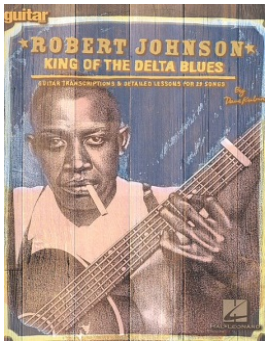

The Delta Gap can cause the *Blues*.

Read through the guidelines below. Take a look at the exercises for the teaching team session. Match each of the acid-base situations (A – F) with one of the clinical descriptions (1 – 6). Try and think of a clinical situation that would explain the acid-base findings.

Anion Gap (AG) Metabolic Acidosis

Predicted Anion Gap = 3 x albumin

In anion gap metabolic acidosis, the anion gap rises 1 point for every 1 point the bicarb falls. If the anion gap is 6 higher than predicted, the bicarb should be decreased by 6 from its baseline of 24. If the bicarb is higher than predicted you have an additional metabolic alkalosis. If the bicarb is lower than predicted you have a non-gap acidosis in addition to a gap acidosis.

(Actual AG – Predicted AG) **–** (25 – measured bicarb)

= 0 means pure AG metabolic acidosis
> 0 means AG acidosis plus metabolic alkalosis
< 0 means AG acidosis plus non-AG acidosis

Respiratory Compensation for Metabolic Acidosis

If CO_2 **=** the last 2 digits of the pH means pure metabolic acidosis
> than the last two digits of the pH means respiratory acidosis
< than the last two digits of the pH means respiratory alkalosis

Osmolal Gap

Measured – Predicted [2xNa + Glucose/18 + Bun/2.8 + ethanol/4.]

Osmolal gap is usually less than 10. Higher suggests unmeasured osmolar compounds.

Practice Exercises

Each of the case scenarios below (A through F) represents a different acid-base situation. Match cases A through F to the best description below (1 - 6) and suggest one possible clinical situation that would fit with that acid-base condition. Assume the predicted AG for each case is 12 and that normal bicarb is 25.

Case	pH	Na	Cl	HCO_3	pCO_2	BUN	Glu	Sosm
A	7.40	137	108	23	40	16	97	355
B	7.25	141	103	11	25	12	100	290
C	7.25	133	116	5	25	12	100	290
D	7.10	144	114	8	28	12	100	290
E	7.30	143	105	13	18	12	100	290
F	7.25	138	102	11	25	18	106	315

Acid base status	Case	Possible Dx
1. Non anion gap metabolic acidosis		
2. High anion gap metabolic acidosis & respiratory alkalosis		
3. High anion gap metabolic acidosis		
4. Normal acid base & high osmolality		
5. High anion gap metabolic acidosis & normal anion gap metabolic acidosis & respiratory acidosis		
6. High anion gap metabolic acidosis & high osmolal gap		