**Purpose**
How to utilize the Hamilton T1 ventilator to provide Non-Invasive Positive Pressure Ventilation.

**Absolute contraindications**
- Respiratory arrest
- Airway obstruction
- Hemodynamic instability, SBP <90 or MAP<65
- Trauma

**Relative contraindications**
- Altered mental status
- Acute myocardial infarction
- Persistent nausea/vomiting
- Inability to clear secretions

**Procedure**
**Initial Settings:**
Inspiratory Peak Airway Pressure (IPAP) 15, Exhalation Peak Airway Pressure (EPAP) 5, Rate 10, Fi02 50%

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Turn on ventilator</td>
</tr>
<tr>
<td>2</td>
<td>Check battery status</td>
</tr>
<tr>
<td>3</td>
<td>Connect tubing and flow sensor to ventilator</td>
</tr>
<tr>
<td>4</td>
<td>Preop checks – Tightness &amp; Flow Sensor</td>
</tr>
<tr>
<td>5</td>
<td>Connect to high pressure oxygen source</td>
</tr>
<tr>
<td>6</td>
<td>If patient is already on NPPV and settings are appropriate, go to step</td>
</tr>
<tr>
<td>7</td>
<td>Select BIPAP or NIV – ST mode, hit confirm</td>
</tr>
<tr>
<td>8</td>
<td>Set PInsP at 10 (This plus the PEEP is the IPAP)</td>
</tr>
<tr>
<td>9</td>
<td>Set PEEP at 5</td>
</tr>
<tr>
<td>10</td>
<td>Set Rate of 10</td>
</tr>
<tr>
<td>11</td>
<td>Set Fi02 at 50%</td>
</tr>
<tr>
<td>12</td>
<td>Set Flow Trigger at 5.0 L/MIN</td>
</tr>
<tr>
<td>13</td>
<td>Click “confirm”</td>
</tr>
<tr>
<td>14</td>
<td>Choose appropriate size mask</td>
</tr>
<tr>
<td>15</td>
<td>If mask has clear elbow in place. Replace elbow on mask with blue elbow</td>
</tr>
<tr>
<td>16</td>
<td>Utilize ETCO2 monitoring, place the ETT style sensor between flow sensor and mask</td>
</tr>
</tbody>
</table>
Verbally prepare the patient
Select “Start Ventilation”
Hold the mask up to the patient’s face – again verbal reassurance is key
Secure the mask to patient’s face once patient feels comfortable
Check for leaks around the mask
Fix any leaks, consider tightening or readjusting mask
You may need to adjust your alarm setting for tidal volume, as it will likely be high

Monitoring
Alarms
- Under “alarms” you can click AUTO and it will automatically set your alarms based on current settings.
- Under the “monitoring” tab you can see many different values.

Abnormal vitals and/or patient uncomfortable
- Titrating all settings in conjunction with one another is key; consider 2 cmH2O and 10%
- Titrating PIP and PEEP (Recall that increasing PEEP will automatically increase PIP)
- Titrating FiO2 to keep SpO2 per A6. Initial Patient Protocol

Consider intubation if there are no signs of improvement along with one or more of the following:
- Inspiratory Peak Airway Pressures are at 20 cmH2O or
- Exhalation Peak Airway Pressures are at 10 cmH2O or
- Patient is continuously breathing at the set rate (Riding the ventilator)

Other Considerations
Goals
- Decrease respiratory distress
- Improve vital signs (>SpO2 and/or <Respiratory Rate)
- Improve patient comfort

Key documentation points
- Reason for NPPV use
- Respiratory distress score (1-10) before and after NPPV application
- Vital signs before and after NPPV application (to include SpO2, BP, RR, and EtCO2)
- Initial and ending settings

Order of Devices

- Mask
- Blue Elbow
- Flow Sensor
- ETCO2
- HEPA Filter
- Circuit
- Ventilator
G39. Non-Invasive Positive Pressure Ventilation

**Other**
- IPAP on Hamilton T1 is the Pinsp + the PEEP (For example: Pinst is 12 + PEEP is 6= settings would be 18/6)
- Neonatal Circuit should be utilized in patients that are less than or equal to 15 kg.
- Adult circuits should be utilized for patients that are greater than 15 kg.
- HEPA Filters are 99.97% effective.

- To complete a nebulizer treatment, connect the nebulize tubing directly to the side of the ventilator (yellow port above where the flow sensor connects) and press this button. This will allow the ventilator to administer the nebulizer treatment only during exhalation – reducing waste.

- By clicking this button, it will take the ventilator to 100% FiO2 for 2 minutes.
- The bottom graph can be changed by touching the graph and choosing another option. It is recommended to monitor the Flow L/MIN which can be found under graphics.