

# Introduction to Mechanical Ventilation

## Part-2

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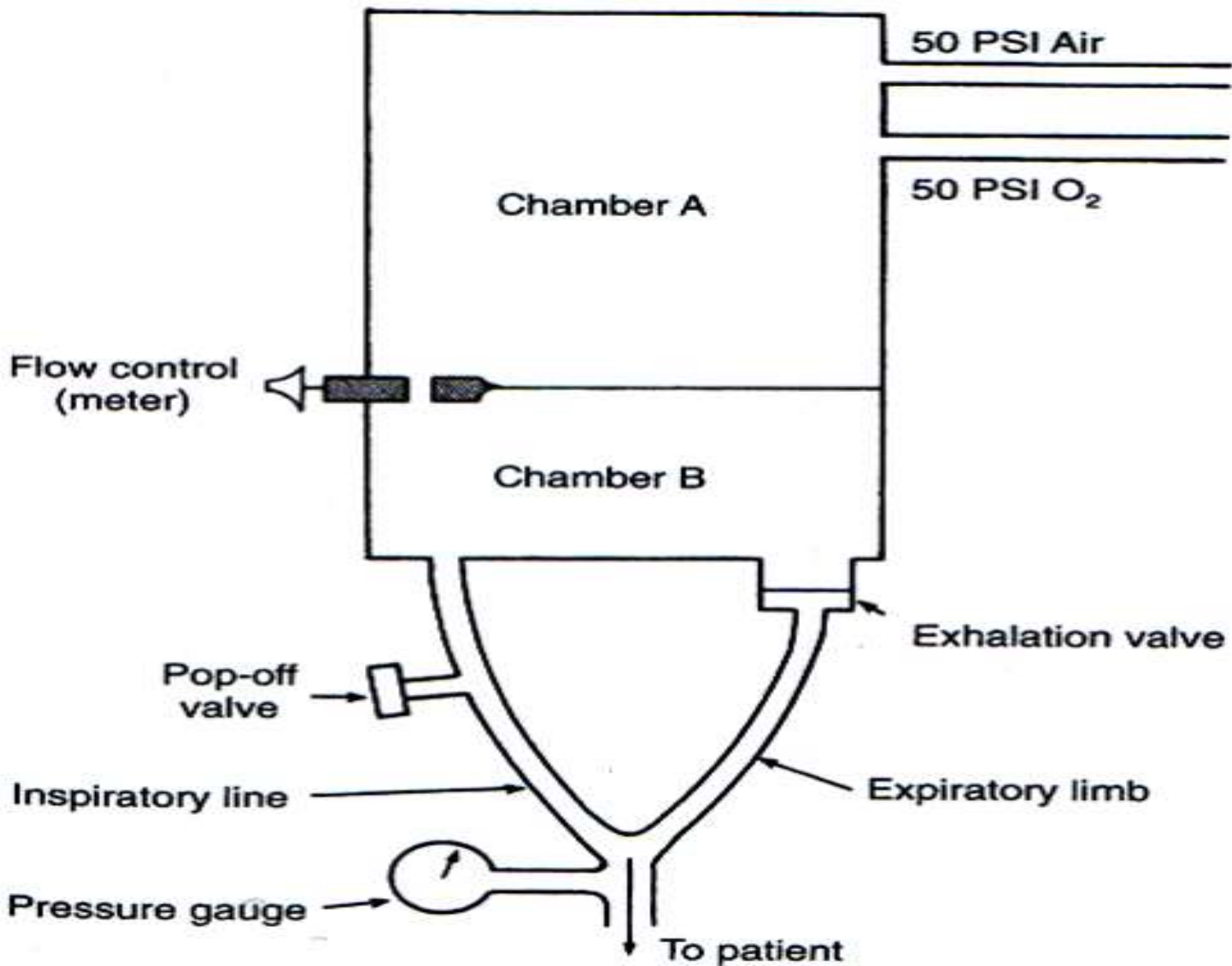
# Overview of topics

