



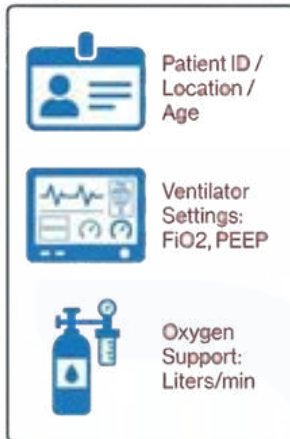
PG Residency Nephrology

Smart Notes. Better Scores.

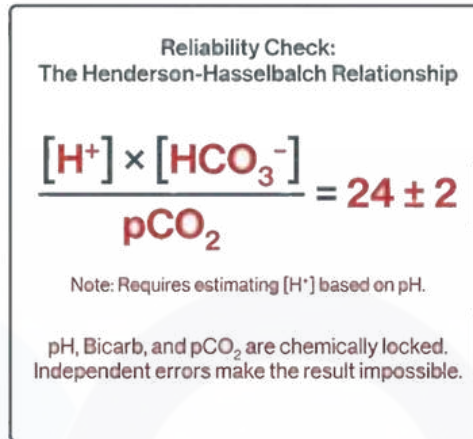


ABG Prerequisites & Reliability Protocol

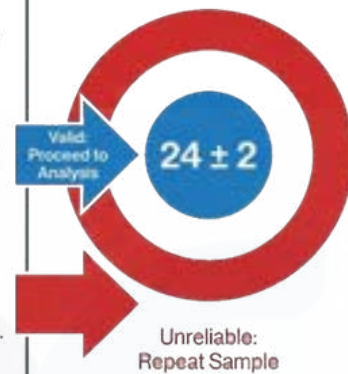
Step 0: Clinical Context



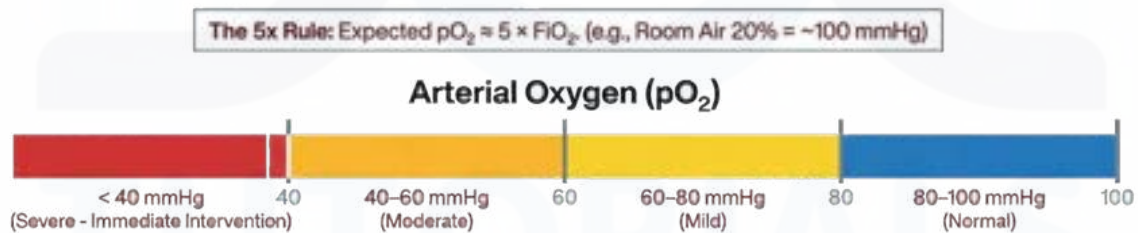
The Validator



