

Table 2: Goals and Objectives for Invasive Mechanical Ventilation

Goals

- To replace in whole or in part the normal functions of the lungs and ventilatory pump in patients whose ability to maintain these functions is temporarily or permanently impaired
- To provide these functions with as little disruption of homeostasis and with as few complications as possible

Physiologic objectives

- To improve alveolar ventilation, as indicated by arterial PCO₂ and pH
- To improve arterial oxygenation, as indicated by arterial PO₂, saturation, and/or oxygen content
- To increase end-inspiratory lung inflation
- To increase end-expiratory lung volume (functional residual capacity)
- To reduce the work of breathing (i.e. to unload the ventilatory muscles)

Clinical objectives

- To reverse acute respiratory acidosis: to relieve immediately life-threatening acidemia, rather than necessarily to make arterial PCO₂ and/or pH normal
- To reverse hypoxemia: to increase arterial PO₂ (generally such that arterial saturation is 90% or more, e.g. to \geq 60 mm Hg), in order to reverse or prevent clinically important tissue hypoxia
- To relieve respiratory distress: to relieve patient discomfort while the primary disease process resolves or improves
- To prevent or reverse atelectasis: to avoid or correct adverse consequences of incomplete lung inflation
- To reverse ventilatory muscle fatigue: to unload the ventilatory muscles and allow them to rest while the causes of increased work load are reversed or improved
- To permit sedation and/or neuromuscular blockade: to allow the patient to be rendered unable to breathe spontaneously, as during surgery or certain ICU procedures
- To decrease systemic or myocardial oxygen consumption: in certain settings (e.g. severe ARDS; cardiogenic shock), when spontaneous breathing or other muscular activity impairs systemic or cardiac oxygenation
- To reduce intracranial pressure, by means of controlled hyperventilation, as in acute closed head injury
- To stabilize the chest wall, as in chest wall resection or massive flail chest