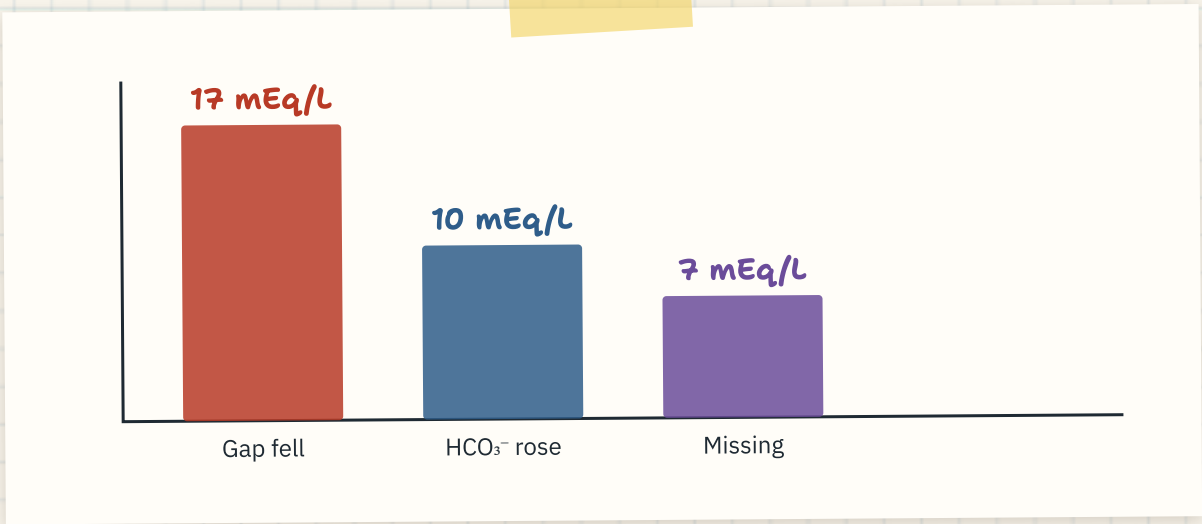
DKA anion gap: high gap to hyperchloraemic

Why the gap closes while the patient is still acidotic



Step by step

1. Insulin lack: fat to liver, ketoacids made
2. Bicarbonate falls, ketoanions rise: high gap
3. Ketoanions lost in urine: potential base gone
4. Saline adds chloride in their place
5. Gap fell more than HCO_3^- rose: non-gap deficit

Patient	Na^+	Cl^-	HCO_3^-	Gap
Arrival	131	95	7	29 (high)
Next morning	137	108	17	12 (normal)
Change	+6	+13	+10	−17

Hook patient: arrival versus next morning

ANION GAP

$$AG = Na^+ - (Cl^- + HCO_3^-)$$

normal about 12 (K^+ excluded); a new acid anion lowers HCO_3^- and raises the gap roughly one for one

Rule of thumb

Ketoanion lost in urine = potential bicarbonate thrown away

Gap falls faster than HCO_3^- rises: anions lost, not converted

Phase 1 high gap; phase 2 hyperchloraemic, normal gap

Exam traps

- A normal gap in a still-acidotic DKA patient: think hyperchloraemic phase, not persistent ketoacidosis.
- Persistent ketoacidosis would keep the gap high.
- Gap fell more than HCO_3^- rose: the difference is anions lost, not converted.

DKA anion gap explained: from high gap to hyperchloraemic acidosis

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

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