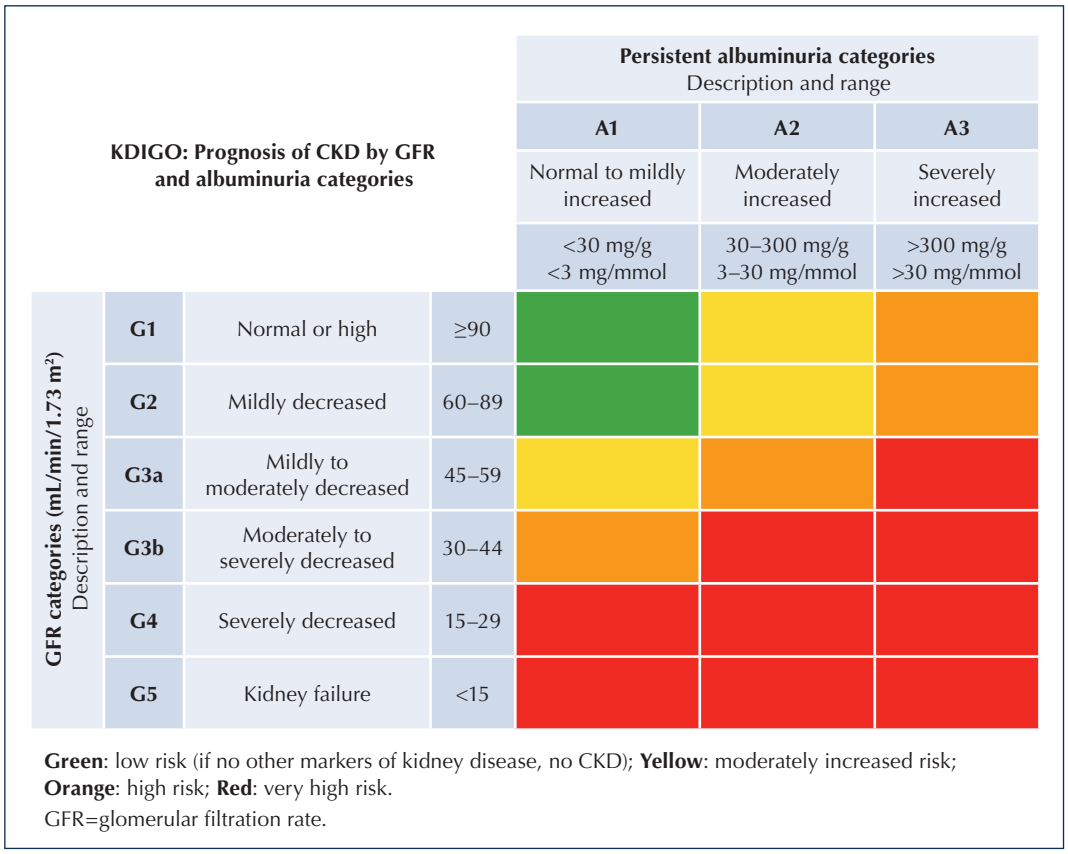

Figure 1. KDIGO (Kidney Disease: Improving Global Outcomes) chronic kidney disease classification (KDIGO Diabetes Work Group, 2022).

this situation, the kidneys initially compensate for damage by increasing the filtration rate (hyperfiltration), which can temporarily mask the progressive decline in kidney function. As a result, GFR may remain preserved or even increased, making it harder to detect CKD in its early stages through traditional measures like serum creatinine or GFR alone. However, testing for albuminuria (ACR >3 mg/mmol) can still detect glomerular damage, even when other markers of renal function, such as GFR, appear normal, making it the most sensitive test for early CKD (Christofides and Desai, 2021). *Figure 2* illustrates how ACR can detect kidney damage with mostly preserved nephron mass, whilst an eGFR <60 mL/min/1.73 m^2 is associated with approximately 80% nephron mass loss (Tonneijck et al, 2017).

On a positive note, microalbuminuria can be improved and sometimes completely reverted, not always preceding renal function loss. Even when albuminuria is associated with renal function loss in a more advanced stage of CKD, a 30%–50% reduction of albuminuria is associated with lower cardiovascular risk and slower progression of CKD, which may delay or prevent renal failure, depending on other clinical factors (Christofides and Desai, 2021).

