

# A stepwise approach to ACUTE KIDNEY INJURY in the ED

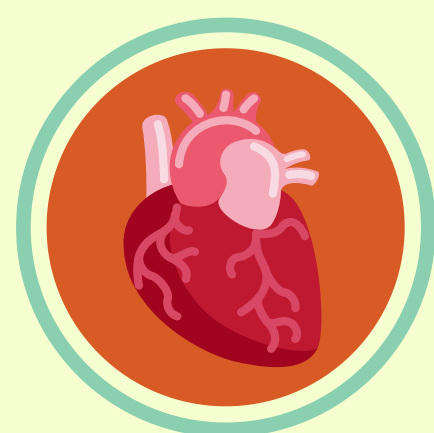


## 1. RULE OUT 2 IMMEDIATE LIFE-THREATS

1. Hyperkalemia - get ECG, electrolytes off blood gas
2. Severe acidosis - get blood gas

## 2. ASSESS FOR ADEQUATE PERFUSION

Use your history, physical examination and POCUS to assess for perfusion and shock (hemorrhagic, vasodilatory, cardiogenic etc.) and treat accordingly



## 3. ASSESS FOR BOTH PULMONARY & PERIPHERAL EDEMA

Assess JVP and lungs with POCUS for pulmonary edema, look and palpate for peripheral edema (pre-tibial and sacral edema).

If there is no evidence of pulmonary or peripheral edema, give a fluid challenge.

### AKI with adequate perfusion, with pulmonary edema (+/- peripheral edema)

- Give furosemide 1mg/kg IV (or 1.5mg/kg IV if on furosemide already)
- Consider pulmonary renal syndromes other than CHF (such as anti-GBM disease, ANCA associated vasculitis, circulating immune complex syndromes eg. lupus), and look for clinical clues (inflammatory arthritis, purpura, Raynaud's, mononeuritis multiplex, uveitis or Sicca syndrome)

### AKI with adequate perfusion, with peripheral edema but no pulmonary edema

- Give furosemide 1mg/kg IV (or 1.5mg/kg IV if on furosemide already)
- If no improvement in renal function, consider hypovolemia ("pre-renal") despite peripheral edema
  - Low serum albumin: treat underlying cause, and consider hepatorenal syndrome and may require iv albumin
  - Venous insufficiency and/or lymphedema: give crystalloid, consider compression therapy
  - Drug induced edema: give crystalloid, reassess offending drug
  - Severe myxedema: give L-thyroxin and monitor

## 4. THE GOLDEN RULES OF AKI WORKUP

1. Measure **post-void residual (PVR)** with bladder scan or urethral catheter
2. **Urine dip** to look for blood and protein suggestive of **nephritic syndrome**
3. Monitor **urine output** ideally with urethral catheter
4. **Avoid nephrotoxins** (NSAIDs, ACEi, ARBs, gentamicin etc.)



## 5. CONSIDER IMAGING FOR POST-RENAL AKI

Consider imaging only in those who:

- Do not improve with fluid challenge (less likely pre-renal)
- Normal urine dip (less likely intra-renal)
- Post-void residual <100mL (less likely BPH)
- Have obvious hydronephrosis on POCUS

These patients warrant further imaging as they might have a rare post-renal AKI cause of bilateral ureteric obstruction such as metastatic cancer, lymphoma or kidney stone with a solitary kidney.