1. Introduction (mechanics and gas exchange)
2. Ventilator Settings (disease specific)
3. Ventilator types and modes

# Types of Mechanical ventilators:

- **Negative-pressure ventilators**
- **Positive-pressure ventilators.**





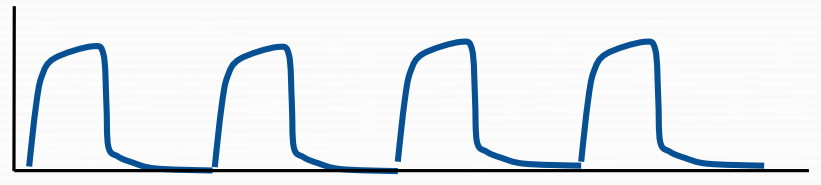
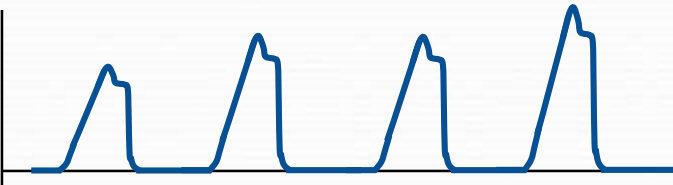
# Types of Positive-Pressure Ventilators

**1- Conventional (Volume – Pressure)**

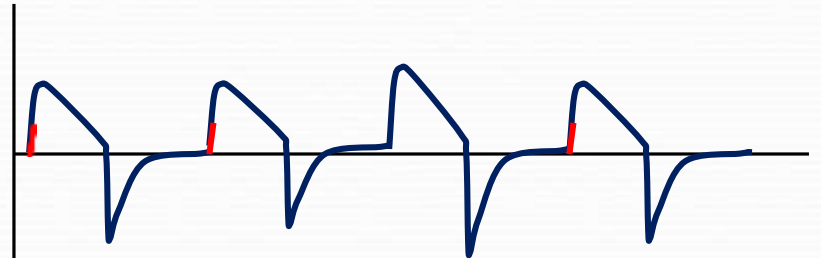
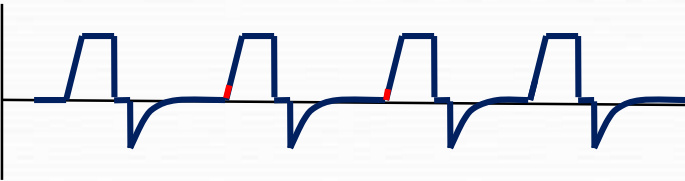
**2- High-Frequency Ventilators**

# Volume Vs Pressure

Pressure

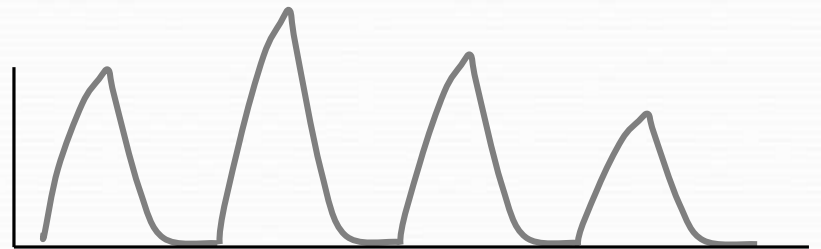
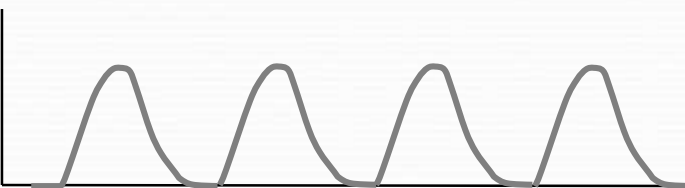


