How do our patients get the most out of Mechanical Ventilation

Jeff Brown


Good Morning!


tering Wilderness Area
USE
EXTREME
CAUTION
Remember: this is NOT a zoo or theme park

Types of Ventilation

Types of Ventilation

- Pressure

Types of Ventilation

Pressure

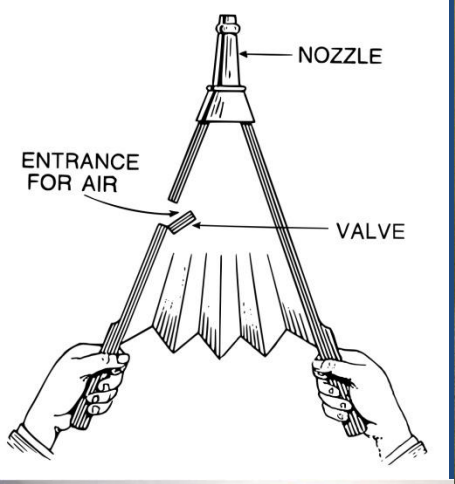
Volume

Types of Ventilation

Volume

Pressure

Negative Pressure


NOZZLE
ENTRANCE FOR AIR
VALVE


BENNETT
RATE
EXPIRATION TIME
PRESSURE


bird
residual breather
MARK 7®
bird oxygen breathing equipment, inc.
san francisco
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california
FLOW RATE
AIR - MIX
PULL
AUTO TIMER


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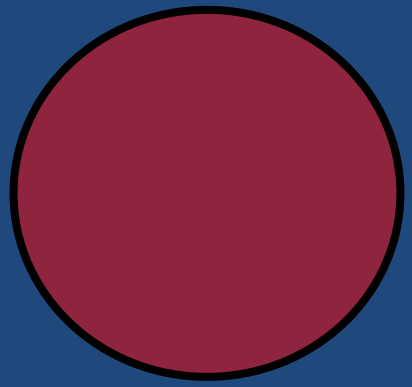
Issues with ventilator understanding

- Engineering issues
- Understand the capabilities
- NO universal language
- Trade marking names of modes.
- Modes

Mechanical ventilator

What are capabilities and limitations of the ventilator



MODE

WHAT IS A “MODE”?

a way or manner in which something occurs or is experienced, expressed, or done.

Examples of Modes

- SIMV
- IMV
- AC
- AC/VC
- VC-SIMV
- AC/VC
- DuoPAP
- SCMV
- SIMV/VC+
- V V+SIMV
- PRVC
- VC+
- ASV
- VAPRV
- VAPSV
- VS
- APRV

- PC-SIMV
- NAVA
- PSV
- AC/PC
- BILEVEL PC
- PCV+
- CMV+AUTOFLOW
- SIMV+AUTOFLOW
- AUTO MODE(PRVC-VS)
- PAV
- PAV+
- ATC
- TC
- BiPhasic
- APC

- “Auto modes” that incorporate two or more “modes”

Basic MODES

Trigger Modes

- Synchronized Intermittent-Mandatory Ventilation (SIMV)
- Assist-Control Ventilation (ACV)

Basic MODES

Pressure Ventilation

- Pressure-Controlled Ventilation (PCV)
- Pressure Support Ventilation (PSV)
- Pressure Controlled Inverse Ratio Ventilation (PCIRV)
- Airway Pressure Release Ventilation (APRV)
- Pressure Regulated Volume Control (PRVC)

Basic MODES
Volume Ventilation

- Volume Control Ventilation

Issues in Naming modes

- No industry wide consensus or rules in naming modes.
- Modes taught differently by sales reps, physicians, educators and therapists.
- New technology allows for mixing of breath types.
- Not a lot of agreement on the definition of what constitutes a mode.

Mechanical Ventilation

- Example: BIPAP, and PSV over PEEP. Are they the same thing?
- Where is the PSV LEVEL or IPAP level starting from? What do you chart ? Absolute pressure applied or ending pressure (PIP)?

Ventilator Modes

- Modes can be described by the following.

