

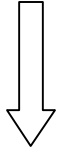
Acidosis (Blood pH = low) <7.40

Metabolic

Primary Event

$\downarrow \text{HCO}_3^-$

$\downarrow \text{pH} \sim \frac{\text{HCO}_3^-}{\text{PaCO}_2}$



Primary Event

HCO_3^-

$\downarrow \text{pH} \sim \frac{\text{HCO}_3^-}{\uparrow \text{PaCO}_2}$

Respiratory

(Hypoventilation)

E.g. in;

- 1-Obstructive lung disease.
- 2-Hyperkalaemia & Others

Calculate anion gap with reference range 6-14 mmol/L

Anion gap = $\text{Na}^+ - (\text{Cl}^- + \text{TCO}_2)$; $12 \pm 4 \text{ mEq/L}$

Acute: (BE) Normal

- Airway Obstruction Bronchospasm (Asthma)
- Neuromuscular Disease & CNS Disorder
- Drug overdose (hypnotics, anaesthetics, benzodiazaphine)

Low

Due to artefact of paraproteins

Chronic: (BE) High

*Chronic obstructive lung disease

- Emphysema=Smokers
- Bronchiectasis

High=MUD PILES

1. Accumulation of **osmotically active** solutes e.g. **e**thanol, **m**ethanol, **l**actic acid, **e**thylene glycol and **s**alicylates
2. Diabetic type-I **ketoacidosis**. (Alcoholic) & **d**iabetes mellitus
3. **Inborn error of metabolism** in 34 days old child e.g. **P**KU and **M**SUD.
4. **Acidosis**. (Lactic Acidosis) excessive parenteral administration of amino acids: e.g. **a**rginine, **l**ysine and **h**istidine.
5. **Glycogen Storage Disease**: for example like in glucose 6-phosphatase deficiency.
6. **Branch-Chain Amino Acid Disorders**.
7. **Toxins**. (acid poisoning), **P**aracetamol,
8. **Uremia**. Starvation, Massive rhabdomyolysis = H^+

Normal=ADIL R

Renal tubular acidosis type I, II, III or IV

- I. $\downarrow \text{K}^+$, distal tubular acidosis with $\uparrow \text{Cl}^-$
- II. $\downarrow \text{K}^+$, proximal tubular defect reabsorption of $\text{HCO}_3^- \downarrow$
- III. $\downarrow \text{K}^+ = \text{I} + \text{II}$ combined
- IV. $\uparrow \text{K}^+$, **Renin-angiotensin block** will retain K^+ and H^+ and **low K^+ will be in urine**. Or **severe lower GI fluid, pancreatic & biliary drainage**. In this case K^+ will be low in plasma and HCO_3^- too. And acid loads will be higher in end stage renal failure.
***CD inhibitors*
***Generalized Renal Failure*

Acetazolamide therapy

Diarrhea

ILeal loop (rare cause)

RTA

- **Fanconi Syndrome:** (IEM) proximal defect – genetic defect in reabsorption mechanisms. Present with glycosuria, proteinuria and aminoaciduria. Excessive loss of H_2O and PO_4^{3-} and HCO_3^- and K^+ (RTA type II).