

Decreased Urine Output

Oliguria: <500 mL/24 hours Anuria: <100 mL/24 hours
Typical cause for concern: <0.5 mL/kg/h or <25-30 mL/hour

Immediate Questions:

Is the patient hypovolemic? GI Bleed, Diarrhea, vomiting common causes

Is there a bladder outlet obstruction? BPH, malignancy

Is there hematuria? Think of Bilateral kidney stones or malignancy

Is Acute Renal Insufficiency present? Hypotension, Meds (Aminoglycosides, NSAIDS),
IV Contrast

Is there an underlying process? CHF, liver cirrhosis

Is Uremia present? Nausea, vomiting, mental status changes → may need dialysis

Differential Dx: Prerenal vs. Renal vs. Postrenal

Prerenal: Refers to renal hypoperfusion

- 1) Shock/hypovolemia – blood loss, sepsis, loss of fluids (Diarrhea/vomiting)
- 2) Relative hypovolemia – 3rd spacing, CHF, cirrhosis, Nephrotic syndrome
- 3) Vascular – renal artery stenosis/occlusion, emboli, aortic dissection

Renal:

- 1) Acute tubular necrosis – due to ischemia, toxins (IV contrast, aminoglycosides, amphotericin B, heavy metals)
- 2) Acute interstitial nephritis – Meds (NSAIDS, sulfa, quinolones), hypercalcemia, uric acid
- 3) Acute glomerular disease – HTN, DIC, RPGN, systemic autoimmune disease

Postrenal:

- 1) Urethral obstruction – BPH, Foley obstruction, prostate cancer
- 2) Bilateral ureteral obstruction – carcinoma or retroperitoneal fibrosis

Physical Exam:

Hypovolemia – orthostatics, hypotension, poor skin turgor/dry mucous membranes
Hypervolemia (CHF, cirrhosis) – JVD, Lung crackles, distended abdomen/fluid wave
Sepsis – Fever

Bladder outlet – Rectal exam for BPH or mass

Labs:

UA: high specific gravity – volume depletion
 RBC casts – glomerular disease
 WBC casts – Infection or inflammation
 Eosinophils – Allergic interstitial nephritis
 Granular casts - ATN
 Hematuria – nephrolithiasis, renal embolization
Urine Na - <15 – prerenal; FeNa <1 – volume depletion
BUN/creat > 20 – hypovolemia, GI Blood loss

Imaging: Ultrasound – reveals obstruction/hydronephrosis
 IVP – not used much
 Retrograde pyelogram – can detect obstruction
 Renal Scan – detects blood flow to kidneys

Practical Approach to Decreased Urine Output

Nursing instructions:

- 1) Strict I's and O's
- 2) Call for urine output <0.5 cc/kg/hr or 30 cc/hr

Exclude postrenal causes:

- 1) Place a Foley Catheter
- 2) Flush Foley Catheter if already in place
- 3) Consider percutaneous nephrostomy (not done often)

Give Volume:

- 1) NS bolus of 300-500cc over 30 minutes (be careful in CHF)
- 2) If suspect Blood loss (GIB) then check H/H, consider blood products
- 3) Consider starting IV NS 75-150 cc/hr (Careful in CHF)

Diuretics:

- 1) Lasix 40 mg IVP, if no result then escalate to additional 80mg IVP if no response in 1-2 hours
- 2) Mannitol 12.5-25 g IV for osmotic diuresis

Consider renal causes:

- 1) Emergent dialysis can be considered in severe volume overload not responding to diuretics, severe hyperkalemia, severe uremic symptoms. Emergent Dialysis does not happen often, and it mostly occurs in the ICU.