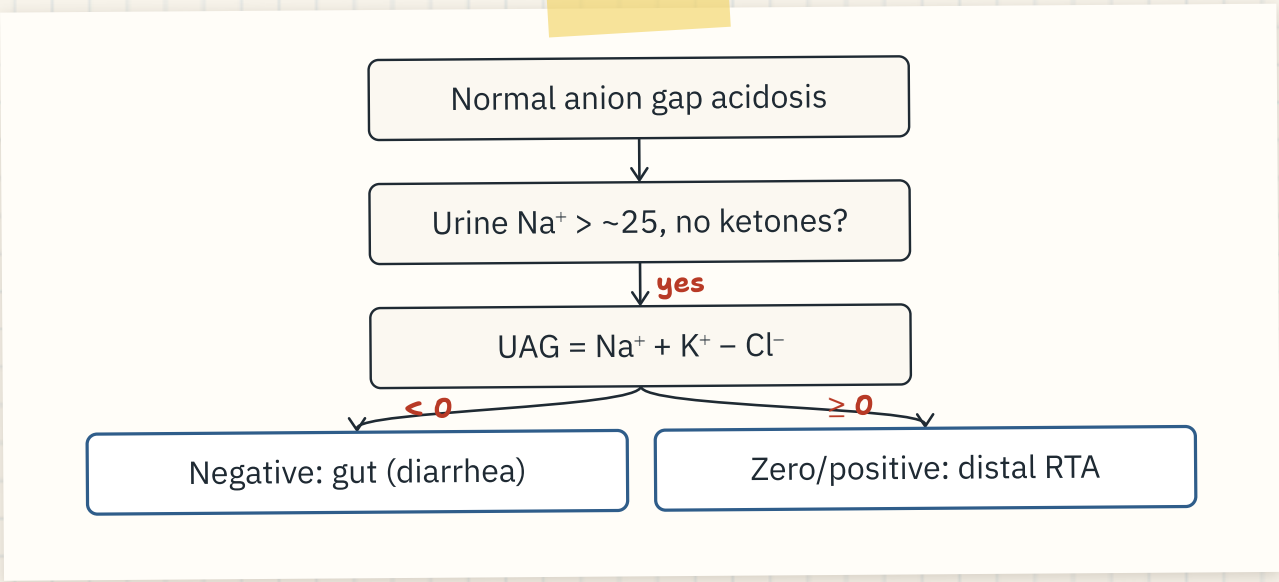
The urine anion gap

Gut or kidney in a normal anion gap acidosis



Step by step

1. Serum AG = $Na^+ - (Cl^- + HCO_3^-)$: normal → hyperchloremic acidosis
2. Ask: is the kidney excreting ammonium?
3. UAG = $(Na^+ + K^+) - Cl^-$ in the urine
4. Negative → usually gut; zero or positive → kidney (distal RTA)
5. Check the limits: ketoacids, hippurate, urine Na^+ below ~25 mEq/L

Urine Na^+, K^+, Cl^-	UAG	Meaning
30, 10, 80	−40	Ammonium excreted → gut (diarrhea)
45, 30, 60	+15	Little ammonium → kidney (distal RTA)
35, 10, 70 (question)	−25	Ammonium excreted → gut (hidden laxatives)

Worked values from the lesson

URINE ANION GAP

UAG = (urine Na^+ + K^+) − urine Cl^-

estimates urine ammonium, which leaves with chloride; good excretion ≈ −20 to −50 mEq/L

Rules of thumb

One new bicarbonate for every ammonium excreted

More ammonium → more chloride → negative gap

For ammonium, trust the gap over the pH

Exam traps

- Urine pH above 5.5 does not prove distal RTA: diarrhea with low potassium can raise it too.
- Ketoacids or hippurate (toluene) carry ammonium out without chloride, so the gap can look positive when the kidney works.
- With a urine Na^+ below about 25 mEq/L, a positive gap can mislead.
- It tracks measured ammonium only loosely: an estimate, not a measurement.

Urine anion gap: telling diarrhea from RTA

Video, written lesson, practice question and sources: medservatory.com/usmle-step-1/renal-acid-base/urine-anion-gap

For exam study only, not medical advice. Follow local guidelines and your lab's ranges.
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