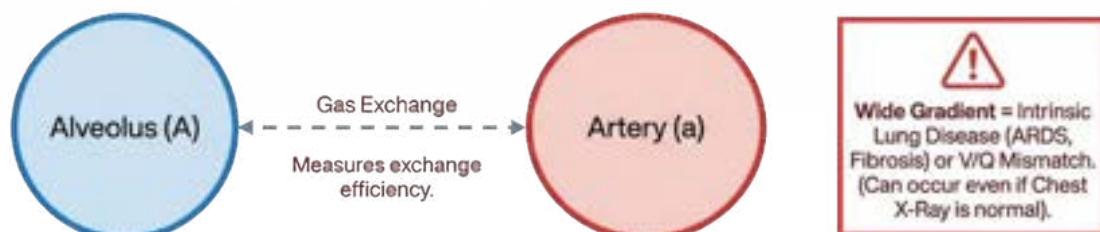
The Decision



Step 1: Oxygenation Status

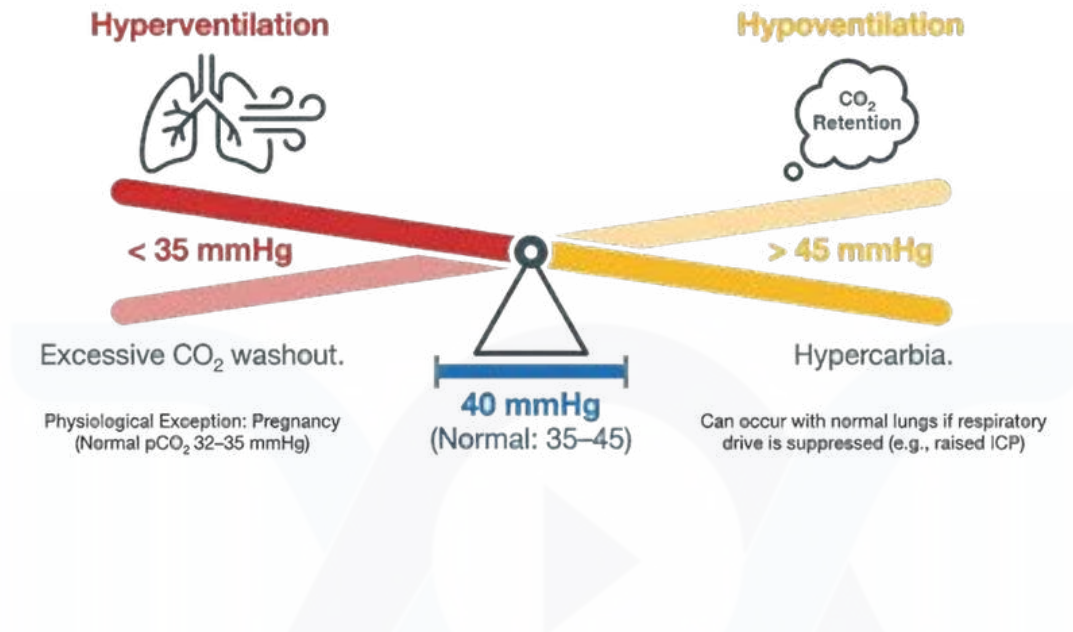


Alveolar-Arterial (A-a) Gradient



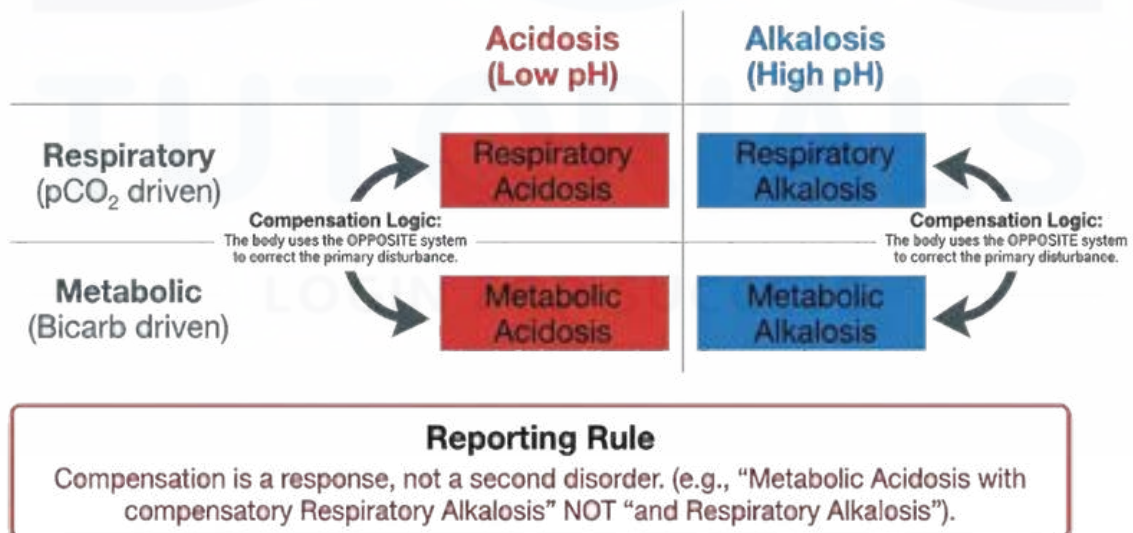
Step 2: Ventilation Status

Defined SOLELY by pCO_2



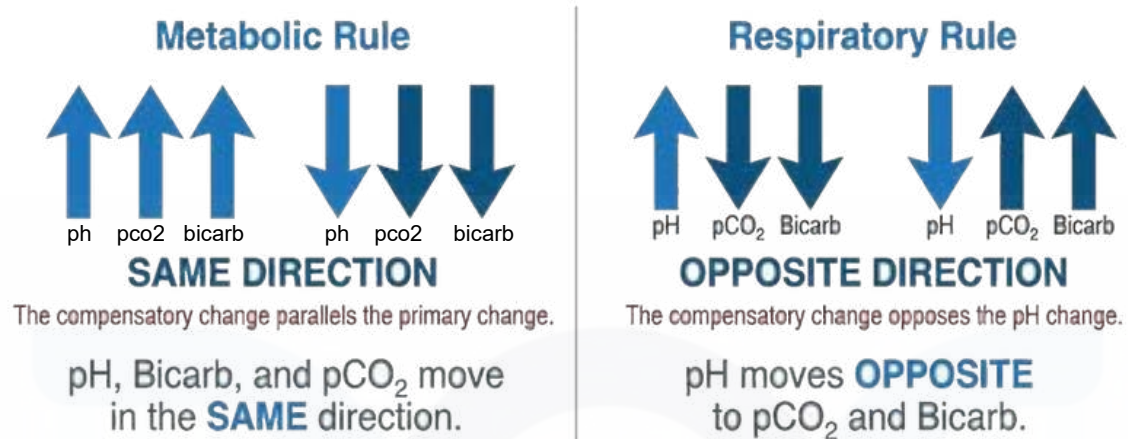
