

Emergency and Critical Care

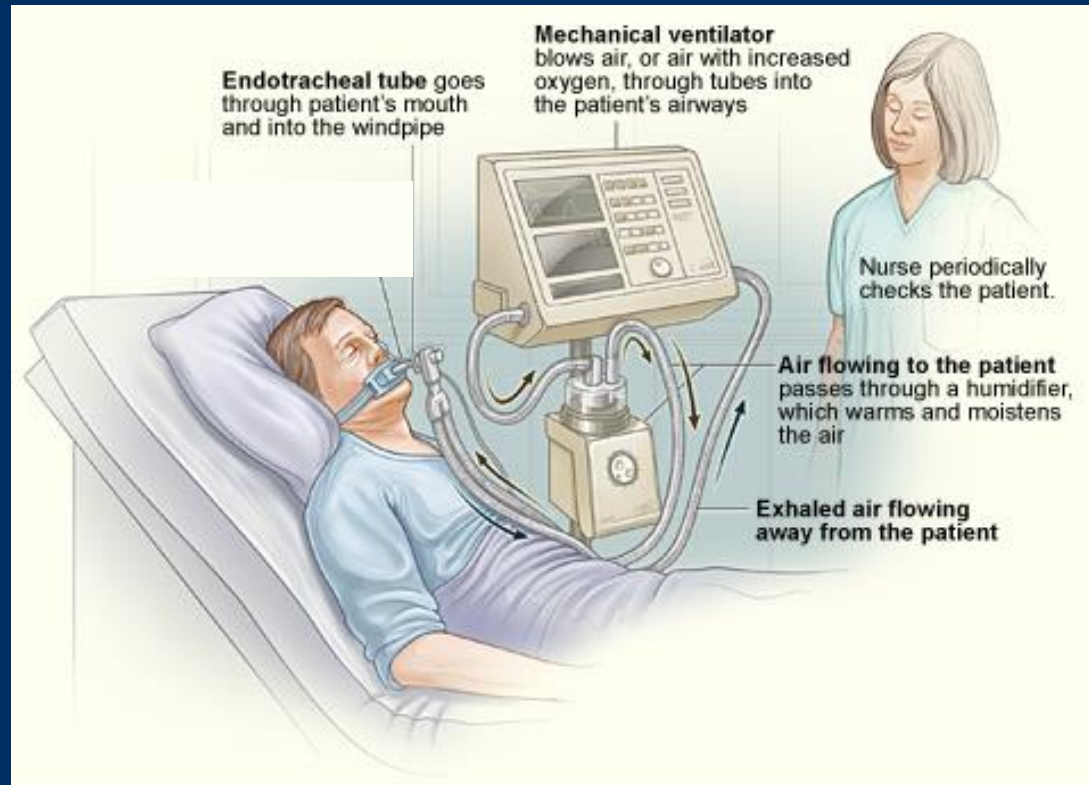


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Acute Respiratory: Mechanical Ventilation

Mechanical Ventilation: Overview

- Goals
- Overall Indication
- Underlying Indications
- Types of ventilators
 - Pressure cycled
 - Volume cycled (most common)
 - Time cycled



Control Mode

Assist Control (A/C)

Synchronized Intermittent
Mandatory Ventilation (SIMV)

Pressure Support

Positive End-Expiratory Pressure
(PEEP)

Continuous Positive Airway
Pressure (CPAP)

Mechanical Ventilation: Controls and Settings

Tidal volume

- Volume of air that the patient receives with each breath.

Rate

- Number of ventilator breaths delivered per minute.

$F_{I_{O_2}}$

- Fraction of inspired oxygen or the oxygen concentration delivered to the patient, which is ultimately determined by condition and ABG's.

Peak airway inspiratory pressure (PIP)

- **Pressure** needed by the ventilator to deliver a set tidal volume at a given compliance (reflects changes in lung compliance).

- TROMPP
 - Tidal volume (V_t)
 - Rate
 - Oxygen- FIO_2
 - Mode
 - Pressure Support (PS)
 - PEEP (positive end expiratory pressure)

Mechanical Ventilation: Alarms and Suctioning

- Alarms
 - Reasons
 - What to do
- Suctioning



Mechanical Ventilation Nursing Care

- Ventilator Associated Pneumonia
 - Nursing care
 - Humidity and Suctioning
- Managing Anxiety
- Disrupted Sleep pattern
- Malnutrition and Nutritional Support

Best case scenario criteria

- Improvement or stabilization of the disease process
- Nutritional and fluid status
- Adequate physical strength and mental alertness
- Stable cardiovascular, renal, and cerebral status
- Optimal blood gas, electrolyte and hemoglobin levels
- Achievement of the physiological parameters of mechanical ventilation

Modes for Weaning

- Assist/Control
- SIMV
- Pressure Support Ventilation:
- CPAP
- T-Piece

Mechanical Ventilation

Nursing Diagnosis



- Impaired gas exchange related to underlying illness, or ventilator setting adjustment during stabilization or weaning.
- Ineffective airway clearance related to increased mucous production associated with continuous positive pressure ventilation.
- Risk for trauma, infection related to ET intubation or trach.
- Impaired physical mobility.
- Impaired verbal communication.
- Defensive coping and powerlessness related to ventilator dependency