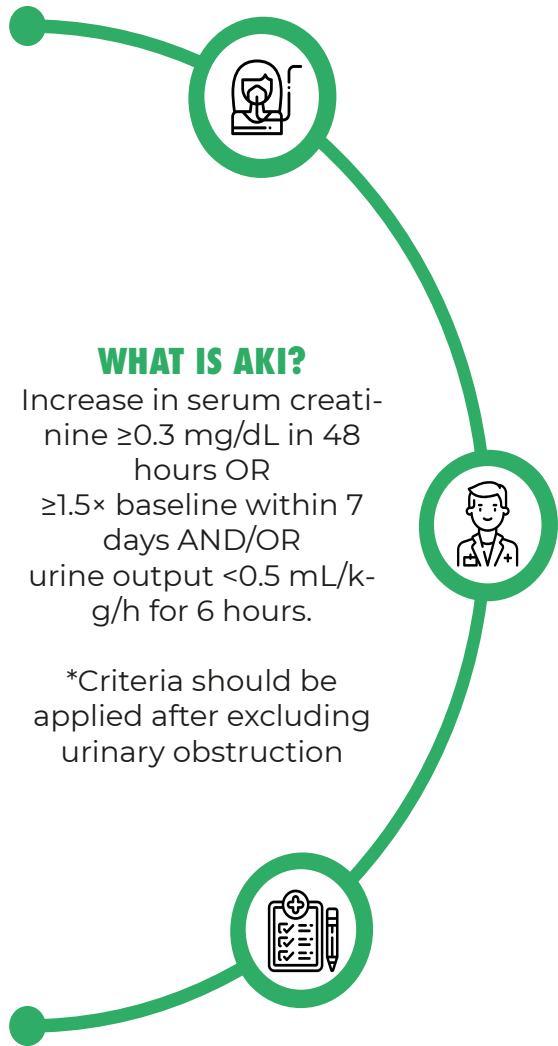


Standard Treatment Workflow (STW)

ACUTE KIDNEY INJURY

ICD-11-GB60



SYMPTOMS

- Reduced urine output
- Dark, concentrated urine
- Swelling over feet/face
- Breathlessness
- Nausea, vomiting, reduced appetite
- Confusion or altered sensorium

AKI RISK INCREASES IN THE PRESENCE OF

- Hypotension
- Volume loss (eg: vomiting, diarrhea, bleeding)
- Heat exposure or heat stroke
- Low effective arterial volume (Heart failure, decompensated liver disease)
- Nephrotoxic/ indigenous drug use
- Plant and chemical toxins
- Radio contrast exposure
- Infections
- Animal bites/ stings
- In neonates - oligohydramnios/birth asphyxia, respiratory distress
- Hemolysis
- Rhabdomyolysis (Post trauma)
- Pregnancy-related complications
- Multiorgan failure

PRINCIPLES OF ASSESSMENT

- Careful review of history and medications
- Determine whether pre-renal, renal or post-renal
- Identify and correct reversible factors
- Look out for occult causes (e.g. envenomations, poisoning)
- Determine severity of AKI
- Determine whether community acquired or hospital acquired

PRELIMINARY ACTIONS

- Monitor urine volume & body weight
- Identify and treat complications
- Correct hydration status
- Stop nephrotoxic drugs
- Exclude urinary outflow obstruction
- Stabilize blood pressure
- Treat infection
- Assess dialysis need
- Optimize blood sugar level

DESIRABLE ACTIONS/INVESTIGATIONS

- Stage AKI (KDIGO criteria*)
- Check electrolytes, acid-base status Including serum calcium, phosphate, and uric acid
- Urinalysis- if proteinuria, hematuria rule out glomerulonephritis
- CBC- hemolysis, low platelets- suggests TMA
- Rule out pre-existing kidney disease
- Ultrasound of KUB region
- Assessment for infection
- Laboratory investigation for specific cause
- CPK level in suspected rhabdomyolysis
- LDH, bilirubin for hemolysis
- ECG, Chest X-ray

AKI IN SPECIFIC SETTINGS

- Neonatal - refer to paediatrician
- Pregnancy - manage complications
- Envenomations - antsnake venom, hemodynamic correction
- Poisoning - specific antidote when available
- Systemic disease - refer for investigations
- Kidney transplant recipient - refer to nephrologist

TREATMENT OF HYPERKALEMIA

- 10 ml of 10% calcium gluconate over 2-5 minutes slow IV under ECG monitoring, can be repeated upto 3 times
- Inhaled Salbutamol : 10mg (4 respules of 2.5ml Salbutamol)
- Insulin-dextrose: 10U in 50ml of 50% dextrose or 100ml of 25% dextrose
- Avoid high potassium diet
- Withhold medication likely to contribute to hyperkalemia (ACEi/ARB)
- Urgent dialysis if life threatening
- Potassium binders if dialysis unavailable

MANAGEMENT

PRIMARY CARE

- Detailed history and physical examination
- Identify and correct volume deficit
- Stop nephrotoxic agents
- Identify and correct bladder outlet obstruction
- Give anti-snake venom if indicated
- Identify hyperkalemia and start treatment
- IV loop diuretics if fluid overload
- Oxygen if pulmonary edema
- PD if indicated
- Timely referral after stabilisation

SECONDARY CARE

- As in primary care
- Admit to healthcare facility, identify and correct urinary tract obstruction (USG, CT)
- Detailed investigation for infections
- Manage pregnancy complications - deliver if indicated
- Look for underlying CKD
- Dialysis (PD or HD)
- Evaluate volume status
- Viral screening for dialysis initiation
- Blood grouping and typing
- Baseline Chest X-ray and ECG
- Look for any life threatening complications
- Admission for stabilization and further evaluation

TERTIARY CARE

- All interventions as in secondary care
- Admission for stabilisation and further evaluation
- Kidney biopsy if indicated
- Multidisciplinary consultation as indicated
- Dialysis (PD or HD or CRRT)
- Plasma Exchange where indicated

RED FLAGS FOR URGENT REFERRAL

- Indications for dialysis
- Unexplained AKI
- Involvement of other organs
- Sepsis
- Systemic disease
- Complicated pregnancy
- Post Transplant

INDICATIONS FOR DIALYSIS

- **A**cidosis- refractory
- **E**lectrolyte disturbance- hyperkalemia
- **I**ntoxications
- **O**verload - refractory
- **U**remic encephalopathy pericarditis

FOLLOW-UP OF AKI

- **UO** > 1L, stable or falling creatinine, no symptoms: stop dialysis
- Not resolving for >2 weeks: CECT to exclude cortical necrosis; kidney biopsy as indicated
- Look for systemic diseases (e.g. vasculitis, myeloma, TMA)
- Serum creatinine and urine protein q 6-12 months for life

ABBREVIATIONS

AKI: Acute Kidney Injury	PD: Peritoneal dialysis	CKD: Chronic Kidney Disease	UO: Urine output
CECT: Contrast-enhanced CT scan	TMA: Thrombotic microangiopathy	HD: Hemodialysis	USG: Ultrasonography

REFERENCE

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2. *KIDNEY DISEASE: Improving Global Outcomes (KDIGO) Acute Kidney Injury Work Group. KDIGO Clinical Practice Guideline for Acute Kidney Injury. Kidney Int, Suppl. 2012; 2: 1–138

👉 STOP AKI: ACT FAST, PROTECT KIDNEYS