Ventilator Pocket Guide

Foundational Equations

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

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