

## PRONE POSITIONING FOR THE INTUBATED PATIENT

Guidelines for turning the intubated patient with ARDS/Covid-19 ARDS from supine to prone position in an attempt to increase pulmonary capillary perfusion and oxygenation (*MercyOne*, 2020).

### 1) Circumstances:

- a) Setting: ICU
- b) Benefits: improvement in pulmonary capillary perfusion and oxygenation in the intubated patient with ARDS/Covid-19 ARDS
- c) Contraindications: evaluate patient for the following absolute and relative contraindications.
  - **Absolute Contraindications** (*Nursing Center*, 2020, as cited in Gordon et al., 2019; Malholtra & Kacmarek, 2019):
    - Burns or open wounds on the anterior/ventral surface
    - Spinal instability and/or unstable fractures, particularly facial or pelvic
    - Massive hemoptysis
    - Deep vein thrombosis treated less than 48 hours
    - Mean arterial pressure (MAP) less than 65 mmHg; shock
    - Increased intracranial pressure
    - Pregnancy (2<sup>nd</sup>/3<sup>rd</sup> trimester)
  - **Relative Contraindications** (*Nursing Center*, 2020, as cited in Malholtra & Kacmarek, 2019):
    - Cardiac abnormalities: life threatening arrhythmias, newly placed pacemaker, ventricular assist device, balloon pumps
    - Thoracic or abdominal surgeries
    - First 24 hours following tracheostomy
    - Facial trauma
    - Recent ophthalmic surgery or increased intraocular pressure

### 2) Procedure

(*Nursing Center*, 2020, as cited in Dirkes et al., 2012; Gordon et al., 2019; Lucchini et al., 2020). Prior to placing any patient in the prone position:

- Inspect and confirm endotracheal tube (ETT) placement and verify it is secure.
- Ensure all intravenous lines and tubes are secure and have enough length for the rotation.
- Draw arterial blood gas (ABG), as ordered.
- Assess vital signs.
- Adequately sedate the patient, as prescribed.
- Gather pillows and/or foam pads to support head, neck, and shoulders. (Obtain Proning Kit)
- Stop feedings up to one hour prior to proning and empty ostomy bags, if present.
- Prepare ETT suctioning equipment.
- Determine which direction you will turn the patient (toward the ventilator).

- Assemble the team: five or six people will be needed based on the size of the patient:
  - One to two people at the head of the bed to monitor ETT (preferably Respiratory Therapist), intravenous lines, and tubes
  - Two people on both sides of the patient to turn
  - Provider on standby in case the patient requires re-intubation
- Preoxygenate the patient with 100% FiO<sub>2</sub>.
- Ensure continuous monitoring of pulse oximetry, mixed venous oxygenation saturation, end-tidal carbon dioxide, and invasive arterial blood pressure for the duration of procedure.

### 3) Step-by-step approach

(Nursing Center, 2020, as cited in Gordon et al., 2019):

- Pull patient to edge of bed furthest from the lateral position to be used while turning.
- Turn patient to lateral decubitus with dependent arm tucked under thorax.
  - Suction airways, as appropriate.
  - Remove ECG leads and patches from chest; reapply on back in mirror image position.
  - Place a new sheet on the side of the bed that the patient will face.
- Turn or logroll patient to prone position and use the sheet to reposition patient to center of bed.
- Ensure patient's face is positioned to one side (toward the ventilator).
- Confirm ETT is not kinked or migrated.
- Suction airways as appropriate.
- Support face, shoulder, and arms for patient comfort (*Nursing Center, 2020, as cited in Lucchini et al., 2020*).
  - Place the patient's head on a C-shaped foam pad to prevent facial pressure injuries.
  - Position limbs to prevent abnormal extension or flexion against shoulders and elbows; use pillows for additional support of hips, shoulders, and face.
  - Rolls may be placed under pelvis and chest in patients with poor neck flexibility, tracheostomy, or both.
- Auscultate chest to ensure proper ETT placement; adjust lines and drains; re-zero the transducer and verify ventilator settings.

### 4) Nursing Considerations

- Monitor sedation level and administer neuromuscular blockage, as prescribed.
  - Patient may require additional sedation to tolerate the prone position.
  - If patient continue to have ventilator desynchrony despite optimizing ventilator settings and sedation, consider a neuromuscular blocking agent.
- Adjust patient position to relieve pressure points, minimize pressure injuries and maximize secretion mobilization.

- Assess for pressure injury.
- Apply hydrocolloid dressing (Allevyn) to high risk areas; face, thorax, iliac crests, and tibial plateau (*Nursing Center, 2020, as cited in Lucchini et al., 2020*).
- Volume-controlled and pressure-controlled modes are typically delivered in the prone position.
- A positive patient response occurs when there is a sustained increase in PaO<sub>2</sub> by 10 mmHg or more stable FiO<sub>2</sub> or improvement in ventilator settings (*Nursing Center, 2020, as cited in Malholtra & Kacmarek, 2019*).
- Studies show that longer proning time (12-16 hours) has resulted in better outcomes (*Nursing Center, 2020, as cited in Lucchini et al., 2020*).
- Ensure proper nutrition is maintained and monitor for aspiration; tube feedings are most safely administered with the patient in supine position (*Nursing Center, 2020, as cited in Hudack, 2013*).
- Monitor for potential complications (*Nursing Center, 2020, as cited in Dirkes et al., 2012; Gordon et al., 2019*):
  - Increased secretions
  - Accidental removal of chest tube, central venous catheter, arterial line, thoracic or abdominal drains
  - Pressure injuries
  - Aspiration
  - Cardiac arrhythmias, cardiac arrest, hypotension
  - Transient oxygen desaturation
  - Pneumothorax
  - Facial edema
  - Vomiting

## REFERENCES

Prone positioning for the non-intubated patient. (2020, April 9). *MercyOne*  
 Prone positioning: mechanically ventilated patients. (2020, May). *Lippincott NursingCenter*.  
<http://www.nursingcenter.com>