



Modes of Ventilation - Method or way a breath is delivered

Control mode

Every breath delivered to patient is a mechanical breath. The breath may be triggered by a timing mechanism or patient effort. May be volume or pressure controlled. *Examples:* AC, VC/IMV, PC/IMV, PRVC.

Supported or spontaneous mode

Every breath is spontaneous, patient triggered, and supported by ventilator. *Examples:* PS, CPAP

Combination mode

Combination of both controlled and supported breaths. *Example:* SIMV/PS is a combination of a set number of volume controlled breaths and pressure supported breaths.

- VC/AC** **Volume Control/Assist Control** - the ventilator is set to deliver a specific volume each breath, regardless of the amount of pressure required to deliver the volume. The clinician can set a high-pressure limit.
- SIMV** **Synchronized Intermittent Mandatory Ventilation** – tidal volume and rate are set, but the ventilator senses patient effort and “reschedules” mandatory (set) breaths.
- PS** **Pressure Support** is a patient-initiated breathing mode in which the ventilator supports patient effort. Provides a set amount of pressure during inspiration to help patient draw in a spontaneous breath. The patient regulates the breath rate. The inspiratory time and/or volume of each breath may vary.
- PC** **Pressure control** is an alternative to volume control. A pressure level is preset. Breaths are delivered at a preset frequency rate and inspiratory time. Pressure is constant throughout the delivered breath. Tidal volume can be variable. Patient can breathe above set rate.
- PEEP** **Positive End Expiratory Pressure** maintains small end-expiratory pressure to help prevent alveolar collapse and improve oxygenation. Patients are often started on 5 cmH₂O of PEEP.
- CPAP** **Continuous Positive Airway Pressure** is positive pressure maintained in the airway to prevent alveolar collapse, but is generally used to describe positive pressure set in spontaneous mode.

Settings - In addition to the mode of ventilation, the following are physician ordered and/or set by the clinician.

- V_T** **Tidal Volume** - Volume of air delivered per breath. Pressure to deliver the breath may vary depending on lung mechanics.
- RR/F** **Respiratory Rate/Frequency** – Set frequency of ventilator delivered breaths per minute.
- I-Time** **Inspiratory Time**, expressed in seconds, is the amount of time spent in inspiration during the total respiratory cycle. *Example:* RR is 12, total cycle time is 5 seconds (60/12 = 5 seconds). If I-Time set at 1 second, then 1 second is spent in inspiration, 4 seconds are available for exhalation.
- FI02** **Fraction of Inspired Oxygen** – The amount of oxygen the ventilator delivers, expressed as a percentage. Room air is 21%.

Sensitivity

The level of effort from the patient needed to “trigger” the ventilator to deliver a breath from the ventilator. Increase sensitivity to decrease patient effort.