1. The control variable: the breath goal, volume or pressure.
2. The Trigger variable: That which starts the breath. Pt (Press and Flow) vs Time (TCT).
3. The Limit variable: Max allowed during insp. Vol., pressure, flow
4. The Cycle variable: That which terminates breath. Volume cycled or Time cycled

- example: pt or time initiated, flow limited, volume cycled ventilation is …. VC/SIMV which is Generally called VC.

Ventilator modes
Other things to consider

- Control variable: Control generally refers to mandated breaths. Generally what is set on the vent which does not include spontaneous features.
- Volume control: the breath is volume limited & the pressure is variable, flow is fixed
- Pressure Control: Pressure is limited or targeted and volume is variable, Flow is variable on demand. PSV is a pressure based breath.
- Dual: Volume targeted or guaranteed, pressure regulated, flow variable on demand

Ventilator modes
Other things to consider

1. CMV generally means the mechanical vent breath, not the spontaneous breath. However new vent modes allow spont. breathing during the mechanical vent breath (APRV/BiLevel)

2. SIMV ventilator breath delivered when the patient makes an effort or if pt not breathing purely on TCT, so SIMV is pt or time cycled to on.

3. CSV purely spontaneous breathing with or without assistance. ie: PSV or CPAP

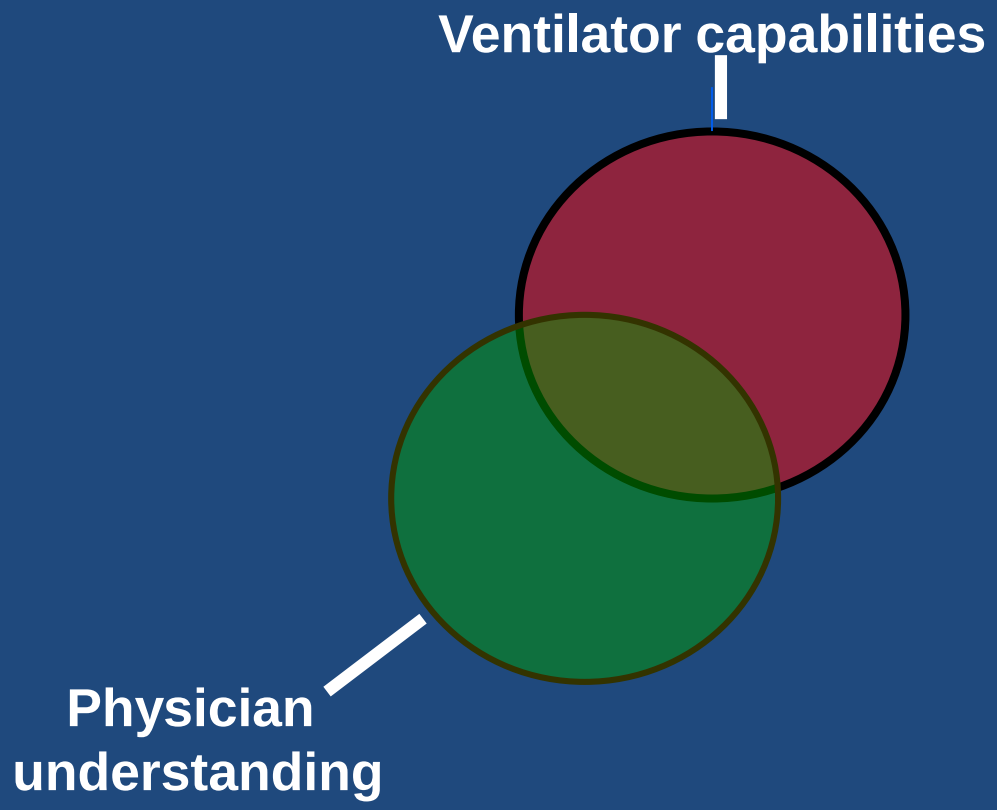
Mechanical Ventilator Modes and Increased WOB

- If you don't activate a breath when the patient makes an effort…
- If you don't terminate a breath when the patient attempts to exhale…..

It Causes….

