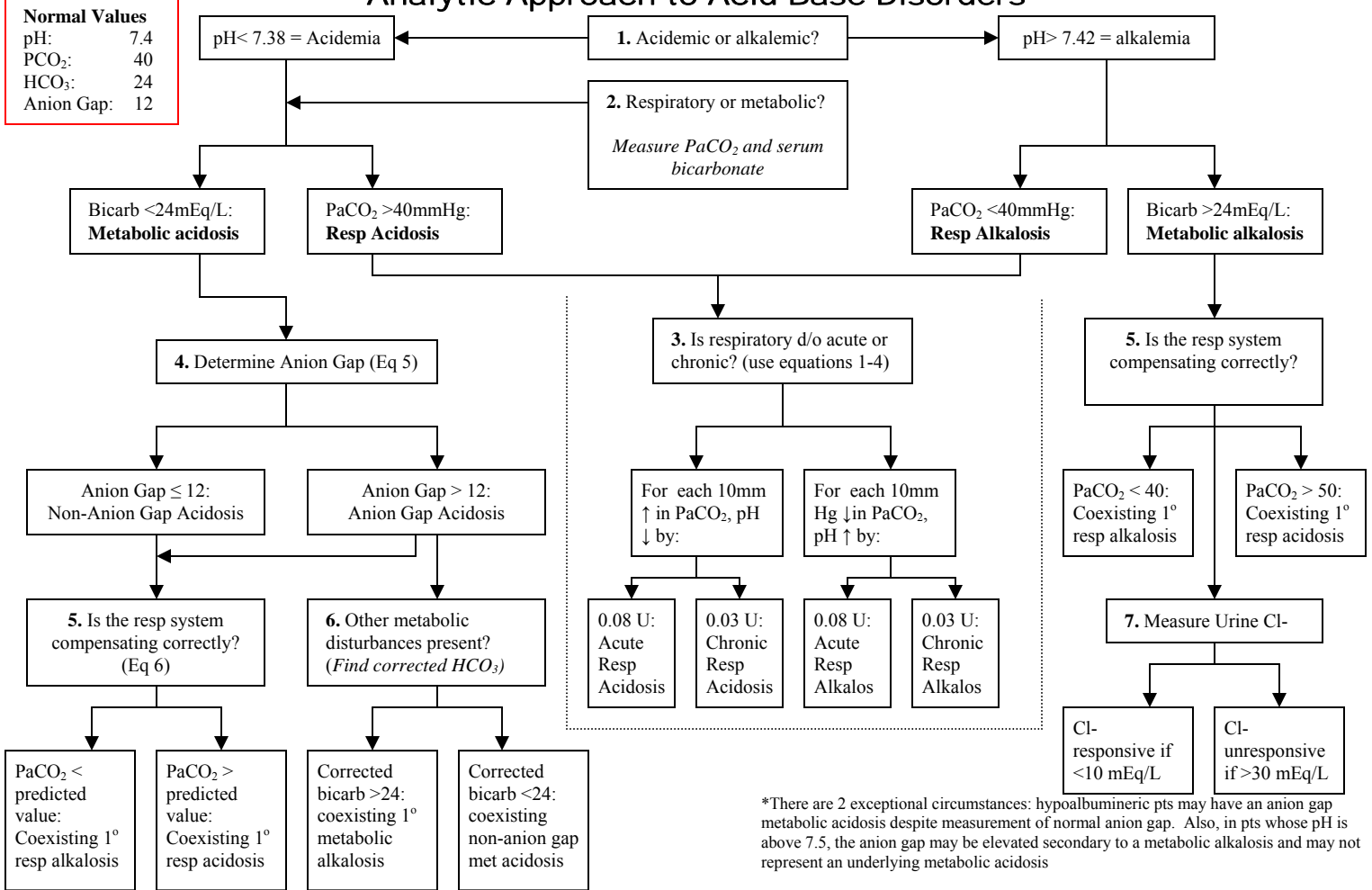


# Analytic Approach to Acid-Base Disorders

<b>Normal Values</b>	
pH:	7.4
PCO <sub>2</sub> :	40
HCO <sub>3</sub> <sup>-</sup> :	24
Anion Gap:	12



## Differential Diagnosis

### Equation 1:

$$\text{Expected decrease in pH for acute resp acidosis} = \frac{0.08 \times (\text{measured PaCO}_2 - 40)}{10}$$

### Equation 2:

$$\text{Expected decrease in pH for chronic resp acidosis} = \frac{0.03 \times (\text{measured PaCO}_2 - 40)}{10}$$

### Equation 3:

$$\text{Expected change in pH for acute resp alkalosis} = \frac{0.08 \times (40 - \text{measured PaCO}_2)}{10}$$

### Equation 4:

$$\text{Expected change in pH for chronic resp alkalosis} = \frac{0.03 \times (40 - \text{measured PaCO}_2)}{10}$$

### Equation 5:

$$\text{Anion Gap} = \text{Na}^+ - (\text{Cl}^- + \text{HCO}_3^-)$$

### Equation 6:

$$\text{Expected PaCO}_2 \text{ in pts} = [1.5 \times (\text{serum bicarb})] + (8 \pm 2)$$

### Equation 7:

$$\text{Corrected bicarbonate} = \text{Measured bicarb} + (\text{anion gap} - 12)$$

<b>Metabolic Alkalosis</b>		<b>Resp Alkalosis</b>
<i>Cl<sup>-</sup> Responsive</i>	<i>Cl<sup>-</sup> Unresponsive</i>	CNS event
Vomiting	Hyperaldosterone	Drugs
Gastric suction	Cushing's	Pregnancy
Diuresis	Bartter's	↓ lung compliance
Villous adenoma	Licorice	Cirrhosis
CF	K <sup>+</sup> depletion	Anxiety

<b>Anion Gap Met Acidosis</b>	<b>Non-Anion Gap Met Acidosis</b>	<b>Resp Acidosis</b>
"MUDPILES"	"ACCRUED"	CNS depression
Methanol	Acid infusion	Chronic lung dz
Uremia	CRF	Neuromusc d/o
DKA	Carb Anhydrase Inhibitor	
Paraldehyde	RTAs	
INH	Ureteroenterostomy	
Lactate	Expansion/extr-alimentation	
Ethylene glycol	Diarrhea	
Salicylates		