Ventilators for Nonintensivists

Basic Ventilator Parameters

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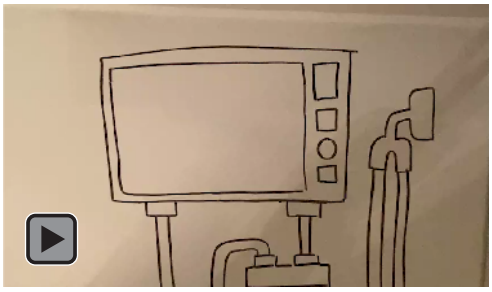
As COVID-19 has rapidly evolved into a pandemic, many physicians without prior critical care training are being called upon to help manage SARS-CoV-2–infected patients who develop respiratory failure and require mechanical ventilation. This video is intended to provide a brief and simplified approach to mechanical ventilation for nonintensivists, with an overview of basic settings for mechanical ventilation. In caring for patients with respiratory failure, clinicians frequently encounter hypoxemia or hypercarbia.



Video 1. Basic ventilator parameters.

The parameters that control the Pa_{O_2}, and therefore the means for managing hypoxemia, are the FI_{O_2} and the PEEP. The parameters that control the Pa_{CO_2}, and therefore the means for managing hypercarbia, are the respiratory rate and the tidal volume (VT). VT can be delivered by setting volume or pressure. Whether VT is set directly (volume control) or indirectly by setting pressure (pressure control), a lung protective ventilatory strategy where the VT is set at 4–8 ml/kg of predicted body weight is recommended. It is important to set the VT according to the predicted body weight and not the actual body weight. Finally, the clinician should be familiar with the unintended negative consequences of each setting including oxygen toxicity, hypotension, volutrauma, and autoPEEP.

Author disclosures are available with the text of this article at www.atsjournals.org.

RECOMMENDED READING

Hess DR, Kacmarek RM. Essentials of mechanical ventilation, 3rd ed. New York: McGraw-Hill Education; 2019.

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