Flow

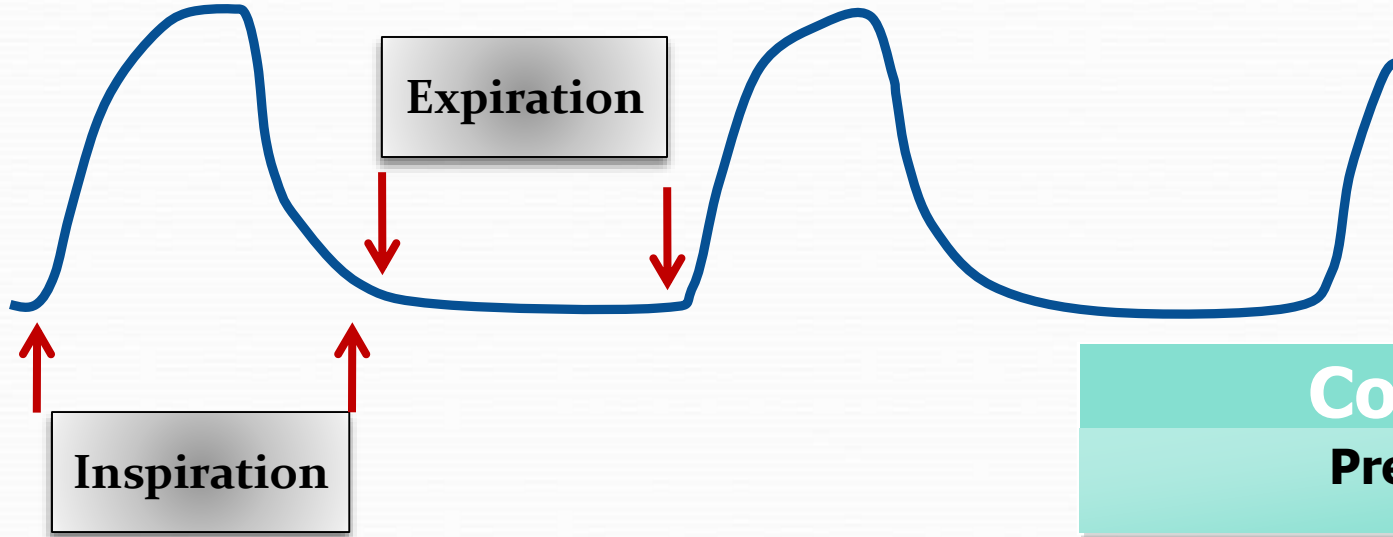


Volume

e



# The Respiratory cycle (Breath)



**Triggering:** Start Inspiration

**Limit:** Safety override

**Cycling:** Start Expiration

**Control**

**Pressure Vs Volume**

**Phase**

**Trigger, Cycle, Limit**

**Conditional**

**Time, Minute volume**

# Breath Types

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Breath Type	Phase Variable		
	Trigger	Limit	Cycle
<b>CONTROLLED</b> (MANDATORY)	<b>Machine</b>	<b>Machine</b>	<b>Machine</b>
<b>ASSISTED</b>	<b>Patient</b>	<b>Machine</b>	<b>Machine</b>
<b>SUPPORTED</b>	<b>Patient</b>	<b>Machine</b>	<b>Patient</b>
<b>SPONTANEOUS</b>	<b>Patient</b>	<b>Patient</b>	<b>Patient</b>

