

Chronic Kidney Disease

Practical bedside approach • Adults

01 DEFINITION AND RISK FACTORS

- CKD means **abnormal kidney structure or function for ≥ 3 months**, with implications for health: $\text{eGFR} < 60 \text{ mL/min/1.73 m}^2$ and/or a marker of kidney damage.
- Markers include albuminuria, persistent glomerular haematuria, abnormal histology or imaging, tubular disorders and a kidney transplant. **Normal eGFR does not exclude CKD.**
- Major risks: **diabetes, hypertension, cardiovascular disease, previous AKI, older age, obesity, smoking, family history and nephrotoxic exposure.** Other causes include glomerular, hereditary and obstructive disease.

02 CLASSIFY BY CAUSE, GFR AND ALBUMINURIA (CGA)

- GFR categories** (mL/min/1.73 m^2): **G1 ≥ 90 ; G2 60-89; G3a 45-59; G3b 30-44; G4 15-29; G5 < 15 .**
- Albuminuria categories** (urine ACR): **A1 < 30 ; A2 30-300; A3 $> 300 \text{ mg/g}$** (approximately < 3 , 3-30 and $> 30 \text{ mg/mmol}$).
- G1/G2 alone is not CKD** without another marker of kidney damage. Report both G and A categories, e.g. diabetic CKD G3bA3.
- Lower eGFR and higher ACR independently increase kidney failure and cardiovascular risk. Use a validated kidney failure risk equation in CKD G3-G5 when applicable.

03 DIAGNOSE, CONFIRM CHRONICITY AND FIND THE CAUSE

- Test at-risk patients with **serum creatinine/eGFR AND urine ACR**, preferably a first-morning sample. Repeat abnormalities; do not diagnose CKD from one result.
- Establish chronicity from previous results, imaging, history or repeat testing beyond 3 months. **Exclude AKI** if kidney function has changed recently.
- Assess BP, volume status, medications, diabetes and family history. Perform urinalysis/sediment; use ultrasound to assess kidney structure and obstruction when indicated.
- Check electrolytes, bicarbonate and blood count; assess calcium/phosphate/PTH and other complications according to stage. Select serology or biopsy when the cause is uncertain.
- Use cystatin C with creatinine when available and useful to improve GFR estimation, especially when creatinine is unreliable or decisions depend on precision.

04 TREAT THE CAUSE AND SLOW PROGRESSION

- Control BP and diabetes; individualise targets. **ACE inhibitor or ARB** is indicated in appropriate albuminuric CKD; do not combine them. Check creatinine/potassium after starting or titrating.
- SGLT2 inhibitor:** recommended for type 2 diabetes + CKD with $\text{eGFR} \geq 20$; also for CKD with $\text{eGFR} \geq 20$ and $\text{ACR} \geq 200 \text{ mg/g}$, or heart failure irrespective of ACR, when eligible.
- Consider **finerenone** for type 2 diabetes with residual albuminuria despite RAS blockade, adequate eGFR and normal potassium; use GLP-1 therapy in appropriate patients.
- Reduce salt, stop smoking, exercise and maintain healthy weight. Aim for protein around **0.8 g/kg/day in adults with CKD G3-G5**; avoid high-protein diets and NSAIDs.
- Adjust drug doses to kidney function; address cardiovascular risk with statin-based therapy when indicated. Treat anaemia, acidosis, hyperkalaemia and CKD-mineral/bone disease individually.

05 FOLLOW-UP, REFERRAL AND KIDNEY FAILURE PLANNING

- Monitor **eGFR and ACR at least annually**, more often with higher risk or treatment changes. Review symptoms, BP, potassium and complications.
- Refer for $\text{eGFR} < 30$, rapid decline, significant albuminuria with haematuria, uncertain cause, resistant hypertension or persistent complications. A 5-year kidney failure risk of 3-5% can support referral.
- Plan transplant assessment and dialysis options before advanced kidney failure. **Start dialysis for clinical indications** such as refractory fluid/electrolyte problems or uraemic symptoms, not eGFR alone.

KEY MESSAGE

Measure both eGFR and ACR, confirm ≥ 3 months of chronicity and identify the cause. Treat early to reduce kidney failure and cardiovascular risk.

REFERENCE

KDIGO 2024 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. Kidney Int. 2024;105(Suppl):S117-S314. kdigo.org/guidelines/ckd-evaluation-and-management/.