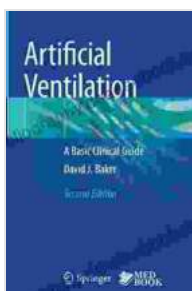


# Artificial Ventilation: Basic Clinical Guide for Healthcare Professionals

Artificial ventilation is a life-saving procedure that provides mechanical support for breathing. It is used in patients who are unable to breathe adequately on their own, such as those with respiratory failure, severe pneumonia, or trauma. Artificial ventilation can be delivered through a variety of methods, including invasive mechanical ventilation (IMV), non-invasive mechanical ventilation (NIV), and manual ventilation.

## Indications for Artificial Ventilation

The decision to initiate artificial ventilation is based on a number of factors, including the patient's clinical condition, respiratory status, and underlying medical history. Some of the most common indications for artificial ventilation include:



### Artificial Ventilation: A Basic Clinical Guide by David J. Baker

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- Respiratory failure
- Severe pneumonia

- Trauma
- Neuromuscular disorders
- Overdose of drugs or alcohol

## **Types of Artificial Ventilation**

There are two main types of artificial ventilation: invasive mechanical ventilation (IMV) and non-invasive mechanical ventilation (NIV). IMV is delivered through a tube that is inserted into the patient's airway. NIV is delivered through a mask or nasal cannula that is placed over the patient's nose and mouth.

### **Invasive Mechanical Ventilation (IMV)**

IMV is the most common type of artificial ventilation. It is used in patients who are unable to breathe adequately on their own, and who require a high level of respiratory support. IMV is delivered through a tube that is inserted into the patient's airway, either through the mouth (orotracheal intubation) or through the nose (nasotracheal intubation). The tube is connected to a ventilator, which provides mechanical support for breathing.

### **Non-Invasive Mechanical Ventilation (NIV)**

NIV is a less invasive form of artificial ventilation that is used in patients who are able to breathe spontaneously but who require additional respiratory support. NIV is delivered through a mask or nasal cannula that is placed over the patient's nose and mouth. The mask or cannula is connected to a ventilator, which provides mechanical support for breathing.

## **Ventilator Settings**

The ventilator settings are determined by the patient's clinical condition and respiratory status. The most common ventilator settings include:

- Tidal volume
- Respiratory rate
- Positive end-expiratory pressure (PEEP)
- Fraction of inspired oxygen (FiO<sub>2</sub>)

### **Tidal Volume**

Tidal volume is the volume of gas that is delivered to the patient with each breath. The tidal volume is typically set between 6 and 8 mL/kg of ideal body weight.

### **Respiratory Rate**

Respiratory rate is the number of breaths that the ventilator delivers per minute. The respiratory rate is typically set between 12 and 20 breaths per minute.

### **Positive End-Expiratory Pressure (PEEP)**

PEEP is the amount of pressure that is applied to the lungs at the end of expiration. PEEP helps to keep the lungs open and prevent them from collapsing. The PEEP is typically set between 5 and 10 cmH<sub>2</sub>O.

### **Fraction of Inspired Oxygen (FiO<sub>2</sub>)**

FiO<sub>2</sub> is the concentration of oxygen in the gas that is delivered to the patient. The FiO<sub>2</sub> is typically set between 0.21 (room air) and 1.0 (100% oxygen).

## **Ventilator Management**

Ventilator management is a complex process that requires careful monitoring of the patient's clinical condition and respiratory status. The ventilator settings are adjusted as needed to meet the patient's changing needs. Ventilator management also includes monitoring for complications, such as ventilator-associated pneumonia (VAP) and ventilator-induced lung injury (VILI).

## **Ventilator Weaning**

Ventilator weaning is the process of gradually reducing the level of ventilatory support and allowing the patient to breathe spontaneously. Ventilator weaning is started when the patient is stable and able to tolerate a reduction in ventilatory support. The ventilator settings are gradually reduced until the patient is able to breathe spontaneously without assistance.

Artificial ventilation is a life-saving procedure that provides mechanical support for breathing. It is used in patients who are unable to breathe effectively on their own.

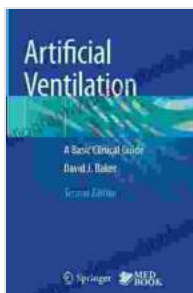
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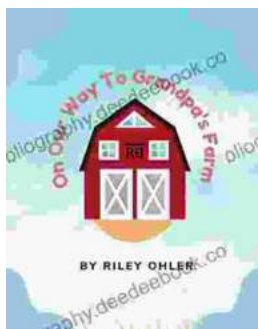
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