Acute Kidney Injury

Abrupt elevation of creatinine, reduction in urinary output, need for renal replacement therapy, or a combination of these findings.

**PRERENAL**
- Intrarenal vasoconstriction—hemodynamically mediated
- Systemic vasodilation
- Volume depletion

**PRERENAL**

**INTRINSIC**
- Glomerular (red blood cells/proteinuria on UA)
- Interstitial (eosinophils/white blood cell casts on UA)
- Tubular (renal tubular cell casts or pigmented casts on UA)
- Vascular

**POSTRENAL**
- Obstruction to urinary outflow
- Extrarenal: prostate hypertrophy, urinary tract malignancy, retroperitoneal fibrosis
- Intrarenal: stones, crystals, tumors

**Diagnosis:** Renal ultrasonography
**Management:** Relief of obstruction (catheterization, percutaneous drainage, or stenting as appropriate)

**Diagnosis:** Renal ultrasonography, urinalysis, renal biopsy
**Management:** Avoiding nephrotoxic drugs, treating underlying cause

**Diagnosis:** History, urinalysis, labs
**Management:**
- Fluid resuscitation to correct underlying volume deficiency
- Diuretics if heart failure

**CLASSIFICATION***

<table>
<thead>
<tr>
<th>STAGE 1</th>
<th>Increase ≥0.3 mg/dL (26.52 μmol/L) OR ≥×1.5-2 baseline</th>
<th>URINE OUTPUT</th>
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<tr>
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<td>&lt;0.5 mL/kg/h for &gt;6 h OR ≥4.0 mg/dL with a rise of &gt;0.5 mg/dL</td>
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| STAGE 2 | Increase >×2-3 baseline | <0.5 mL/kg/h for ≥12 h |

| STAGE 3 | Increase ≥×3 baseline OR ≥4.0 mg/dL with a rise of >0.5 mg/dL | <0.3 mL/kg/h for ≥24 h OR anuria for ≥12 h OR initiation of renal replacement therapy |

**INDICATIONS FOR RENAL REPLACEMENT THERAPY**
- Refractory hyperkalemia
- Refractory volume overload with anuria/oliguria
- Intractable acidemia
- Uremia (with encephalopathy, pericarditis, or pleuritis)
- Removal of certain toxins (eg, toxic alcohols, lithium, salicylate, valproate)

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*Kidney Disease: Improving Global Outcomes (KDIGO) Criteria