

## Ventilator Pocket Guide

## Foundational Equations

<b>Ohm's Law</b>	$\Delta P = FR = P_{aw} - P_{alv} = P_{pl} - PEEP_{total}$
<b>Equation of Motion</b>	$P_{aw} = FR + \frac{V_t}{C} + PEEP_{total}$
<b>Compliance</b>	$C = \frac{\Delta V}{\Delta P}$
<b>Natural Decay Equation</b>	$V_i(t) = \frac{V_o}{e^{\frac{t}{RC}}} = \frac{V_o}{e^{\frac{t}{\tau}}}$
<b>Calculating <math>\tau</math>, General Case</b>	$\tau = \frac{V_t}{F} \cdot \text{Bigg}(\frac{PIP - P_{plt}}{P_{plt} - PEEP_{total}}\text{Bigg)}$
<b>Calculating <math>\tau</math>, Special Case*</b>	$\tau = \frac{V_t}{F}$

\*Assumes (1) no autoPEEP and (2) patient is passive.

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