Chronic Kidney Disease (CKD)

Early Identification and Intervention in Primary Care

CKD is underdiagnosed and undertreated in the community[1]

Early identification, risk stratification, and treatment can reduce the morbidity and mortality rates from CKD and its related complications, such as CVD[2]

Step 1 Identify individuals at risk

Main clinical risk factors for CKD:
- Hypertension
- Diabetes
- CVD
- Family history of CKD

Consider other factors:
- Systemic disease affecting the kidneys (e.g. SLE)
- Obesity
- Genetic risk factors (e.g. ADPKD)
- Environmental exposures to nephrotoxins
- Demographics – older age, race/ethnicity
- History of AKI

Step 2 Test high-risk adults to detect CKD
(not population-wide)

Evaluate kidney function – eGFR
- eGFR calculated based on serum creatinine and/or cystatin C

AND

Evaluate kidney damage – albuminuria
- **UACR or dipstick*** (if UACR is unavailable)

If UACR ≥30 mg/g (≥3 mg/mmol) OR eGFR <60 mL/min/1.73 m²

Re-test in 3 months

If low eGFR or high UACR are present for >3 months, diagnose CKD

If UACR <30 mg/g (<3 mg/mmol) AND eGFR ≥60 mL/min/1.73 m²

Re-test at least once a year†

Step 3 Diagnose CKD

Step 4 Stratify and treat
(also see Table 1)

Risk categories for CKD progression, morbidity, and mortality; monitoring frequency (number of check-ups per year in parentheses); **and nephrology consultation**[3]

eGFR categories (mL/min/1.73 m²) Description and range	Albuminuria categories: A1 <30 mg/g <3 mg/mmol	A2 30–299 mg/g 3–29 mg/mmol	A3 ≥300 mg/g ≥30 mg/mmol
≥90 G1	Monitor (1)	Treat (1)	Treat & consult (3)
60–89 G2	Monitor (1)	Treat (1)	Treat & consult (3)
45–59 G3a	Treat (1)	Treat (2)	Treat & consult (3)
30–44 G3b	Treat (2)	Treat & consult (3)	Treat & consult (3)
15–29 G4	Treat & consult (3)	Treat & consult (3)	Treat & consult (4+)
<15 G5	Treat & consult (4+)	Treat & consult (4+)	Treat & consult (4+)

Low risk
Stable disease ***OR*** **NO CKD in absence of other markers of kidney damage.**[†] Requires measurements once a year or earlier in case of new symptoms / risk factors.

Moderately increased risk
Requires measurements at least once a year

High risk
Requires measurements at least twice a year

Very high risk
Treat in agreement with a nephrologist
Requires measurements at least three times a year
Requires the closest monitoring at least four times a year (every 1–3 months)

Adapted from de Boer *et al.* 2022[3]

Step 5 Nephrology consultation

Take action based on the risk categories for CKD progression, morbidity, and mortality, and monitoring frequency (see above).

Primary care practitioners should consult with a nephrologist while initiating treatment; some patients may be under the direct care of a nephrologist if indicated (see Table 3).

Table 1. Treat to slow CKD progression, reduce mortality risk, and manage comorbidities

Lifestyle modification	
Smoking cessation; regular exercise; well-balanced diet (avoid excessive protein intake and processed food, limit sodium intake <2 g/day)	
Medical treatment	
Treat diabetes, hypertension, and CVD: Optimise blood pressure and glycemic control	Ensure guideline-directed medical treatment to slow down CKD progression and reduce CVD risk: maximally tolerated doses of **ACEIs/ARBs, SGLT2 inhibitors, nonsteroidal MRAs** with proven benefits in renal and cardiovascular outcome trials for T2D; also consider **lipid-lowering therapy (statins)** and/or **antiplatelet therapy** (for patients with CKD at risk of atherosclerotic events)
Considerations	
Adjust dosing of medications based on eGFR; exercise caution when prescribing analgesics, antimicrobials, hypoglycemics, chemotherapeutics, or anticoagulants; avoid nephrotoxins (e.g. NSAIDs) and some contrast media	

Table 2. Monitor for CKD progression and comorbidities

CKD progression and comorbidities	What to monitor
CKD monitoring	eGFR, UACR, urinalysis (urine sediment)
CVD and dyslipidemia	Blood pressure, cardiovascular risk stratification, lipid status
Diabetes	Blood glucose, HbA1c

Identify CKD complications: anemia, mineral and bone disorders, metabolic acidosis, etc.