The challenge of providing adequate ACR screening to people living with diabetes is, indeed, multidimensional and extends beyond the individual healthcare provider's expertise. ACR testing is not as widely adopted as eGFR testing, partly because it is not routinely included in standard lab test panels. This omission contributes to lower uptake of ACR testing. One possible solution is improving the use of information technology to automate lab requests, which could help reduce human error and ensure more consistent ACR screening (Christofides and Desai, 2021).

The removal of ACR testing from the Quality and Outcomes Framework (QOF) has also been

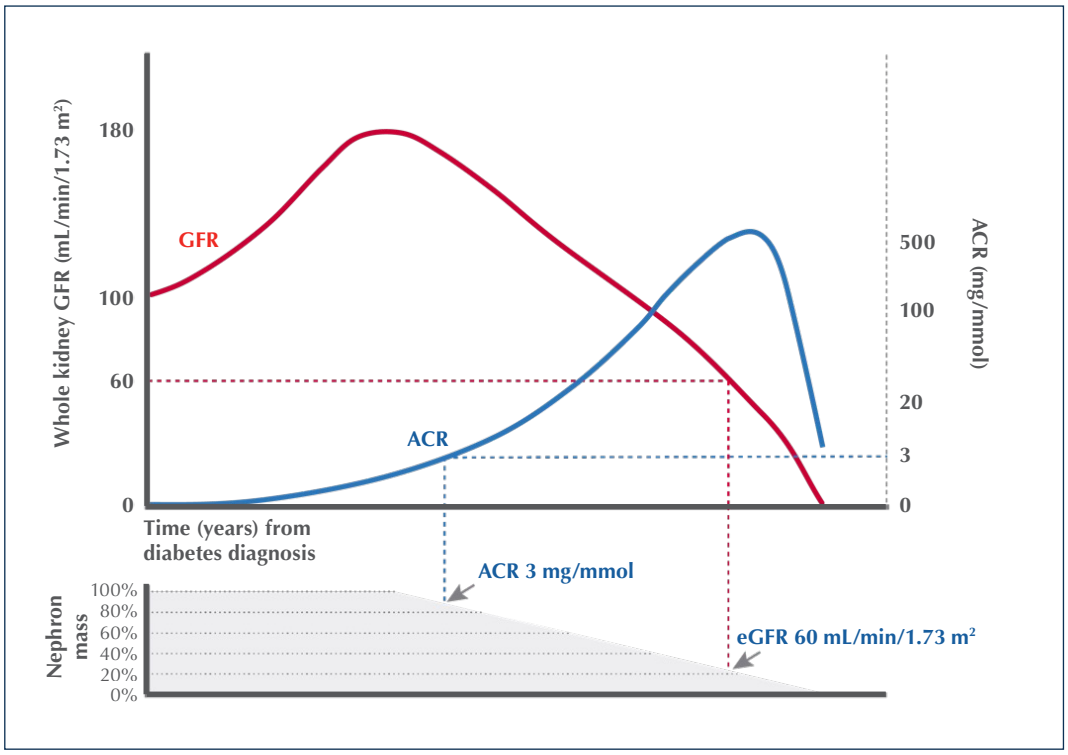

Figure 2. ACR testing can detect early signs of diabetic kidney disease (DKD) before significant nephron loss has occurred. Why wait? (Tonneijck et al, 2017)

linked to a decrease in its uptake. Since QOF offers financial incentives to primary care for meeting specific targets, its inclusion has historically motivated better adherence to guidelines and improved health outcomes (Baig and Zafar, 2023). At the local level, the introduction of primary care incentives, through enhanced services for long-term conditions, could provide a potential solution to increase ACR testing rates. By aligning financial incentives with the broader goals of improving diabetes care, uptake of ACR testing could increase, contributing to better management of kidney health in people with diabetes.

Early treatment optimisation, can it be done in primary care?

The foundation for managing most long-term conditions is a healthy lifestyle, and CKD is not different. For many years, the treatment of CKD primarily focused on renin–angiotensin system (RAS) blockade, with maximal therapy using angiotensin-converting enzyme inhibitors (ACEis) or angiotensin II receptor blockers (ARBs). These therapies were foundational, helping to slow CKD progression by reducing glomerular hypertension and proteinuria.

