How I set the ventilator

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# Common Mode Settings

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FiO$_2$</td>
<td>Fraction of inspired oxygen</td>
</tr>
<tr>
<td>PEEP (cm H$_2$O)</td>
<td>Positive end-expiratory pressure</td>
</tr>
<tr>
<td>Trigger Sensitivity</td>
<td>The criteria used by the ventilator to determine patient effort</td>
</tr>
</tbody>
</table>
Respiratory System Mechanics

Compliance \( (C_{RS}) = \frac{\text{Tidal Volume (mL)}}{\text{Plateau} - \text{PEEP}} \)

Airway Resistance \( (R_{AW}) = \frac{\text{Peak} - \text{Plateau}}{\text{Flow (L/sec)}} \)

Flow on the ventilator is L/min so divide by 60 to convert to L/sec
## Volume Assist Control

<table>
<thead>
<tr>
<th>Parameter</th>
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<tbody>
<tr>
<td>Frequency (rpm)</td>
<td>Respirations per minute</td>
</tr>
<tr>
<td>Tidal Volume (mL)</td>
<td>6 to 8 mL/kg of Ideal Body Weight</td>
</tr>
<tr>
<td>Flow (L/min)</td>
<td>Determines the time it takes to deliver the tidal volume</td>
</tr>
<tr>
<td>Inspiratory Pause</td>
<td>Used to distinguish resistive and elastic pressures</td>
</tr>
</tbody>
</table>
Initial Settings – Volume Assist Control

• **Tidal volume**
  • 6 – 8 mL/kg of PBW
  • Unsure of their height?
    • Male: 450 mL
    • Female: 350 mL

• **Respiratory Rate (frequency)**
  • 20 – 25 bpm

• **Flow**
  • 50 to 60 L/min

• **Inspiratory Pause**
  • 0.2 to 0.3 seconds

• **PEEP**
  • 5 - 10 cmH2O

• **FiO2**
  • 0.70 (titrate based on SpO2 after initiation)
RR: 24
VT: 450
MV: 10.60
PiP: 41.0
EIP: 25.0
Pmean: 15.8
FiO2: 70
RSB: Off

FiO2: 0.65
VT: 24.0
TI: 10.0
PEEP: 60
Flow: VC-AC
### Pressure Assist Control

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Frequency (rpm)</td>
<td>Respirations per minute</td>
</tr>
<tr>
<td>Pressure (cm H$_2$O)</td>
<td>Adjusted to deliver 6 to 8 mL/kg of Ideal Body Weight</td>
</tr>
<tr>
<td>Inspiratory Time (s)</td>
<td>The length of time the pressure is maintained</td>
</tr>
<tr>
<td>Rise Time (s)</td>
<td>The time the ventilator will take to reach the set pressure</td>
</tr>
</tbody>
</table>
Initial Settings – Pressure Assist Control

• **Pressure Control 12 to 14 cm H2O**
  • Adjust for 6 – 8 mL/kg of PBW
  • Unsure of their height?
    • Male: 450 mL
    • Female: 350 mL
• **Respiratory Rate (frequency)**
  • 20 – 25 bpm
• **Inspiratory time**
  • 0.7 to 1 second
• **PEEP**
  • 5 - 10 cmH2O
• **FiO2**
  • 0.70 (titrate based on SpO2 after initiation)
Breath Timing

Respiratory Cycle determined by Frequency

Inspiration | Expiration

Active | Passive

I:E ratio
Breath Timing

Respiratory Cycle determined by Frequency

Inspiration | Expiration

Is this sufficient time for exhalation?

I:E ratio
Breath Timing

Respiratory Cycle determined by Frequency

Inspiration

Expiration

Is this sufficient time for exhalation?

I:E ratio
Breath Timing
Breath Timing
## Pressure Support

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Pressure (cm H₂O)</td>
<td>Adjusted to deliver 6 to 8 mL/kg of Ideal Body Weight</td>
</tr>
<tr>
<td>Inspiratory Cycle (%)</td>
<td>The % of peak flow when the breath is terminated</td>
</tr>
<tr>
<td>Rise Time (s)</td>
<td>The time the ventilator will take to reach the set pressure</td>
</tr>
<tr>
<td>Back up</td>
<td>Switch to Assist Control mode if the patient goes apneic</td>
</tr>
</tbody>
</table>
Considerations

• **Volume Assist Control**
  • Flow/Volume is constant
  • Monitor **Plateau Pressure** and **Respiratory Rate**

• **Pressure Assist Control**
  • Pressure if constant
  • Monitor **Tidal Volume** and **Respiratory Rate**

• **Pressure Support**
  • Start Low PS then increase for Tidal volume 6 – 8 mL/kg PBW
  • Monitor **P0.1** (2 – 4 cmH₂O)
  • % cycle may need adjustment

• **Ineffective Efforts**
  • Over-assistance + weak efforts +/- high airway resistance
Thank you

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