



- Title: Guidelines for use of RotoProne® Bed
- Responsibility: Registered Nurses (RNs) with assistance of Respiratory Therapists (RTs), and physicians.
- Purpose: To ensure the consistent, safe provision of care for patients requiring prone positioning with RotoProne®.
- Equipment:
1. RotoProne® Bed
 2. Proning Packs
- Specific Notes:
1. A physician's order is required to initiate prone positioning via the RotoProne® bed.
 2. Patients with one or more of the following may benefit from prone therapy:
 - ARDS
 - PaO₂/FiO₂ ratio < 300
 - PEEP > 10cm H₂O
 - FiO₂ > 60%
 - In need of measures for mobilization of secretions
 - Other conditions or procedures warranted by clinical manifestations as specified by medical staff.
 3. Absolute contraindications to RotoProne® therapy include:
 - Unstable facial, skull, cervical, thoracolumbar, or pelvic fractures
 - Skeletal or cervical traction
 - Uncontrolled ICP
 - Pt weight < 40kg or > 160kg
 - Pt height > 200cm
 4. Relative contraindications to RotoProne® therapy include:
 - Inability to tolerate prone position
 - Increased ICP
 - Hemodynamic instability
 5. The patient must always be proned toward the ventilator.
 6. At a minimum, skin assessment is completed every four hours.
 7. Two individuals must be present whenever the patient is being rotated from supine to prone or prone to supine positions.
- Key Points:
1. Assessment and documentation of patient's level of consciousness must be done prior to prone positioning.
 2. Sedate patient to Riker Sedation Agitation Scale score <3 for this intervention.
 3. Prior assessment must be undertaken to assess whether the critically ill, hemodynamically unstable patient can tolerate a changing or prone position.
 4. A trial of 90° degrees lateral positioning should be performed prior to proning to assess patient's tolerance and response.
 5. Furthermore, additional trials (daily) should be periodically undertaken to assess patient's tolerance to 90° degrees lateral positioning for assessment of improvement or decline in clinical status with RotoProne® therapy.
 6. A basis for positioning schedule is whether the patient is able to sustain improvement in oxygenation (PaO₂/FiO₂) while proned.
 7. A patient-specific proning schedule may include the following:
 - Assessment of patient's tolerance to proning
 - Length of time to be proned and supine
 - Degrees of rotation while prone and supine
 - Pause times while being rotated for both prone and supine positions.
 8. If patient is decompensating while proned or simply unable to maintain improvement, he/she should be returned to the supine and/or lateral position. Subsequently, the RotoProne® bed is discontinued when the patient's clinical status is unresponsive to the position change.

Procedure

Point of Emphasis

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| <ol style="list-style-type: none"> 1. Explain procedure to the patient and family with review of potential complications. 2. Wash hands and don nonsterile gloves. 3. Assess and document the patient’s level of consciousness (LOC) prior to the use of the prone position. 4. Sedate patient to maintain SAS sedation score < 3. | <p>Review of education will help alleviate anxiety, fears, and frustrations.</p> <p>Baseline LOC allows post evaluation of LOC to relate patient’s tolerance of procedure and enables further planning for sedation needs.</p> <p>Due to increased fears and medical instability, higher levels of sedation is recommended and possibly paralyzing agents to prevent potential self injury.</p> |
| <ol style="list-style-type: none"> 5. Transfer patient from bed to RotoProne® bed. | |

Preparing patient for proning (specific preparation)

