

Acute Kidney Injury

Practical bedside approach • Recognition, causes and treatment

01 WHAT IS AKI?

- AKI is a sudden decline in kidney function, diagnosed by **any one** of the following:
- Serum creatinine increase ≥ 0.3 mg/dL within 48 hours.
- Serum creatinine increase to ≥ 1.5 times baseline within 7 days.
- Urine output < 0.5 mL/kg/hour for at least 6 hours.
- AKI can occur with preserved urine output; oliguria is not essential for diagnosis.

02 RISK FACTORS & CAUSES

- **Risk factors:** CKD, previous AKI, older age, diabetes, heart failure and liver disease.
- **Common triggers:** dehydration, bleeding, sepsis, hypotension, major surgery and nephrotoxic medications.
- Think of three mechanisms: **reduced renal perfusion, intrinsic kidney injury and urinary obstruction.**
- Review NSAIDs, aminoglycosides and other potentially nephrotoxic drugs, especially during acute illness.

03 ASSESS THE PATIENT

- Compare creatinine with baseline and monitor urine output.
- Assess blood pressure, perfusion and volume status: **is the patient dehydrated or overloaded?**
- Check potassium, bicarbonate, urinalysis and other investigations guided by the suspected cause.
- Arrange urgent ultrasound when obstruction is suspected or the cause is unclear.
- Haematuria with proteinuria may suggest glomerulonephritis and requires prompt nephrological assessment.

04 HOW DO WE TREAT IT?

- **Every AKI requires prompt assessment and treatment of the cause; not every AKI requires dialysis.**
- Correct hypovolaemia with isotonic crystalloids when indicated, reassessing frequently; avoid fluid overload.
- Treat sepsis promptly and restore adequate perfusion.
- Relieve urinary obstruction; infected obstruction requires urgent drainage.
- Stop avoidable nephrotoxins, review temporarily withholding haemodynamically active drugs when appropriate, and adjust medication doses.
- Treat hyperkalaemia, acidosis and fluid overload.
- **Diuretics may treat overload but do not reverse AKI; do not give them simply to increase urine output.**

05 WHEN IS DIALYSIS NEEDED?

- Arrange urgent kidney replacement therapy for complications unresponsive to medical treatment:
- **Refractory hyperkalaemia; severe metabolic acidosis; fluid overload or pulmonary oedema; uraemic complications**, such as pericarditis or encephalopathy.
- **Dialyse the patient's complications, not an isolated creatinine or urea value.**

06 FOLLOW-UP

- Monitor kidney-function recovery and reassess at approximately **3 months** for persistent kidney dysfunction or CKD.

REFERENCES

1. KDIGO. Clinical Practice Guideline for Acute Kidney Injury. Kidney Int Suppl. 2012;2:1-138.
2. NICE NG148. Acute kidney injury: prevention, detection and management.

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