PHASE VARIABLES IN MODES OF VENTILATION:

INITIATION AND TRIGGERING: who decides when to take a breath?

When the trigger variable is met, the ventilator cycles to inspiration. Multiple trigger variable can be active at the same time. For example, SIMV is a mode which is time triggered as well as flow-triggered.

- **TIME-TRIGGERED:** “MANDATORY”, Machine decides when you breathe. The timer triggers.
- **FLOW-TRIGGERED:** Patient triggers by sucking a small amount of flow away from the circuit
- **PRESSURE-TRIGGERED:** Patient triggers by generating a small amount of negative pressure
- **VOLUME-TRIGGERED:** Patient triggers by inhaling a certain set volume of gas

LIMIT: what decides when inspiration stops?

A “limit” is reached before the end of inspiration. It doesn’t necessarily end the inspiration; it just restricts that variable so that it doesn’t increase beyond that limit. All of the limits can be set all at once.

- **FLOW-LIMITED:** There is a set flow, and the ventilator will not allow any greater rate of flow during inspiration
- **PRESSURE-LIMITED:** the ventilator will not exceed the set pressure during inspiration
- **VOLUME-LIMITED:** the ventilator will not exceed the set volume during inspiration (so if the volume is reached before the inspiration is over, there is an inspiratory pause)

CYCLING: what decides when to switch from inspiration to expiration?

When the cycling variable is met, it causes the ventilator to open its expiration valve, and the patient exhales. There can be only one cycling variable.

- **TIME-CYCLED:** the clock decides. The inspiratory pause is timed.
- **FLOW-CYCLED:** once the inspiratory flow rate falls to a certain set rate, the ventilator allows you to exhale.
- **PRESSURE-CYCLED:** once the set peak inspiratory pressure is reached, the ventilator allows you to exhale.
- **VOLUME-CYCLED:** once you reach the target volume, the ventilator allows you to exhale.

PEEP: Positive End Expiratory Pressure: what happens before the next breath

- Also known as the “baseline” variable