Chronic Kidney Disease

KDIGO 2024 · Stage it, slow it, and treat the cardiovascular risk

eGFR + ALBUMINURIA
both, always

STAGE IT ON TWO AXES *albuminuria is not optional — it drives prognosis and therapy*

G STAGE — eGFR (mL/min/1.73 m²)

G1 ≥ 90 · **G2** 60–89 · **G3a** 45–59 · **G3b** 30–44 · **G4** 15–29 · **G5** < 15. *CKD requires abnormality present for **> 3 months**. A single low eGFR is not CKD.*

A STAGE — urine albumin-to-creatinine ratio (mg/g)

A1 < 30 · **A2** 30–300 · **A3** > 300. *A patient with a normal eGFR and A3 albuminuria has CKD and substantial risk. **Check a UACR in everyone you stage.***

THE PILLARS OF KIDNEY PROTECTION *this is where progression is actually slowed*

Therapy	Who qualifies	Notes
RAS inhibitor ACEi or ARB	CKD with **albuminuria**, especially A2–A3, with or without diabetes	Titrate to the maximum tolerated dose. **Do not stop for a stable creatinine rise of up to ~30%** — that reflects intraglomerular pressure reduction, which is the point.
SGLT2 inhibitor	**eGFR ≥ 20** with **UACR ≥ 200 mg/g**; or **T2D + CKD with eGFR ≥ 20**; or heart failure at **any** albuminuria	Roughly **37% reduction** in kidney disease progression and **23% reduction** in AKI, **irrespective of diabetes status**. Expect a small initial eGFR dip — continue through it.
Finerenone non-steroidal MRA	**T2D**, **eGFR > 25**, **normal potassium**, and **albuminuria > 30 mg/g** despite a maximally tolerated RAS inhibitor	Requires **careful monitoring of potassium and eGFR**, with dose reduction or discontinuation if needed. Adds benefit on top of RASi and SGLT2i.
Blood pressure	Most adults with CKD	Target **office BP < 130/80 mmHg**, using standardised measurement technique.
Statin	Most adults with CKD	CKD is a cardiovascular risk state. **Most patients with CKD die of cardiovascular disease, not of dialysis.**

MANAGE THE COMPLICATIONS *each has a threshold worth remembering*

ANEMIA

Replete iron first — target ferritin and transferrin saturation before starting an erythropoiesis-stimulating agent. **Do not target a normal hemoglobin**; overcorrection increases stroke and thrombosis. Investigate other causes before attributing it to CKD.

MINERAL & BONE

Rising **phosphate** and **PTH** with falling **calcitriol**. Dietary phosphate restriction, then binders — **prefer non-calcium-based**. Treat vitamin D deficiency. Calcimimetics for persistent hyperparathyroidism on dialysis.

ACIDOSIS & POTASSIUM

Oral bicarbonate for serum bicarbonate persistently < 18–22 — slows progression and protects muscle and bone. For **hyperkalemia**, use a potassium binder to **keep the RASi and MRA on board** rather than stopping them.

WHEN TO REFER, AND WHAT TO AVOID *plan the transition long before you need it*

REFER TO NEPHROLOGY

eGFR < 30 (G4–G5) · **UACR > 300** · rapid progression · persistent hematuria with proteinuria · refractory hypertension on 4 agents · recurrent stones · suspected genetic or glomerular disease · persistent electrolyte abnormality. **Early referral allows planned access and modality choice** rather than a crash start on a temporary line.

AVOID / ADJUST

NSAIDs · iodinated contrast where avoidable · nephrotoxic antibiotic combinations such as **vancomycin plus piperacillin-tazobactam** · **metformin below eGFR 30** · renally cleared drugs at unadjusted doses. **Give a sick-day plan** to hold RASi, SGLT2i, diuretics, and metformin during intercurrent illness.

PLANNING FOR KIDNEY FAILURE *start the conversation at G4, not at G5*

Element	What to do, and when
Modality education	Discuss **hemodialysis, peritoneal dialysis, transplantation, and conservative care** while the patient is still well enough to choose. Conservative management is a legitimate option, particularly in the frail elderly, where dialysis may not extend meaningful life.
Vascular access	Refer for an **arteriovenous fistula several months before** anticipated need — fistulas take time to mature. **Protect the non-dominant arm**: no PICC lines, no routine phlebotomy or cannulation.
Transplant workup	Refer early — assessment takes months, and **pre-emptive transplantation gives better outcomes** than transplanting after years of dialysis. Living donor options should be raised explicitly.
Vaccination	**Hepatitis B** (higher doses and more doses may be needed in CKD), influenza, pneumococcal, and COVID-19. Do it before immunosuppression or dialysis.
Advance care planning	Document goals and resuscitation preferences. Dialysis withdrawal is a common terminal event and is far easier discussed early than in a crisis.

WHEN THE eGFR DROPS SUDDENLY *AKI on CKD is not just progression*

WORK THROUGH THE REVERSIBLE CAUSES

Volume depletion from over-diuresis or poor intake · **obstruction** — scan the bladder · new **NSAID**, contrast, or nephrotoxic antibiotic · sepsis or hypotension · decompensated heart failure or cirrhosis · rapidly progressive glomerular disease with an active sediment.

THE COMMON MISSTEP

Attributing every rise to "CKD progression" and doing nothing. True CKD progression is gradual over months. A jump over days is an **acute insult** with something reversible behind it — check a urine dipstick, a bladder scan, the drug chart, and the volume status before accepting a new baseline.

PEARLS & PITFALLS

- **A normal eGFR does not exclude CKD.** Isolated A3 albuminuria carries high renal and cardiovascular risk.
- **Do not stop the ACEi for a 25% creatinine rise.** Recheck, look for volume depletion, and preserve the drug that is protecting the kidney.
- **Expect an eGFR dip when starting an SGLT2 inhibitor.** It is hemodynamic and it precedes long-term benefit.
- **SGLT2 inhibitors help regardless of diabetes.** Do not reserve them for diabetic patients.
- **Use a potassium binder to keep the RASi**, rather than sacrificing a mortality-modifying drug.
- **Refer early.** Late referral means a tunnelled line and an emergency start, which carries worse outcomes than a planned fistula.

References: KDIGO 2024 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease · DAPA-CKD, EMPA-KIDNEY, FIDELIO-DKD and FIGARO-DKD trial programs.

Educational aid; verify doses against local protocol, renal function, and patient factors.