- Dys-synchrony
- Increased WOB
- Anxiety

How do our patients get the most out of a Mechanical ventilator

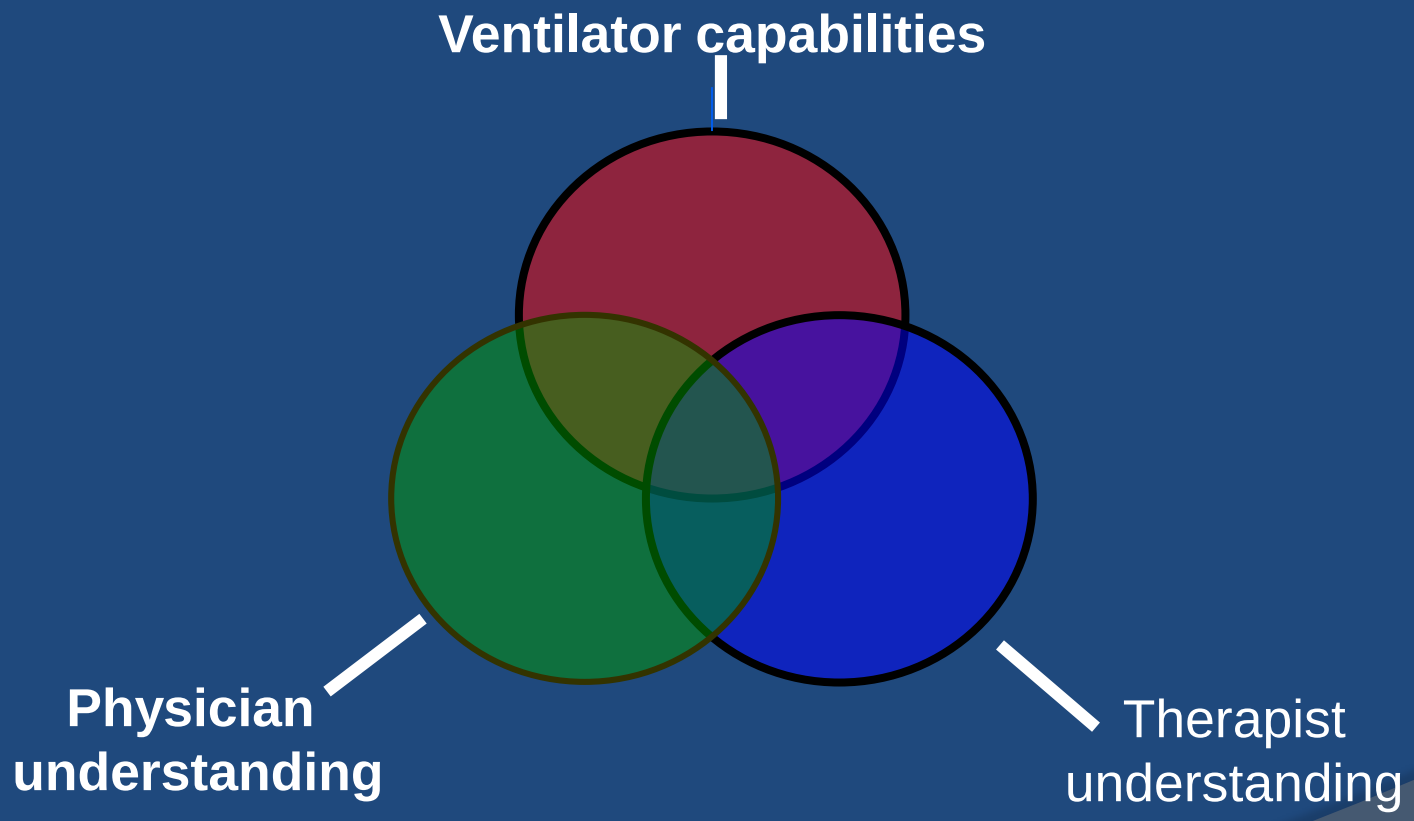


Physician Understanding

Develop a understanding of not only the capabilities but also limitations of ventilators

Incorporate modalities unique to a ventilator when developing patient care plan.

