

APPROACH TO THE ABG + ELECTROLYTES

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Is it ACIDOSIS/ALKALOSIS?
.....and What is the PRIMARY CAUSE

ie., If ↓ HCO₃⁻ => Metabolic Acidosis
If ↑ HCO₃⁻ => Metabolic Alkalosis
If ↑ CO₂ => Respiratory Acidosis
If ↓ CO₂ => Respiratory Alkalosis

eg 1	pH	7.28	Metabolic
	CO ₂	28	Acidosis
	HCO ₃	14	
eg 2	pH	7.6	Metabolic
	CO ₂	52	Alkalosis
	HCO ₃	38	
eg 3	pH	7.24	Respiratory
	CO ₂	64	Acidosis
	HCO ₃	19	
eg 4	pH	7.48	Respiratory
	CO ₂	14	Alkalosis
	HCO ₃	20	

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COMPENSATION?

METABOLIC PROBLEM

RESPIRATORY PROBLEM
1 2 3 4

M	methanol
U	Uraemia
D	DKA
P	Paraldehyde
I	Iron/Isoniazid
L	Lactate
E	Ethanol
S	Salicylate

ACIDOSIS
CO₂=[(1.5XHCO₃-0+8)+2]

ALKALOSIS
CO₂=(0.9XHCO₃)+16

ACUTE	CHRONIC
ACIDOSIS HCO ₃ ⁻ ↑ by 1 mmol/L for every 10 in CO ₂	ACIDOSIS HCO ₃ ⁻ ↑ by 3 mmol/L for every 10 in CO ₂
ALKALOSIS HCO ₃ ⁻ ↓ by 2 mmol/L for every 10 in CO ₂	ALKALOSIS HCO ₃ ⁻ ↓ by 4 mmol/L for every 10 in CO ₂

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CALCULATE ANION GAP

Anion Gap = Na - (Cl⁻ + HCO₃⁻)
Remember if there is a raised Anion Gap, there is a Metabolic Acidosis

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OSMOLAR GAP

Calculate Osmolality : 2xNa + U + Glc
Osmolar Gap is OSM_{measured} - OSM_{calculated}

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ELECTROLYTES PLUS

Correct Na for Glucose: Na_{corrected} = Na + (Glc-5)/3
Correct K for pH- Normal is 4. For every 0.1 drop in pH K increases by 0.5mmol/L above 4.
U:C ratio

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OXYGENATION

A-a Gradient = [(760-vapour pressure) x FiO₂ - 1.25xPaCO₂] - PaO₂
at FiO₂ of 21%= [(150) - 1.25PaCO₂] - PaO₂

4 CALCULATE DELTA RATIO

$\frac{\Delta \text{ANION GAP (12)}}{\Delta \text{HCO}_3\text{-(24)}}$	< 0.4	= NAGMA
	0.4-0.8	= NAGMA + RAGMA
	1	= RAGMA
	2	= Metabolic Alkalosis

A	Addisons
B	Bicarb Loss
C	CA inhibitors/ Cl-
D	Diarrhoea