Step 3: Acid-Base Landscape

The balance of pH is driven by two opposing components



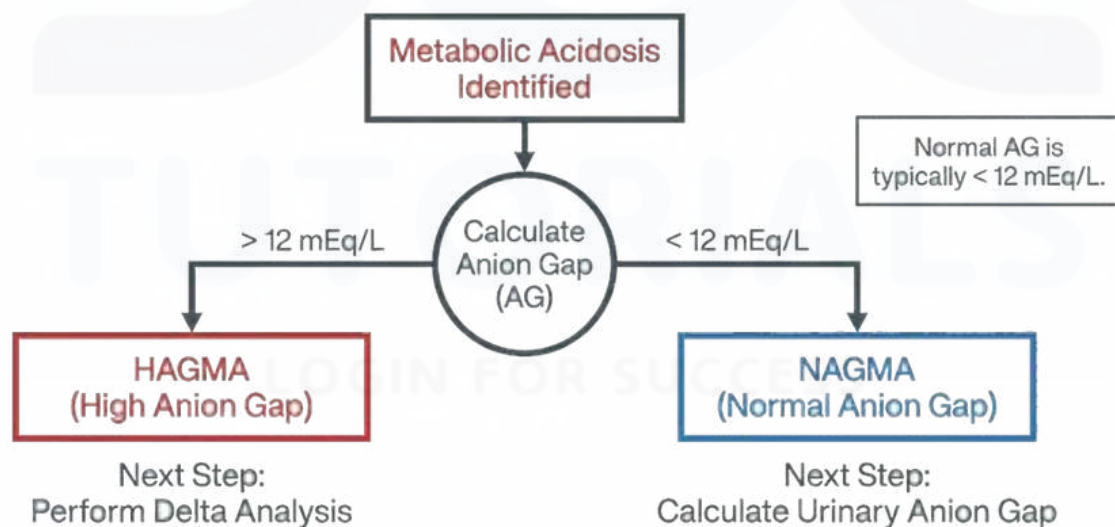
The Rules of Compensation

Verifying the physiological response



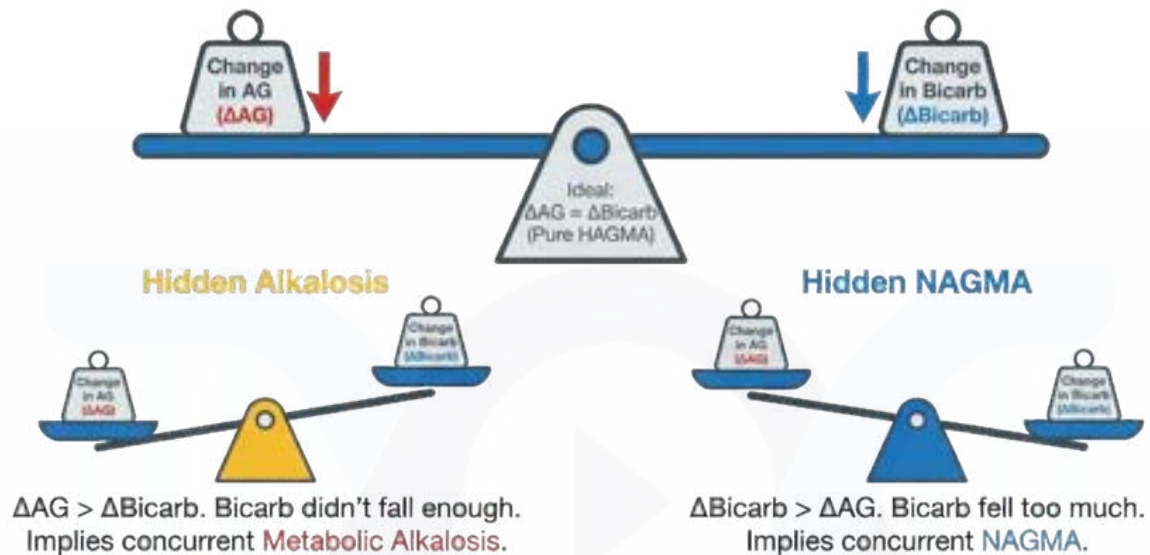
Goal: Compensation aims to normalize pH but rarely overcorrects.