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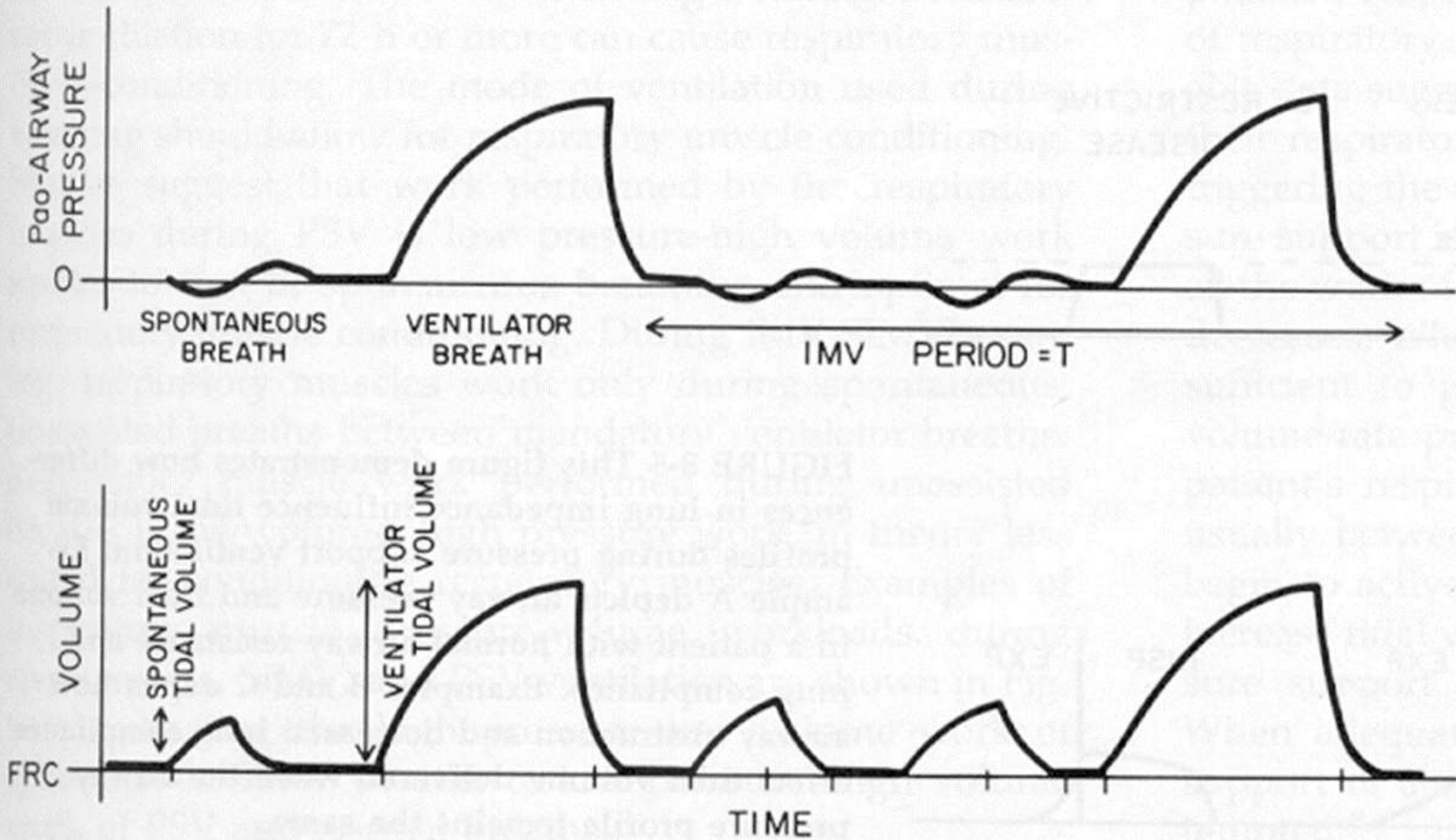


