



**Compensation/Calculation for Acid–Base Disorders**

<b>Metabolic Acidosis</b>
Every 1 mmol/L decrease in $\text{HCO}_3^-$ → 1 mm Hg decrease in $\text{PCO}_2$
Expected $\text{PCO}_2 = 1.5 (\text{HCO}_3^-) + 8 \pm 2$ (Winter's formula)
$\text{PCO}_2$ should approach last two digits of pH
<b>Metabolic Alkalosis</b>
Every 1 mmol/L increase in $\text{HCO}_3^-$ → 0.7 mm Hg increase in $\text{PCO}_2$
<b>Respiratory Acidosis</b>
Acute: 10 mm Hg increase in $\text{PCO}_2$ → 1 mmol/L increase in $\text{HCO}_3^-$
Chronic: 10 mm Hg increase in $\text{PCO}_2$ → 4 mmol/L increase in $\text{HCO}_3^-$
<b>Respiratory Alkalosis</b>
Acute: Every 10 mm Hg decrease in $\text{PCO}_2$ → 2 mmol/L decrease in $\text{HCO}_3^-$
Chronic: Every 10 mm Hg decrease in $\text{PCO}_2$ → 4 mmol/L decrease in $\text{HCO}_3^-$

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