I. Statement of Purpose

To provide guidelines for BiPAP and or CPAP to patients requiring non-invasive positive pressure ventilation (NIPPV) as supportive therapy.

II. Definitions

NIPPV is the application of positive pressure during the respiratory cycle to maintain adequate ventilation without intubation.

BiPAP is the application of a user selected level of independently set IPAP (Inspiratory Positive Airway Pressure) and EPAP (Expiratory Positive Airway Pressure) to the patient’s airway via facial or nasal mask.

CPAP is the application of a user selected level of continuous positive airway pressure via facial or nasal mask.

III. Statement of Policy

In order to provide a standard of initiating, maintaining, and evaluating the care of patients receiving BiPAP or CPAP.

IV. Procedure

1. The Cardiopulmonary Department will set up, initiate, adjust, monitor, and evaluate the effectiveness of the NIPPV systems as per policy guidelines.

2. NIPPV should not be considered a method of continuous ventilator support. It is not a life support system and is only intended to augment the patient’s spontaneous ventilation. Patients that exhibit the following parameters must be considered in respiratory distress and moved to an intensive care setting in order to be monitored more closely.
3. If NIPPV is attempted on the medical-surgical floor and the following parameters occur, the patient should be transferred to ICU:

   3.1. FIO2 ≥ 40% or ≥ 6 lpm bleed in
   3.2. Patient RR of ≥ 30 on NIPPV
   3.3. IPAP ≥ 20 (Inspiratory Positive Airway Pressure)

4. Patient placement:

   4.1. NIPPV may be utilized on the medical-surgical floor if the patient is stable.
   4.2. If the patient meets ICU criteria, that patient must be admitted to ICU.
   4.3. In addition to ICU admission criteria if any of the following parameters are met, the patient should be transferred to ICU:

      4.3.1. Risk of aspiration of gastric contents, i.e. vomiting in the last 48 hours.
      4.3.2. Patient is comatose or obtunded.

**Indication / Assessment of Need**

- Impending respiratory failure whose acute cause of respiratory distress is of transient origin and who demonstrate a successful response to a trial of NIPPV.
- Patient who exhibit clinical evidence of ventilatory muscle fatigue that may be accompanied by CO2 retention, i.e. COPD
- Chronic Heart Failure (CHF) patients who need EPAP while being treated for underlying condition, i.e. fluid retention.
- Post extubation to support ventilation.
- Nocturnal hypoventilation

**Contraindications / Hazards / Limitations**

- Respiratory failure without a spontaneous respiratory drive.
- Risk of aspiration of gastric contents, i.e. vomiting within the last 48 hours.
• Patients in which the nasal or facial mask or head gear cannot be secured secondary to the extent of their injury. (Such as laceration or broken bones) other interfering essential apparatuses, or the refusal or inability to cooperate.

• Patients with acute sinusitis or otitis media.

• History of allergy or hypersensitivity to the mask material where the risk from allergic reaction outweighs the benefit of ventilatory assistance.

• Patients in which the nasal mask or oral leak exceeds the units ability to maintain desired pressure.

• Protection of patient’s airway

Methods

1. NIPPV Request:

   1.1 A physician’s order for NIPPV must include:

      1.1.1 Request for BiPAP or CPAP
      1.1.2 Mode of BiPAP, i.e. spontaneous timed, spontaneous, or CPAP
      1.1.3 IPAP level
      1.1.4 EPAP level
      1.1.5 O2 saturation goal is ScO2 > 92%
      1.1.6 Specified O2 flow rate to be bleed into circuit is O2 at 2 lpm
      1.1.7 If IPAP/EPAP ordered per RT, use the lowest possible setting to achieve goals.

   1.2 Order for transfer to ICU if NIPPV patient meets any criteria listed in policy statement # 4

2. Patient application:

   2.1 Patient understanding and acceptance is important for the success of this modality. The RRT should explain the device and its purpose, how the mask is applied, that the patient may or may not be able to speak, and the duration of use.

   2.2 Proper mask sizing is a crucial component of success. Mask comfort is often the limiting factor to success. The smallest mask possible for the patient’s nasal or facial contour should be selected. Mask fit should be determined by manufacturer’s recommendations.

   2.3 During initial application of NIPPV the patient’s response should be assessed.
3. Adjustments:

3.1 NIPPV setting adjustments per MD request are to be monitored and based on the patient’s physiologic response. Failure to see an improvement in the patient’s respiratory status within 1 hour of implementing NIPPV is an indication to discontinue and evaluate other supportive options.

4. Monitoring:

4.1 The RRT will assess the patient on initiation, after 1 hour and every 2 hours while in place. Patient assessment documentation should include:

   4.1.1 Respiratory Rate Set
   4.1.2 Respiratory Rate Total
   4.1.3 Tidal Volume
   4.1.4 NIPPV mode
   4.1.5 IPAP level
   4.1.6 EPAP level
   4.1.7 Liter Flow of Oxygen or FIO2
   4.1.8 Heart Rate
   4.1.9 Saturation
   4.1.10 Lung Sounds
   4.1.11 Leak (Volume)

4.2. Arterial Blood Gases should be ordered prior to initiation and as indicated per patient condition and per RT order.

5. NIPPV circuits will be changed if soiled.