# Ventilator mode

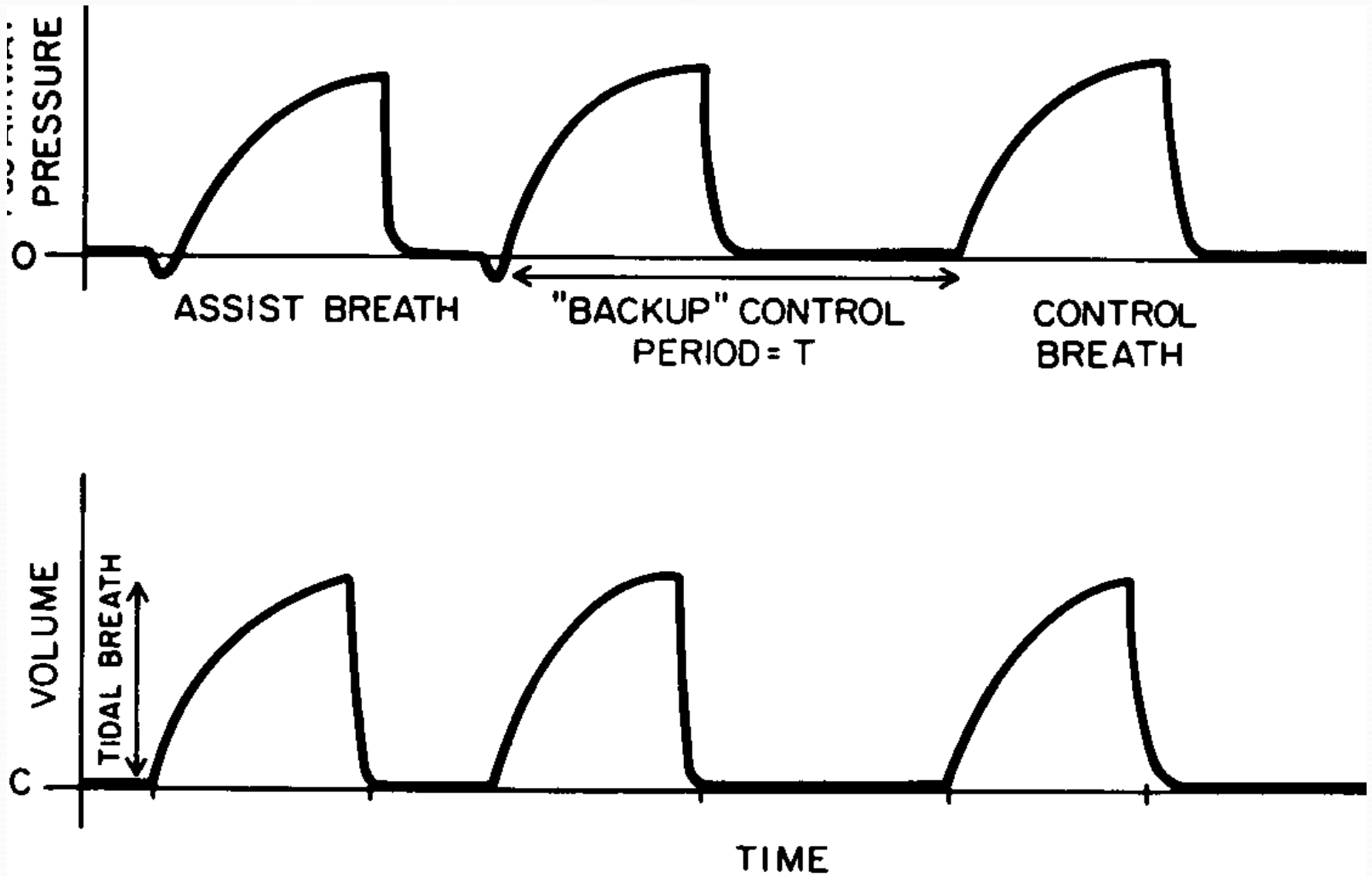
## *Patient-Ventilator Interaction*

- **IMV/IPPV**
- **Assist/Control (A/C) / SIPPV / PTV** ( $\pm$ VG)
- **SIMV** ( $\pm$ PSV,  $\pm$ VG)
- **PSV (+Backup?)** ( $\pm$ VG)
- **Volume Guarantee (VG)**
- **Others**