Table 3. Additional considerations for nephrology consultation

- Unexplained, progressive decline in eGFR ≥5 mL/min/1.73 m² over 12 months or sudden decline in eGFR over days to weeks
- Unexplained significant albuminuria/proteinuria or hematuria
- Persistent hyperkalemia, resistant hypertension (defined as uncontrolled hypertension on three antihypertensive agents, including a diuretic), recurring kidney stones, or hereditary kidney diseases (e.g. ADPKD)
- Other complications identified (anemia, mineral and bone disorders, metabolic acidosis, etc.)

Consultation with a nephrologist can be for identifying other treatable causes or for developing a treatment plan. Although some patients may be maintained further in nephrology care, most will return to primary care.

Consider using other KDIGO guidelines: KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. https://kdigo.org/wp-content/uploads/2017/02/KDIGO_2012_CKD_GL.pdf; KDIGO 2022 Clinical Practice Guideline for Diabetes Management in Chronic Kidney Disease https://kdigo.org/wp-content/uploads/2022/10/KDIGO-2022-Clinical-Practice-Guideline-for-Diabetes-Management-in-CKD.pdf; KDIGO 2021 Clinical Practice Guideline for the Management of Blood Pressure in Chronic Kidney Disease https://kdigo.org/wp-content/uploads/2016/10/KDIGO-2021-BP-GL.pdf; KDIGO Clinical Practice Guideline for Lipid Management in Chronic Kidney Disease https://kdigo.org/wp-content/uploads/2017/02/KDIGO-2013-Lipids-Guideline-English.pdf

Footnotes
*If albuminuria is detected by dipstick, use UACR for quantification of urinary albumin excretion. †Re-test based on individual patient assessment, at least once a year. ‡Urine sediment abnormalities, electrolyte abnormalities due to tubular disorders, renal histological abnormalities, structural abnormalities detected by imaging (e.g. polycystic kidneys, reflux nephropathy), or a history of kidney transplantation.

Abbreviations
ACEI, angiotensin-converting enzyme inhibitor; ADPKD, autosomal dominant polycystic kidney disease; AKI, acute kidney injury; ARB, angiotensin II receptor blocker; CKD, chronic kidney disease; CVD, cardiovascular disease; eGFR, estimated glomerular filtration rate; G, refers to the GFR category; HbA1c, glycated hemoglobin; KDIGO, Kidney Disease: Improving Global Outcomes; MRA, mineralocorticoid receptor antagonist; NSAID, non-steroidal anti-inflammatory drug; SGLT2, sodium–glucose co-transporter-2; SLE, systemic lupus erythematosus; T2D, type 2 diabetes; UACR, urine albumin–creatinine ratio.

References

1. Sundström J *et al. Lancet Reg Health Eur* 2022; 20: 100438.
2. Shlipak MG *et al. Kidney Int* 2021; 99 (1): 34–47.
3. Adapted from de Boer IH et al. ADA/KDIGO Consensus Report: Diabetes Management in Chronic Kidney Disease. Diabetes Care 2022; In press by Adapted from de Boer IH et al. Kidney International (2022); https://kdigo.org/wp-content/uploads/2018/03/ADA-KDIGO-Consensus-Report-Diabetes-CKD-KI-2022.pdf.

PCDE endorses and supports the Clinical One Pager for Primary Care around Early Identification and Intervention of CKD.

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