



Home Ventilators

Home mechanical ventilators have been utilized for infants and adults for several decades. Those patients who need home mechanical ventilators are the ones who passed the acute life-threatening process but still need mechanical ventilation support for longer term or for life. Examples of infants and pediatrics' use are chronic respiratory failure such as bronchopulmonary dysphagia, diaphragmatic hernia, and phrenic nerve paralysis. For adults, those are neuromuscular diseases such as amyotrophic lateral sclerosis (ALS), muscular dystrophy, chronic obstructive pulmonary disease (COPD), central sleep apnea, obstructive sleep apnea.

Hypercapnic respiratory failure (high carbon dioxide levels) due to obesity have been increased nowadays.

Non-invasive types of mechanical ventilators are usually used without an artificial airway. The most common modes are CPAP, Bipap, AVAPs setting.

CPAP: setting is giving one level of pressure to the patient all the time to help the lung open and improve oxygenation but does not offer assist with the breath.

BIPAP: gives two levels of pressures, on inhalation and exhalation; helping the lung open and ventilation to blow off carbon dioxide and assisting each breath.

AVAPS: you can set up tidal volume (how much volume is given to each breath) and the ventilator adjusts the inspiratory pressure to achieve this volume, besides setting PEEP (one level of pressure is provided all the time to keep the lung open).

Patients wear a mask which covers nostrils (nasal pillows), nose (nasal mask), or nose and mouth (full-face mask).

With invasive mechanical ventilators, patients have an artificial airway usually tracheostomy (a hole on the neck and short breathing tube in the hole to connect from ventilator to airway directly).

Those ventilators have many different modes e.g. **Volume control** (targeted tidal volume and respiratory rate; how many breaths given per minute), **Pressure control** (targeted pressure to give every breath and respiratory rate), **SIMV** (some breaths are mandatory and some are patient triggered), **Pressure support** (similar to BIPAP above).

Compared to hospital-use ventilators, home mechanical ventilators are smaller, compact and easier to use and for transportation.

In general home care companies and respiratory clinicians support patients and families for using of home ventilators including education, maintenance of the machine, providing accessory supplies (suctioning, oxygen, medications, etc).

The setting of mechanical ventilator is prescribed by a physician to provide enough ventilation and oxygenation.

Below are some examples of commonly used home ventilators and masks used



Trilogy (Philips)



LTV (Vyaire)



Airsense (Resmed)



Life 2000 (Hillrom)



Vocsn (Ventec Life System)



Nasal pillow



Nasal Mask



Full Face Mask