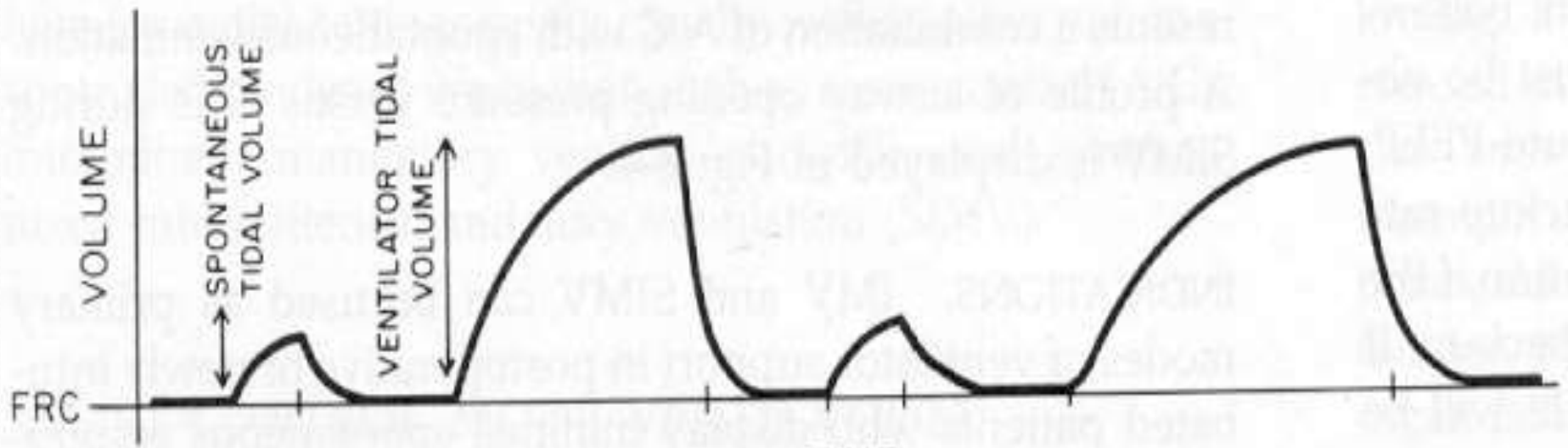
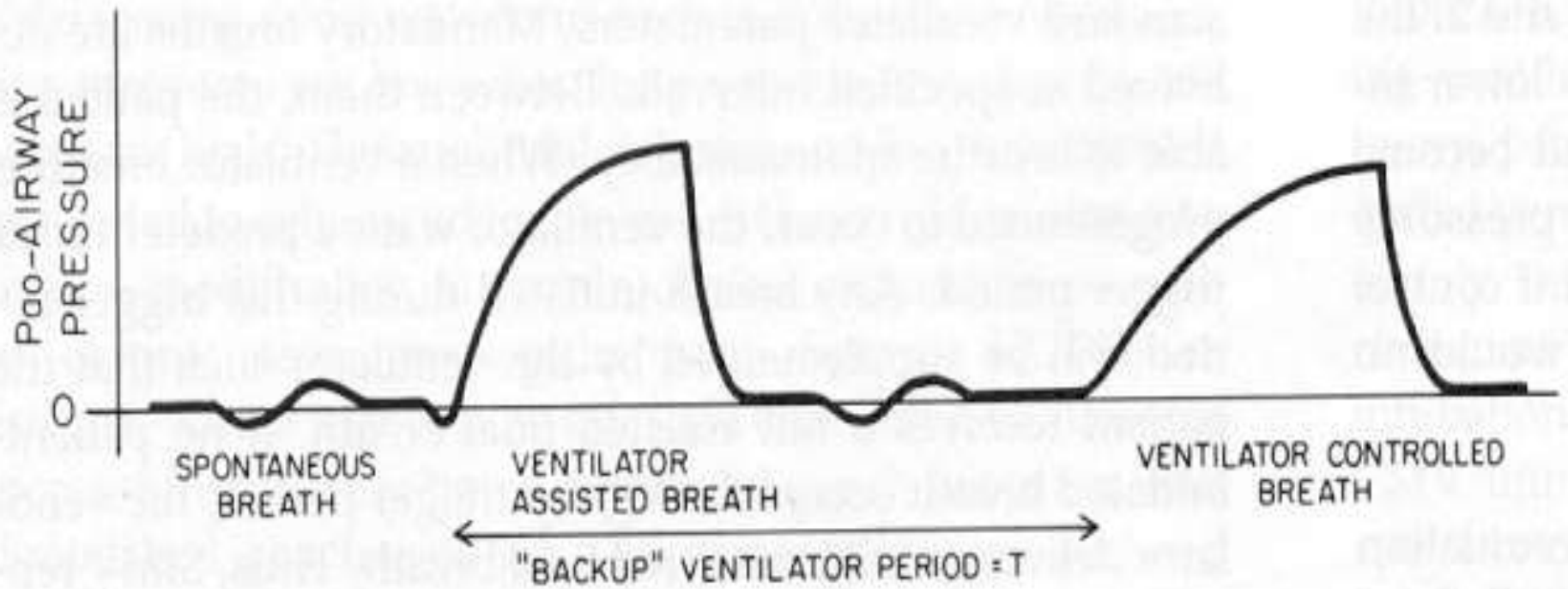
# IMV



