PRONATION THERAPY (MANUAL) – ICU

PURPOSE: To outline the nursing management of patients receiving manual pronation therapy.

SUPPORTIVE DATA: Pronation therapy is a supportive therapy to improve gas exchange and to prevent ventilator induced lung injury in patients who have acute respiratory distress syndrome (ARDS) with severe hyoxemia, by influencing distribution of ventilation and perfusion.

Patients with one or more of the following may benefit from this therapy:
- Diagnosis of severe ARDS
- Severe hypoxemia (e.g. O2 sat < 92% on FiO2 > 80%, PEEP >10 for at least 1 hour)
- Low tidal volume approach used for mechanical ventilation

Pronation therapy is absolutely contraindicated for the following:
- Unstable cervical, thoracic, lumbar, pelvic, skull or facial fractures
- Cervical or skeletal traction
- Uncontrolled intracranial pressure
- Intra-aortic balloon pump (IABP) therapy
- Extracorporeal Membrane Oxygenator therapy

Pronation therapy can be used with caution in the following:
- Recent sternotomy or burn
- Open abdomen
- Pregnancy
- Recent tracheal surgery/ new tracheostomy
- Massive hemoptysis
- Anterior chest tube with leak
- Shock
- Hemodynamic instability
- If need for CPR is expected to be imminent
- New pacemaker
- Uncontrolled cardiac arrhythmias

Complications may include:
- Agitation
- Disconnection/ dislodging/ kinking of tubes
- Skin/ pressure injuries
- Facial pressure injury
- Shoulder contractures
- Peripheral arm nerve injury
- Periorbital and conjunctival edema
- Eye pressure or injury

Patients receiving pronation therapy are especially susceptible to developing pressure injuries. It is very important to do thorough skin assessments in order to recognize and prevent pressure injuries.

Effectiveness may be noted if initiated within 24 hours of diagnosis of severe ARDS. Pronation therapy must be approved by the attending physician and must be ordered by a provider.

ASSESSMENT:
1. Ensure complete order for prone positioning. Order to include timeframe/schedule for patient to be in prone position.
2. Perform full head to toe assessment.
3. Perform a 90 degree turn trial to assess for patient's tolerance and response to position

change.

4. Assess the following immediately prior to initiation of prone positioning and then per Nursing Clinical Standards:
   - Vital signs including oxygen saturation
   - Level of consciousness
   - Richmond Agitation Sedation Scale (RASS)/ adequacy of sedation
   - Pain assessment/ adequacy of pain management
   - Respiratory assessment
   - Peak inspiratory pressure (PIP), if on volume cycled mode, or tidal volume, if on pressure cycled mode
   - Thorough skin assessment including all bony prominences and face
5. Assess for complications a minimum of every 4 hours:
   - Pressure injuries (face, ears, lips, chin, axilla, shoulders, sides, upper and lower extremities, iliac crest, genitals, knees and tips of toes are especially as risk).
   - Facial/ ocular edema
   - Lines, tubes and drain migration
   - Shoulder injury (e.g. grimacing when moving arms)

PREPARATION:

6. Turn off tube feeding 1 hour before proning and remove residual. Hold feeding until patient has been placed in prone position.
7. Change dressings as indicated.
8. Ensure endotracheal tube holder is changed to "tape style" if repositionable fastener (AnchorFast™) is in place.
9. Apply skin protectant/barrier to forehead nose and chin (e.g. Silicone Allevyn Foam)
10. Place hydrocolloid dressing over areas where shearing, friction, and pressure injuries are likely to occur (i.e. cheeks, chest, pelvis, elbows, and knees).
11. Consider applying fecal incontinent device (Flexi-seal™) or rectal bag and indwelling bladder catheter if indicated
12. Administer sedation and analgesic as needed and ordered.
13. Suction patient's airway, nose and mouth and perform mouth care.
14. Perform eye care.
15. Ensure all lines, tubes and drains are properly secured and have enough slack for turning.
16. Route lines above waist toward head (except chest tubes and other large bore tubes.)
17. Route lines below waist, chest tubes and large bore tubes (e.g. ECMO lines) towards feet, aligned with leg and extend to the foot of the bed.
18. Empty tubes, drains, and ostomy bags.
19. Disconnect any unecessary tube temporarily (e.g. feeding tubing from NGT).
20. Remove cardiac monitoring electrodes from chest and place on limbs for the turning procedure.

CHANGE TO PRONE POSITION:

21. Follow "Steps for Manual Prone Positioning: Turning to Prone Position" (addendum)
22. Place cardiac monitoring ECG leads on patient's back (white and green leads on patient's right, black and red leads on patient's left, just as with anterior placement).
23. Place absorbent pad under head.
24. Suction endotracheal tube, nose and mouth.