Mechanical ventilator



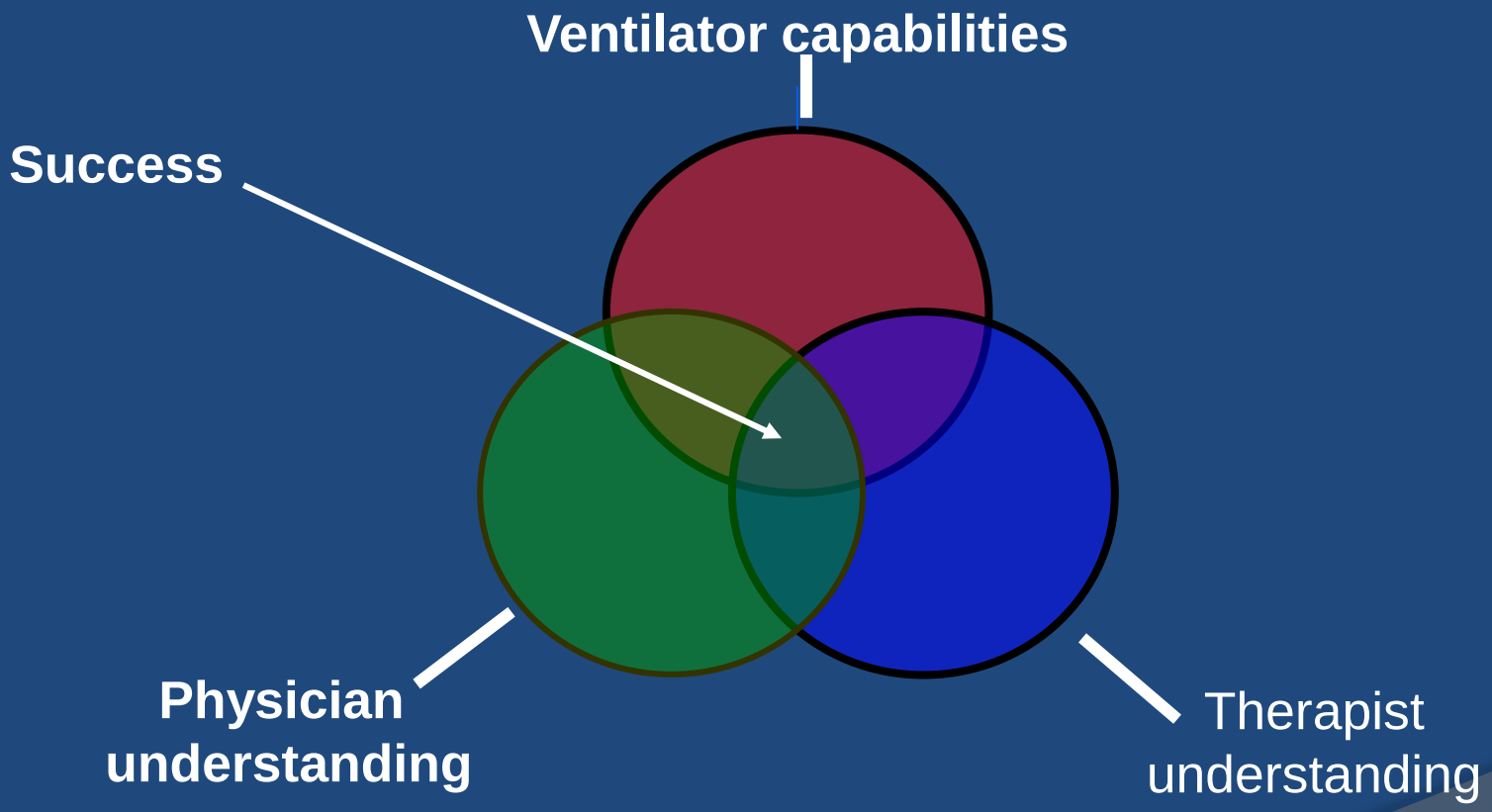
Respiratory Understanding

Develop a superior ventilator knowledge base .

Trouble shoot skills

Clear understanding of ventilator limitations

Mechanical ventilator

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