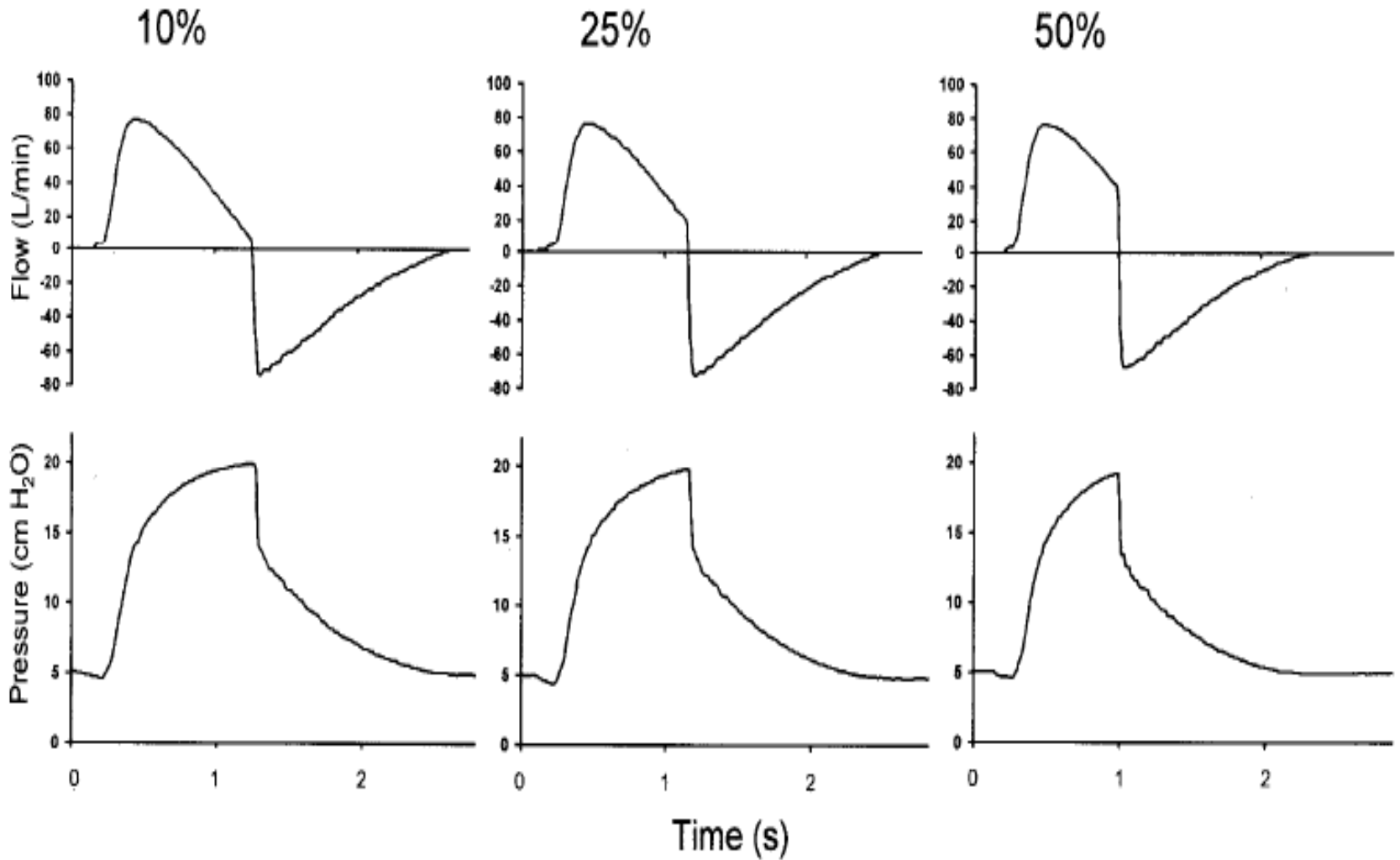
# A/C



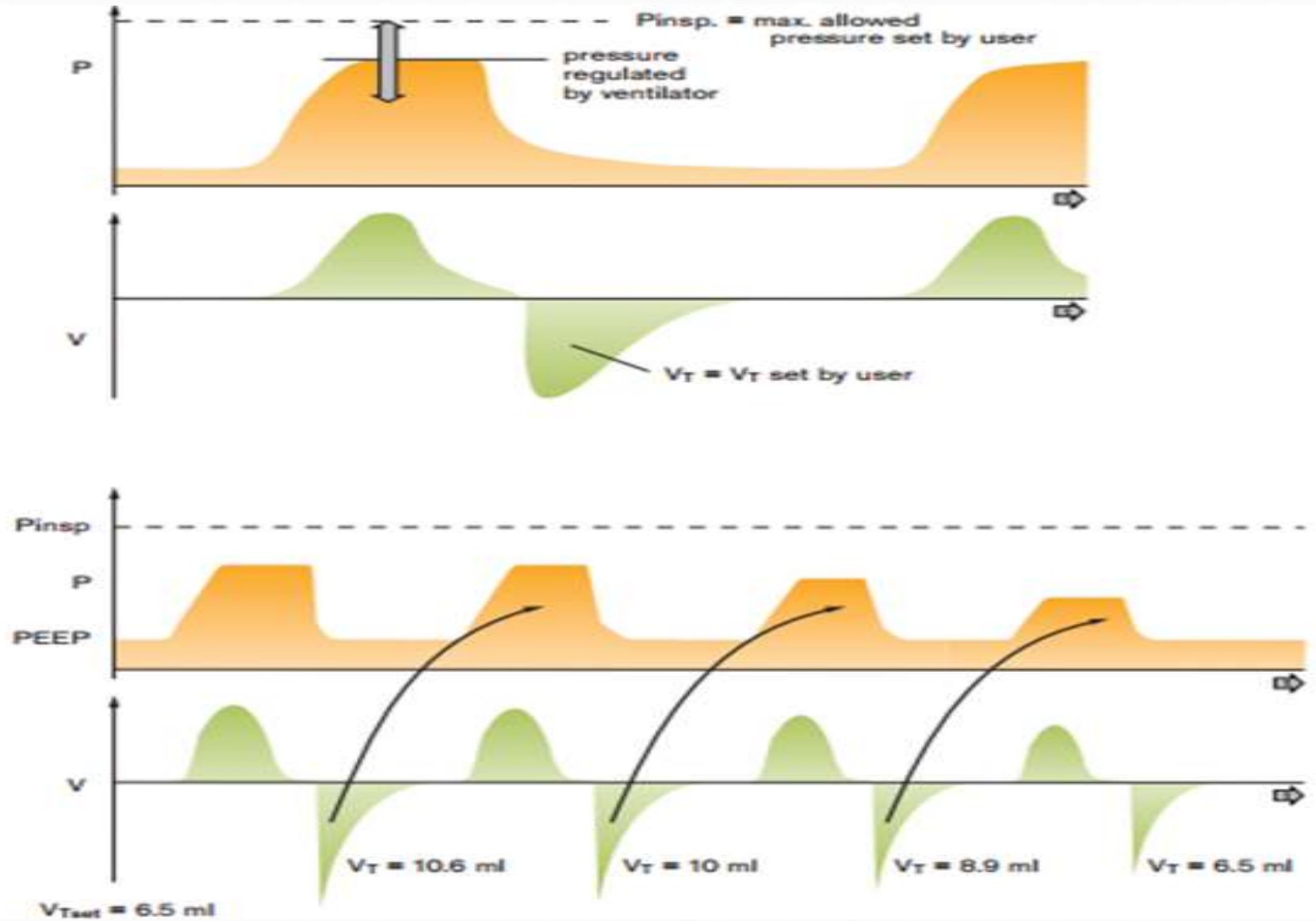
# SIMV



# PSV



# VG



# Ventilator modes: Comparison

	Controlled	Assisted	Supported	Spont..
<b>IMV</b>	Yes	×	×	Yes
<b>A/C</b>	Yes	Yes	×	×
<b>SIMV</b>	Yes	Yes	×	Yes
<b>PSV</b>	×	×	Yes	×



**T H A N K**

**Y O U**