Metabolic Acidosis: The Deep Dive



HAGMA: Delta Analysis

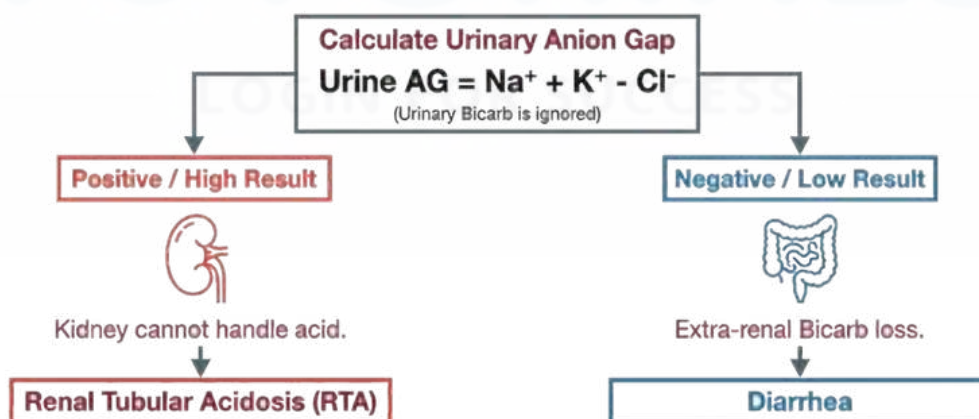
Finding Hidden Disorders



Common HAG MA Causes: Lactic Acidosis, OKA, Renal Failure, Toxins (Methanol, Ethylene Glycc)

NAGMA: Determining Etiology

Renal vs. Extra-Renal Causes



Other Causes: Acetazolamide, Amphotericin B, Uretero-sigmoidostomy.

Modern Medical Editorial

Acute Kidney Injury (AKI): KDIGO Criteria

Acute decline in renal function leading to dysregulation of water, electrolytes, and acid-base.



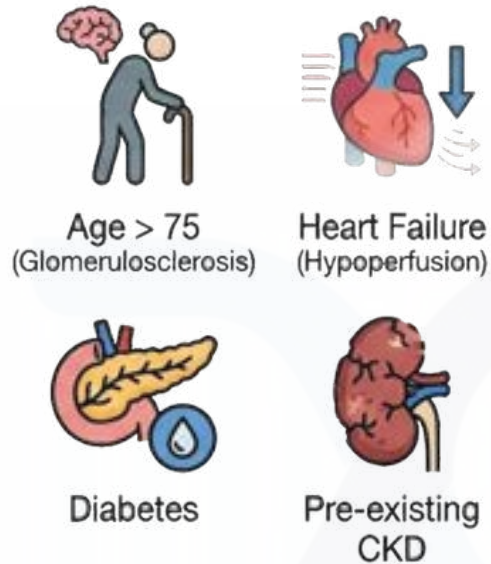
Staging: Adult vs. Pediatric Challenges

Adults (KDIGO / RIFLE)		Pediatrics (pRIFLE)
- Based on: Serum Creatinine fold-increase. - Stages: 1, 2, 3. Stage 3D = Initiation of Dialysis (RRT). RIFLE L (Loss >4wks) & E (End Stage >3mos) are older terms.	 Problem: Low muscle mass in children makes raw Serum Creatinine unreliable.	- Based on: Estimated Creatinine Clearance (eCCl). - Formula: Schwartz Formula. - Modified Windows: 8hr and 16hr urine output checks.