However, the emergence of SGLT2 inhibitors, initially developed as glucose-lowering agents for type 2 diabetes, marked a breakthrough. Clinical trials soon revealed that SGLT2 inhibitors had profound cardiorenal benefits, independent of their effects on blood glucose. Landmark studies, such as CREDENCE, DAPA-CKD and EMPA-KIDNEY, demonstrated significant reductions in CKD progression and cardiovascular events (Heerspink et al, 2020; KDIGO Diabetes Work Group, 2022; The EMPA-KIDNEY Collaborative Group et al, 2023). As a result, SGLT2 inhibitors revolutionised the management of CKD, being recommended by NICE guidelines in addition to optimal management of care (NICE, 2021), although it is important to clarify that this is not recommended for people living with type 1 diabetes. KDIGO provide a handy summary of the combined management of diabetes and CKD (KDIGO CKD Work Group, 2022; Fig. 2). ■

Take-home messages.

- All people living with diabetes should be offered a kidney health check (GFR and ACR) annually, independently of having a CKD diagnosis.
- ACR is the most sensitive test to diagnose CKD, detecting kidney damage even when GFR shows preserved renal function.
- An ACR ≥3 mg/mmol or reduced GFR represent kidney damage, but it is important to confirm chronicity longer than 3 months to make a CKD diagnosis. Note that CKD can be diagnosed based on albuminuria (ACR) with preserved renal function (GFR).
- Albuminuria can be improved and even reversed with treatment optimisation, consequently reducing the speed of GFR loss, or preventing it entirely.
- The therapeutic role of SGLT2 inhibitors has expanded beyond glucose control, becoming essential in preventing and managing the complications of CKD, as well as slowing down CKD disease progression.

Baig A, Zafar A (2023) Urine ACR uptake in patients with a diagnosis of type 1 and 2 diabetes mellitus in a primary care setting: A cross sectional study. *Prim Care Diabetes* **17**: 639–42

Christofides EA, Desai N (2021) Optimal early diagnosis and monitoring of diabetic kidney disease in type 2 diabetes mellitus: addressing the barriers to albuminuria testing. *J Prim Care Community Health* **12**: 21501327211003683

Farrimond B, Agathangelou G, Gofman L et al (2023) *Kidney disease: A UK public health emergency. The health economics of kidney disease to 2033*. Kidney Research UK, Peterborough, Cambs. Available at: https://www.kidneyresearchuk.org/wp-content/uploads/2023/06/Economics-of-Kidney-Disease-full-report_accessible.pdf (accessed 08.10.24)

Heerspink HJL, Stefánsson BV, Correa-Rotter R et al; DAPA-CKD Trial Committees and Investigators. (2020) Dapagliflozin in patients with chronic kidney disease. *N Engl J Med* **383**: 1436–46

Kidney Disease: Improving Global Outcomes (KDIGO) Diabetes Work Group (2022) KDIGO 2022 Clinical Practice Guideline for Diabetes Management in Chronic Kidney Disease. *Kidney Int* **102**(Suppl 5): S1–127

Kidney Disease: Improving Global Outcomes (KDIGO) CKD Work Group (2024) KDIGO 2024 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. *Kidney Int* **105**(Suppl 4): S117–314

NHS England (2024) *How to align capacity with demand in general practice*. Available at: https://www.england.nhs.uk/long-read/how-to-align-capacity-with-demand-in-general-practice (accessed 08.10.24)

NICE (2021) *Chronic kidney disease: assessment and management* (NG203). NICE, London. Available at: https://www.nice.org.uk/guidance/ng203 (accessed 08.10.24)

The EMPA-KIDNEY Collaborative Group; Herrington WG, Staplin N, Wanner C et al (2023) Empagliflozin in patients with chronic kidney disease. *N Engl J Med* **388**: 117–27

Tonneijck L, Muskiet MH, Smits MM et al (2017) Glomerular hyperfiltration in diabetes: mechanisms, clinical significance, and treatment. *J Am Soc Nephrol* **28**: 1023–39