ACUTE KIDNEY INJURY

KDIGO Staging · Prevention · When to Start RRT

STAGE IT
protect it

DEFINE · KDIGO

any one criterion

↑ Creatinine (fast)

≥ 0.3 mg/dL rise within 48 h

↑ Creatinine (trend)

≥ 1.5 × baseline, known or presumed within 7 days

↓ Urine output

< 0.5 mL/kg/h for 6 hours

KDIGO STAGING

stage by the worst criterion met

Stage	Serum creatinine	Urine output
1	1.5-1.9 × baseline OR ≥ 0.3 mg/dL rise	< 0.5 mL/kg/h for 6-12 h
2	2.0-2.9 × baseline	< 0.5 mL/kg/h for ≥ 12 h
3	≥ 3.0 × baseline OR ≥ 4.0 mg/dL OR RRT started	< 0.3 mL/kg/h for ≥ 24 h OR anuria ≥ 12 h

FIND THE CAUSE

urine indices: FENa < 1% pre-renal · > 2% ATN (invalid on diuretics)

PRE-RENAL

Hypovolaemia, sepsis, cardiorenal, hepatorenal, abdominal compartment (commonest in ICU)

INTRINSIC

ATN (ischaemic / septic), nephrotoxins, rhabdomyolysis, contrast, GN / vasculitis, AIN

POST-RENAL

Obstruction: blocked catheter, stones, pelvic mass. Exclude with bladder scan / ultrasound

Urine microscopy: muddy-brown granular casts = ATN · RBC casts = GN · WBC / eosinophils = AIN · bland = pre-renal. Also: CK (rhabdo), renal ultrasound, drug levels, FEurea < 35% if on diuretics.

START RRT NOW IF

emergencies won't wait

- Refractory hyperkalaemia
- Refractory metabolic acidosis
- Refractory fluid overload / pulmonary oedema
- Uraemic pericarditis or encephalopathy
- Selected poisons / toxins

PREVENT & PROTECT

- Stop nephrotoxins (NSAIDs, aminoglycosides, ACEi/ARB in shock, contrast)
- Optimise volume & perfusion; target MAP ≥ 65 (higher if chronic HTN)
- Balanced crystalloids over high-chloride saline; avoid starch
- Renally dose drugs; monitor vancomycin / aminoglycoside levels
- NO renal-dose dopamine; NO diuretics to prevent or treat AKI

RRT · MODALITY, DOSE & TIMING

CRRT

Haemodynamic instability, raised ICP, slow fluid removal. Effluent 20-25 mL/kg/h; regional citrate anticoagulation preferred.

IHD / SLED

Haemodynamically stable; rapid clearance (severe hyperkalaemia, dialysable toxins). Hybrid SLED bridges the two.

TIMING

Start for indications, not a stage threshold. No benefit from early start (STARRT-AKI, AKIKI); harm in over-delay (AKIKI 2).

PEARLS & PITFALLS

- Creatinine lags injury by 24-48 h - a normal value does not exclude evolving AKI; track urine output.
- Fluid overload dilutes creatinine (falsely reassuring) and independently worsens outcome - de-resuscitate.
- Baseline creatinine matters; without it a single value under-stages the injury.
- Do not use diuretics or dopamine to convert oliguric to non-oliguric AKI as an outcome strategy.

References: KDIGO AKI 2012 (2026 update in draft) · STARRT-AKI 2020 · AKIKI 1/2 2016-21 · ELAIN 2016.

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