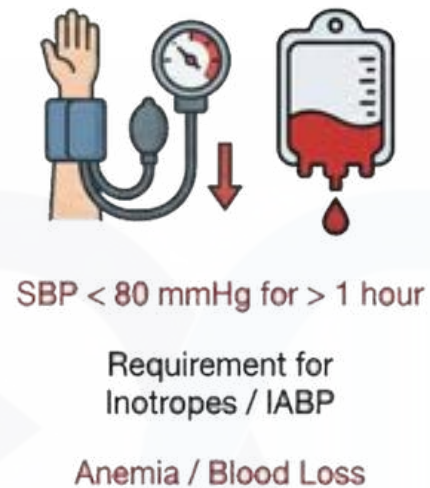


Modern Medical Editorial
AKI Risk Stratification

Vulnerable Patients



Hemodynamic Triggers



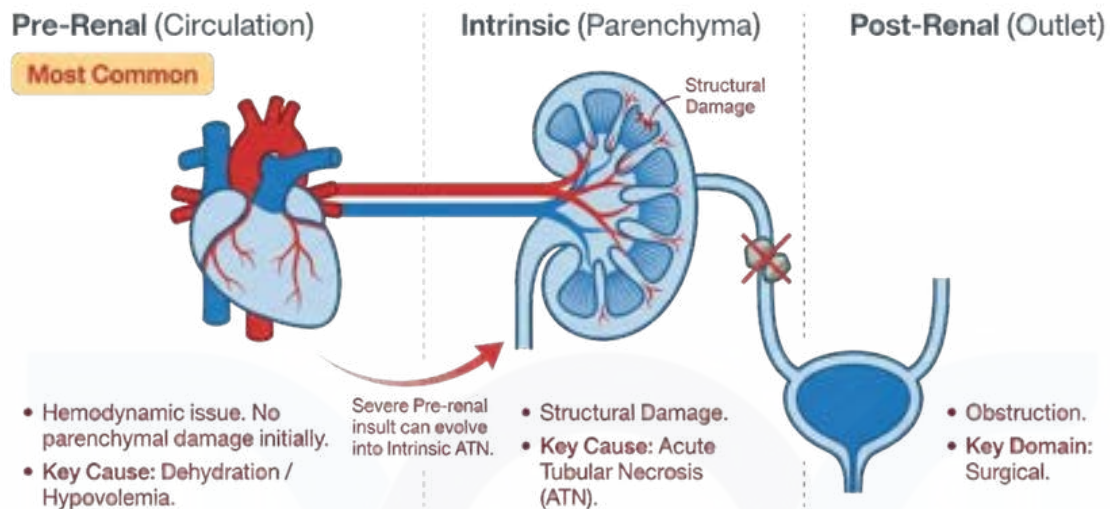
Procedural Hazards (Contrast)



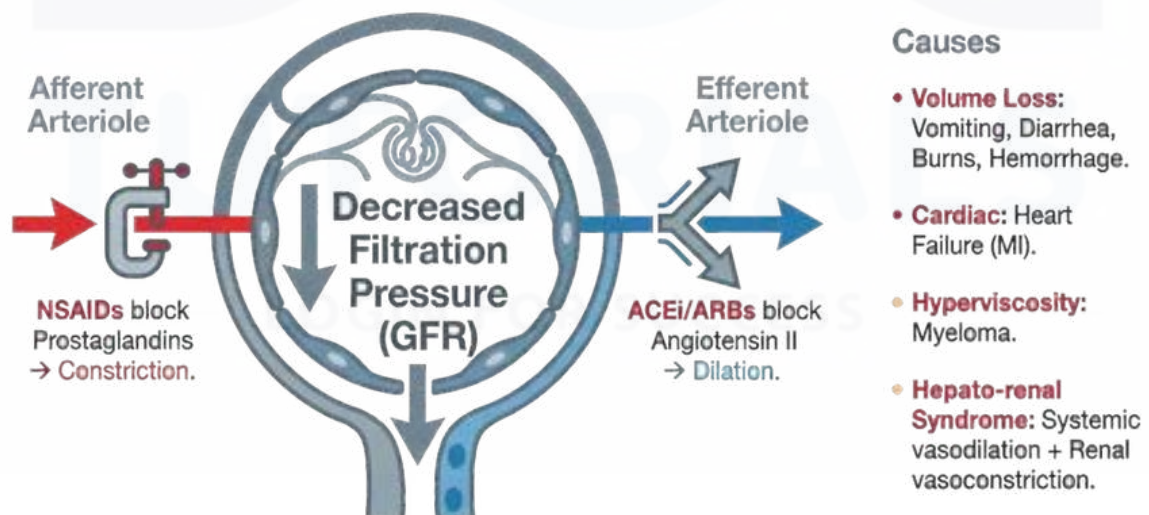
Osmolality Hierarchy:



