Use of SNS Ventilators in the Pediatric Patient (LP-10, LTV-1200 and Uni-Vent Eagle)

Concepts of Rapid or Volume Based Pediatric Ventilation

- If volume ventilating, start at 10 ml/kg (unless protective lung strategy ventilation required)
- Volume lost to circuit must be replaced unless measurements taken at “wye”
- Set I-time generally between 0.7 – 1.0 sec.

NORMAL RESPIRATORY RATES

<table>
<thead>
<tr>
<th>Age</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant</td>
<td>30-60</td>
</tr>
<tr>
<td>Toddler</td>
<td>24-40</td>
</tr>
<tr>
<td>Preschooler</td>
<td>22-34</td>
</tr>
<tr>
<td>School-age child</td>
<td>18-30</td>
</tr>
<tr>
<td>Adolescent</td>
<td>12-16</td>
</tr>
</tbody>
</table>

ASSESSMENT

- Chest rise
- Breath sounds
- Respiratory Rate
- Work of Breathing
- Pressures required to deliver volume
- ABG/TCM/SaO₂

UNI-VENT® Eagle™ Ventilation System “Quick Set-Up”

Mode
- SIMV, Assist Control (A/C), CPAP

Volume
- 10 ml/kg (displayed on LCD above control)

Breath rate
- Set age appropriate (dial is sensitive, 1-150 bpm)

Inspiratory Time
- (0.7-1.0 Combination of Inspiratory time and I:E ratio is displayed on LCD (I:E ratio default 1:1 preset)

FiO₂
- Dial desired FiO₂ (21% to 100%) value displayed on LCD

PEEP
- Pushbutton switch: each push = 1 cwp

Alarms
- Set based on average Peak Inspiratory Pressure

Low Alarm Limit
- 5 cwp below spontaneous Peak Inspiratory Pressure

High Alarm Limit
- 10 cwp above Mechanical Breaths Peak Inspiratory Pressure

Battery Life
- 3 hours maximum using internal compressor; 12 hours using external gas source

Development of this document was conducted under the direction and oversight of Illinois Emergency Medical Services for Children and the Pediatric Work Group, Illinois Terrorism Task Force. The development, printing and distribution of this resource tool has been supported through federal funding from the Assistant Secretary for Preparedness and Response (ASPR) Hospital Preparedness Grant.
### Use of SNS Ventilators in the Pediatric Patient

**LP-10 Ventilator “Quick Set Up”**

<table>
<thead>
<tr>
<th>Mode</th>
<th>SIMV or Assist Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume</td>
<td>10ml/kg (measured by spirometer)</td>
</tr>
<tr>
<td>Breath Rate</td>
<td>Set age appropriate</td>
</tr>
<tr>
<td>Inspiratory Time</td>
<td>(0.7-1.0 second)</td>
</tr>
</tbody>
</table>

- **FiO2**
  - Capable of delivering 100%
  - Set liter flow (not > 10 lpm)
  - Analyze FiO2

- **Back of machine- O2 enrichment kit**
  - Set liter flow (not > 10 lpm)
  - Analyze FiO2

- **Front of machine- Bleed O2 into circuit**
  - Highest FiO2 approximately 40%
  - Adjust liter flow and analyze

- **PEEP**
  - External PEEP valve located on circuit exhalation valve; dial in desired PEEP pressure

- **Alarms**
  - Set based on average Peak Inspiratory Pressure

- **Low Alarm Limit**
  - 5 cwp below Peak Inspiratory Pressure

- **High Alarm Limit**
  - 10 cwp above Mechanical Breaths Peak Inspiratory Pressure

- **Battery Life**
  - Internal Battery 30 minutes to 1 hour; External battery 10 hours

### LTV-1200 “Quick Set Up”

<table>
<thead>
<tr>
<th>Preuse</th>
<th>Vent Op/Leak test/New Patient/Patient Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode</td>
<td>SIMV, Assist Control (A/C), Pressure Support-CPAP, NPPV</td>
</tr>
<tr>
<td>Volume</td>
<td>10 ml/kg</td>
</tr>
<tr>
<td>Breath Rate</td>
<td>Set age appropriate</td>
</tr>
</tbody>
</table>

- **PEEP**
  - Set on Machine

- **FiO2**
  - High pressure source – set oxygen on vent (capable of delivering 100%)
  - Low pressure source – adjust liter flow and analyze

- **Alarms**
  - Low Pressure – Set 5 cwp below average spontaneous Peak Inspiratory Pressure
  - High Pressure – Set 10 cwp below average Peak Inspiratory Pressure
  - Low Min. Vol. – Set 1 lpm below average minute volume

- **Ext. Features**
  - Safe to use defaults provided appropriate size patient selected

- **Battery Life**
  - Internal Battery 1 hour; Small external battery 3 hours; Large external battery 9 hours

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