**NONINVASIVE VENTILATION**

Positive pressure ventilation that is delivered through a nasal, mask, or helmet interface and without the insertion of an invasive airway (such as an endotracheal tube or a tracheostomy)

**CPAP**
- Continuous positive airway pressure
- Delivers continuous pressure throughout respiratory cycle
- Supports oxygenation

**BIPAP**
- Bilevel positive airway pressure
- Delivers preset inspiratory and expiratory pressures
- Supports oxygenation and ventilation
- Should monitor Vt and for barotrauma (eg, pneumothorax or pneumomediastinum)

**HHFNC**
- Heated high-flow nasal cannula
- Delivers heated humidification, increasing tolerance to flows above those provided by traditional nasal cannula.
- Supports oxygenation and ventilation by washing out CO₂ from upper airway
- Delivered PEEP is variable and depends on set flow and patients’ ability to close mouth

**PREDICTORS OF SUCCESS**
- Ability to cooperate
- Good mask fit/minimal air leak
- Moderate hypercarbia (PaCO₂ 45-92)
- Clinical improvements within first 2 hours

**ABSOLUTE CONTRAINDICATIONS**
- Cardiac or respiratory arrest
- Inability to fit mask
- Patient intolerance
- Inability to protect airway or clear secretions

**RELATIVE CONTRAINDICATIONS**
- Hemodynamically unstable
- Rapidly progressing respiratory failure in full-code patient

**PHYSIOLOGY**

Preserves airway clearance and spontaneous breathing

Decreases need for sedation

Increases functional residual capacity and opens up atelectasis

Decreases LV afterload by decreasing transmural pressures

**INTERFACES**

Choice of the interface plays major role in determining success, failure, and complications due to degree of tolerance & air leak

Examples include nasal, facemask (oronasal & full), and helmet

Need to watch closely for skin breakdown & vomiting

**Nasal**

**Oronasal**

**Full Facemask**

**Helmet**

**DECREASES**

- Work of breathing by improving pulmonary compliance and counteracting intrinsic PEEP in patients with air trapping

- LV afterload by decreasing transmural pressures

- Bilevel support augments inspiratory tidal volumes (Vt) and improves ventilation

**INCREASES**

- Functional residual capacity and opens up atelectasis

- LV afterload by decreasing transmural pressures

- Decreases need for sedation

- Decreases LV afterload by decreasing transmural pressures

- Decreases work of breathing by improving pulmonary compliance and counteracting intrinsic PEEP in patients with air trapping

- Bilevel support augments inspiratory tidal volumes (Vt) and improves ventilation