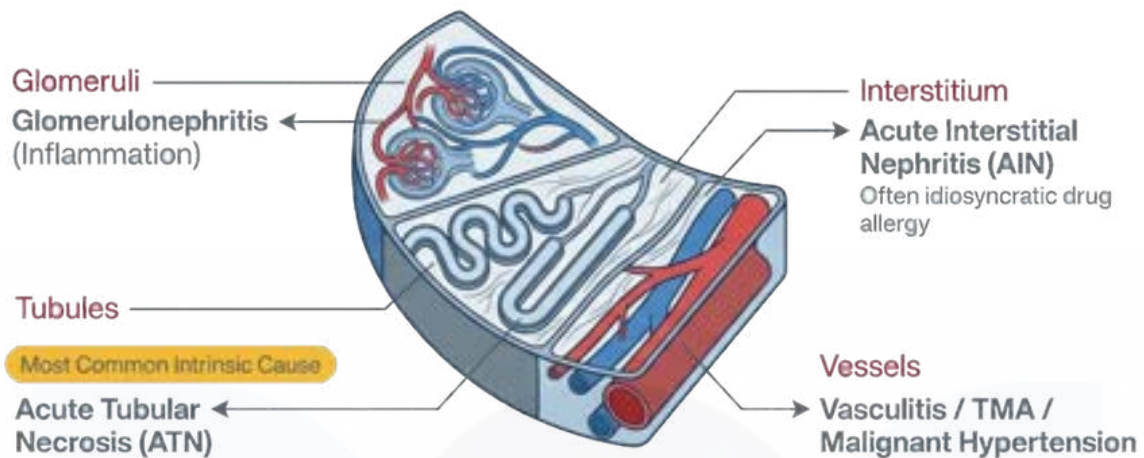
Anatomical Classification of AKI



Pre-Renal Mechanism & Autoregulation Failure



Intrinsic AKI: Compartmental Targets



Pathology: Predominantly apoptosis (Granular casts,) not necrosis.

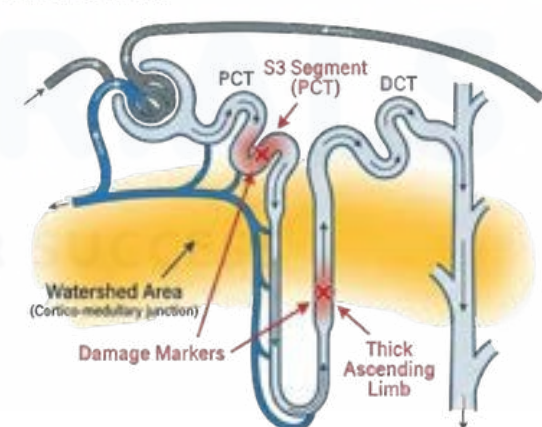
Acute Tubular Necrosis ATN

MNEMONIC

I-I-T

- **Ischemia:** Prolonged pre-renal AKI (Common).
- **Infection:** Sepsis (Multifactorial).
- **Toxins:** Exogenous (Contrast, Aminoglycosides) or Endogenous (Myoglobin, Uric Acid).

PATHOLOGY MAP



The pathology map shows a nephron with the following labels:

- PCT:** Proximal Convoluted Tubule
- S3 Segment (PCT):** Site of damage marker (red X)
- DCT:** Distal Convoluted Tubule
- Watershed Area (Cortico-medullary junction):** Area of vulnerability
- Thick Ascending Limb:** Site of damage marker (red X)
- Damage Markers:** Indicated by red X's at the S3 segment and thick ascending limb.

Pathology: Predominantly apoptosis (Granular casts,) not necrosis.

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