



RespiSim

Initial Mechanical Ventilator Settings*				
	Egan's	Pilbeam's	Essentials	IngMar Medical
FiO₂	<ul style="list-style-type: none"> • 100% in unstable or unknown patient • 50-70% in stable or known data 	<ul style="list-style-type: none"> • Depends on patient disease process (many different contingencies) 	<ul style="list-style-type: none"> • Set to keep PaO₂ > 60 	<ul style="list-style-type: none"> • 100% in unstable or unknown patient • 50-70% in stable or known data
PEEP	• 5 cmH ₂ O	• 3-5 cmH ₂ O	• 5-10 cmH ₂ O	• 5 cmH ₂ O
RR	• 12-14 bpm	<ul style="list-style-type: none"> • 8-12 bpm • 15-25 bpm in ARDS 	• 8-16bpm	• 10-16 bpm
V_T	• 6-8 ml/kg IBW	• 6-12 ml/kg IBW	<ul style="list-style-type: none"> • 6-10 ml/kg IBW if PP < 25 • ≤ 8 ml/kg IBW if PP 25-30 • ≤ 6 ml/kg IBW if PP > 30 	• 6-8 ml/kg IBW
Flow / T_I			• 80 lpm (or to meet demand)	• To meet demand

* The Initiation of Mechanical Ventilation clinical simulation modules require the participant to set appropriate initial ventilator and alarm settings. The initial settings provided for in the simulations are the result of a consensus amongst published values in respected mechanical ventilation textbooks, as well as common clinical practice.

1. Shelledy DC. Initiation and adjusting ventilatory support. In: Kacmarek RM, Stoller JK, Heuer AJ. Egan's fundamentals of respiratory care, 10th edition. St Louis, MO: Mosby|Elsevier; 2012:1045-1090.
2. Cairo JM. Part II: Initiating ventilation. In: Cairo JM. Pilbeam's mechanical ventilation physiological and clinical applications, 5th edition. St Louis, MO: Mosby|Elsevier; 2012:47-122.
3. Kacmarek RM, Dimas S. Initiation, maintenance, and weaning from mechanical ventilation. In: Kacmarek RM, Dimas S. The essentials of respiratory care, 4th edition. St Louis, MO: Mosby|Elsevier; 2005:737-766.

Mechanical Ventilator Alarm Settings**

** Currently, there are no clinical practice guidelines for ventilator alarm settings. Over the past several years, dating back to a Joint Commission (JC) Sentinel Event Alert (“Prevention of Ventilator-Related Deaths,” 2002), there has been a continued and sustained emphasis on the recognition and determination of appropriate ventilator alarm settings.

In late 2014, the Emergency Care Research Institute (ECRI) organization published the “2015 Top 10 Health Technology Hazards.” Alarm hazards, including inadequate alarm configuration policies and procedures, and ventilator disconnections not caught because of inappropriately set or missed alarms, were numbers one and five on the list, respectively. Alarm hazards was also first on the list in 2014. Recommendations and steering from the ECRI and Association for Advancement of Medical Instrumentation (AAMI) have also been published regarding core concepts related to clinical device alarms, and ventilator alarms specifically.

In addition, the AARC published a consensus statement suggesting that ventilator alarms or alerts be stratified into levels of acuity: high, medium, and low priority. Subsequently, most current generation ventilators incorporate the recommended alarm prioritization into visual and auditory alarms. However, to date, there is no expert consensus or clinical practice guideline for appropriate alarm settings relative to mode of ventilation, patient conditions, or even default values.

The JC has mandated that all hospitals be prepared to be in accordance with their National Patient Safety Goal (NPSG) on Clinical Alarms. This NPSG is layered, beginning with establishing alarm safety as a priority, analyzing institution policy on alarms, and collecting institution-specific data. On January 1, 2016, hospitals are expected to have established policies and provide education on alarms.

Although there is no clinical practice guideline to date, perhaps with the continued emphasis from the above mentioned organizations and the work mandated by the JC, there will emerge an expert consensus and guidelines for appropriate ventilator alarm settings. The Initiation of Mechanical Ventilation clinical simulation modules require the participant to set appropriate initial ventilator and alarm settings. The alarm settings are not dictated or provided for in the simulation and should be evaluated at the discretion of the administering faculty or preceptor.