MAINTENANCE:

25. Ensure tongue is inside of mouth and provide mouthcare a minimum of every 2 hours.
26. Suction mouth and nose a minimum of every 2 hours.
27. Ensure eyes are closed, provide eye care a minimum of every 4 hours, and administer lubricant as ordered.
28. Ensure adequate sedation and pain control.
29. Reposition the patient's head every 2 hours
30. Position arms for comfort by either placing them aligned with the body or in a swimmer's position, one up and one down.

CHANGE TO SUPINE POSITION

31. Follow "Steps for Manual Prone Positioning" except do not use the last sheet and pillows, and so there is no need to adjust pillows.

DISCONTINUATION	32.	Consult with provider regarding discontinuation of prone positioning if: • FiO2 <60% with PEEP <8 cm H20 in prone supine position for at least 4 hours • Oxygenation is declining after 2-4 hours of proning • Patient condition worsened by the prone position
SAFETY:	33.	Ensure all lines, tubes and drains are secure and that there is enough slack before turning.
	34.	Ensure adequate number of staff is present while turning patient to prone or supine position, including a provider and a Respiratory Care Practitioner.
	35.	Ensure Respiratory Care Practitioner (RCP) is present for maintaining safety of the airway while turning.
	36.	Turn patient toward the ventilator when changing to prone position.
	37.	Return patient to supine position if patient condition decompensates (e.g. becomes hypotensive, desaturates).
REPORTABLE CONDITIONS:	38.	Notify provider of the following: • Deterioration in vital signs • Increasing respiratory distress • Significant change in respiratory assessment • ECG changes • Significant changes in ABGs • Occurrence of unrelieved skin pressure • Sustained agitation or pain • Need for discontinuation of pronation therapy
PATIENT/FAMILY TEACHING:	39.	Instruct on the purpose of pronation therapy.
ADDITIONAL STANDARDS:	40.	Implement the following as indicated: • Mechanical Ventilation • Pressure Ulcer Prevention and Management • Intravenous Sedation and Analgesia - ICU
DOCUMENTATION:	41.	Document pronation therapy in iView, Activities of Daily Living section, “Position”

Initial date approved:	Reviewed and approved by: Professional Practice Committee Nurse Executive Council Attending Staff Association Executive Committee	Revision Date:

References:

Malhotra, A., & Kacmarek, R. M. (2017). Prone ventilation for adult patients with acute respiratory distress syndrome. Retrieved from UptoDate.com

Vollman, K., Dickenson, S., & Powers, J. Pronation Therapy. (2017). In D. L. M. Wiegand (ed) AACN Procedure manual for high acuity, progressive and critical care (7th ed) St Louis: Elsevier.

Method of proning video :
https://www.bing.com/videos/search?q=prone+position+ards&&view=detail&mid=F7D1BA373A9FA8422059F7D1BA373A9FA8422059&&FORM=VRDGAR&ru=%2Fvideos%2Fsearch%3Fq%3Dprone%2Bposition%2Bards%26FORM%3DHDRSC3

Steps for Manual Prone Positioning

- Place patient on FiO2 1.0 (100%)
- Remove top linen, gown, and pillows
- Tuck patient's hands under hips
- Place flat sheet on top of patient and smooth
- Place 2 pillows under each of the following:
    - Chest
    - Hips
    - Shins
- Place another sheet on top of the pillows
- Untuck bottom sheet; roll all 3 sheets together on each side
    - On ventilator side: roll under
    - On other side: roll up
    - Make sheets as snug to the body as possible
- The primary nurse gives direction and does countdown to moving the patient:
    - Move patient laterally away from the ventilator
    - Place ECG leads on patient's back
    - While maintaining good grip on the roll with staff members hands almost touching each other, turn patient on side toward the ventilator (ventilator side staff hands are now under the patient and patient is leaning against them)
    - All staff reposition hands to make sure they have a firm grip on the bedding (wait for all staff to be ready)
    - Move patient prone
- Unroll sheets
- Assess if patient is in neutral, central position and shift if necessary
- Assess for proper alignment of pillows. 6 staff lift up patient while one staff protects airway and another moves pillows to proper position
- Position head and arms for comfort, with one arm in swimmer's position alternately, and support with a pillow as necessary. Place patient in reverse Trendelenburg ensuring ETT is protected
- Return to ordered FiO2 setting as tolerated

Initial date approved: 7/20	Reviewed and approved by: Professional Practice Committee Nurse Executive Council Attending Staff Association Executive Committee	Revision Date: