COVID-19 has the potential to cause Adult Respiratory Distress Syndrome (ARDS), which is an acute lung condition in which there is inadequate oxygen supply due to fluid buildup in the lungs. Prone positioning can be successful in improving oxygenation with or without mechanical ventilation. The prone position places patients flat with their chests/face down, putting different bony prominences at risk for pressure injury. Best practice suggests maintaining prone positioning for between 12 to 20 consecutive hours per day, which poses challenges for pressure injury prevention by nursing staff.

Guidelines have been published for Prone Positioning of Non-intubated patients as well as for Mechanically Ventilated patients.

COVID-19 Manual Prone Positioning of mechanically Ventilated Patients

COVID-19 Prone Positioning of Non-Intubated Patients

Nursing care of patients in the prone position is challenging, as is the physical act of turning the patient from supine to prone. Prone positioning should be approached with advanced planning, teamwork and coordination.

Rationale for Prone Positioning

Turning the patient with ARDS from a supine to a prone position can increase pulmonary capillary perfusion and oxygenation. The physiologic changes (fluid shifting from the posterior lung, allowing undamaged alveoli to be filled with oxygenated blood) that occur when turning a patient into a prone position improve ventilation. Prone positioning expands the dependent lung areas. Expanding dependent lung areas opens collapsed alveoli, increasing ventilation capacity and improving oxygenation.

Work of breathing can also be reduced with prone positioning because it reduces the pressure on the lungs from the cardiac structures and abdominal organs. Reducing work of breathing saves vital energy that the patient can use for healing and recovery.

Contraindications: Determine if the risks of prone positioning are outweighed by the patient's need for improved oxygenation. See Guidelines for Manual Prone Positioning and Self-Prone Positioning referenced above for detailed contraindications to prone positioning.

Pressure Injury Prevention with Prone Positioning

Pre-Positioning Assessment and Injury Prevention

1. Apply soft silicone multilayer foam prophylactic dressings to bony prominences, chin, cheeks and forehead to assist in the avoidance of hospital acquired pressure injury.
2. Assess all pressure points prior to proning.
   i. Apply soft silicone multi-layered foam prophylactic dressings to pressure points (patella, pretibial areas, cheeks, etc.).
   ii. Apply thin foam dressing under medical devices.
iii. Avoid multiple layers of dressings or linen that increase pressure.
3. Choose correct size medical devices to fit the patient.
5. Avoid device placement over sites of prior or existing pressure injury.

Post-Positioning Assessment and Injury Prevention During Proning

1. Once positioning is achieved, check for uneven distribution of pressure and positioning of medical devices. Pay particular attention to breast region, knees, toes, penis, clavicles, ilieac crest and symphysis pubis.
2. Confirm that medical devices are not placed underneath patient.
3. Ensure pressure points are padded. (Pillows or blankets under shins to float feet, pillows under shoulders and head, pillows under pelvis to keep pressure off genitalia.)
4. Carefully place limbs, keeping in mind the goal of preventing extension and contraction of shoulders or elbows. Pillows can be strategically placed to provide additional support to the pelvis, shoulder, and face. AVOID placing pillows directly under abdomen.
5. **Assess skin integrity frequently** as these patients are at higher risk for pressure injuries, especially the face and the anterior chest wall.
   - To reduce this risk, use soft silicone multilayer foam prophylactic dressings on bony prominences, such as the forehead, chin, and shoulders.
   - Repositioning the head every hour and providing ocular and eyelid protection can help reduce skin breakdown.
   - For **Self-proned patients**: assist to turn and reposition the patient every 2 hours to redistribute pressure and reduce friction.
   - For **Manually proned patients**: assess skin integrity and perform micro-repositioning every 2 hours or as tolerated.
   - **Pressure Points**
     - Forehead
     - Chin
     - Cheeks
     - Nose
     - Clavicle – shoulders
     - Elbows
     - Chest – breasts
     - Genitalia – penis
     - Anterior pelvic bones (iliac crests, ischium, symphysis pubis)
     - Knees – patella
     - Dorsal feet, heels and toes
     - Under and around Medical Devices

6. Rotate arm position and head rotation every 2 hours to prevent hospital acquired pressure injury.
7. The patient's head should be turned toward the ventilator, never face down. Ensure Oral endotracheal tubing or securing devices are not creating pressure on patients cheeks or face.
8. Document all skin assessments and preventive measures


Resources:
4. National Pressure Injury Advisory Panel 2020