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| <ol style="list-style-type: none"> 6. Place patient’s head on Main Pack within Head Support and tighten Head Support adjustment knob to close Head Support around patient’s head without compressing the pack foam. (Refer to Rotoprone Therapy System Manual for specifics.) 7. Install Leg Abductor pack between patient’s legs. Pull rings on Post Bracket Pins to release and lock pins. 8. Feed lower-body invasive lines and tubes through the U-slot at the top of the Leg Abductor Pack. Ensure all lines have enough slack to avoid pulling or tangling during rotation. Groin lines, chest tubes, rectal tubes, and the foley are placed through the circular opening at the foot of the bed. Use the accessory rack to hang foley or rectal tube. 9. Adjust foot support board to maintain the patient’s foot at a 90-degree angle. The foot board is removed every two hours. 10. Install Side Support pack into side pack blocks and position in between Foot-end supports. Packs may be switched from side to side to accommodate narrow or wide body types. 11. Turn pack adjuster crank to position packs snugly against patient’s side. Packs must be secure enough that patient does not slide side-to-side when rotated. 12. Insert patient’s arms into Arm Supports 13. All pressure monitoring, ECG, as well as IV tubings that are in the chest and/or arms are placed in the tube management system located at the head of the bed. 14. The ventilator tubing is placed in the tube management system holder farthest from the vent. | <p>The Head Support enables proper anatomical positioning of the spine. Head support should be applied appropriately, to prevent cervical related injuries and integumentary integrity.</p> <p>Maintains skin integrity and proper anatomical positioning with securing of the lower extremities.</p> <p>Protects against accidental removal or dislodgement with position changes.</p> <p>Maintains skin integrity and proper anatomical positioning of the lower extremities. Also prevent neurological sequelae of immobility.</p> <p>Protects against accidental removal or dislodgement with position changes.</p> <p>Protects against accidental removal or dislodgement with position changes.</p> |
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<u>Procedure</u>	<u>Point of Emphasis</u>
15. Install abdominal sling by placing sling on top of patient and feeding straps through slots on top of side support pack. Fold straps over and fasten.	
16. Unfasten superficial proning packs and release from under patient frame.	Pay particular attention to assure securing of proning packs upon release.
17. Install lower proning packs by positioning packs across patient's shins.	
18. Install upper proning packs by positioning packs across patient's lower abdomen or hips.	
19. Install pelvic proning packs by positioning packs across patient's lower abdomen or hips.	
20. Install Chest Packs and Chest Pack accessory by placing it over the patient's shoulders.	
21. Position the Face Pack on the patient's face after appropriately adjusting Face Pack foam for fit. The foam should sit across the patient's forehead.	The Face Pack enables proper anatomical positioning and security of the head and cervical spine. Care should be maintained in placement regarding skin integrity.
22. Feed Face Pack Straps into Head Support assembly.	Stabilized Face Pack with Head Support to ensure immobilization of head and cervical spine.
23. Once all Proning Packs are in place, ensure one staff member is positioned at the head of the bed and one is positioned at the foot of the bed prior to beginning rotation. The person at the head of the bed is responsible for checking the stability of the endotracheal tube and IV lines. The person at the foot of the bed is responsible for manipulating the bed settings.	
24. Remove the lock pin and the computerized screen will say "prone therapy setting."	
25. Choose the prone option and ensure that the bed will turn clockwise (towards the ventilator).	
26. The screen will then prompt you to check the following: tubing, airway, head support, arm slings, and abdominal support. Proceed with assessment of the above mentioned.	Protects against accidental removal or dislodgement with position changes, along with ensuring all safety and security devices in functional ready position.
27. Screen will change with a prompt to lower bed and level to zero degrees. This is done by pressing and holding the button until the bed is in proper position. This can be done from the screen at the foot of the bed or from the hand controls at the head of the bed.	
28. Utilizing the hand control or screen press the supine/prone button to prone the patient. The bed will only turn while the button is being depressed. If a problem occurs, releasing the button will stop the proning.	

Procedure

Point of Emphasis

29. Once the patient is prone the screen will automatically change to the rotation screen.
30. The degree of rotation and pause times will be determined by the physician and/or advanced practice nurse. Begin rotation according to the specified orders.
31. Degrees of rotation will gradually be increased throughout RotoProne® therapy cycle. One must pay particular attention to all lines, tubes, the airway, and vital signs.

Returning to Supine Position:

1. Suction endotracheal tube (ETT) and empty any water from ventilator tubing prior to returning patient to supine position.
2. Assess that all IV lines, drainage tubes and catheters have enough slack to safely turn the patient. Ensure that ventilator tubing has remained in the tube management system.
3. One staff member is positioned at the head of the bed and one is positioned at the foot of the bed prior to returning the patient to supine position.
4. Use the Prone/Supine button to access the supine settings.
5. Press the Rotate and Lower button to move the patient surface to zero degrees and the lowest height.
6. The screen will change to the Checklist screen to ensure the patient is secure. Follow the prompts and check tubing, airway and head support.
7. Press and hold the supine button until the patient is back in the supine position.
8. Once the patient is in the supine position, remove the Face Pack and the proning packs. Store proning packs under the bed.
9. The rotation screen will appear. Follow the prompts to check airway, check tubing, and check head support.
10. The degree of rotation and pause times will be determined by the physician and/or advanced practice nurse. Begin rotation according to the specified orders.
11. Degrees of rotation will gradually be increased with the RotoProne® therapy cycle. One must pay particular attention to all lines, tubes, the airway, and vital signs.
12. Various RotoProne® packs and proning packs should be cleaned with saniwipes or cleaned with soap and water daily.

Prevent aspiration/microaspiration from increased secretion produced while prone.

Protects against accidental removal or dislodgement with position changes.

Protects against accidental removal or dislodgement with position changes.

Nursing assessment vital in terms of evaluating how patient tolerating and/or benefiting from rotational prone therapy along with skin integrity.

Care of the patient receiving Rotoprone therapy:

<u>Procedure</u>	<u>Point of Emphasis</u>
<ol style="list-style-type: none"> 1. Obtain and Document a Baseline Assessment <ol style="list-style-type: none"> a. Vital Signs. b. Hemodynamic status and trend (BP, HR, Central Pressures). c. Oxygenation and Ventilatory Status (Mode of Ventilation, Rate, FiO₂, PIP, PP, SaO₂. ETCO₂ and ABG's as indicated). d. Neurological Status (LOC, mental status, pupillary response and movement of extremities). e. General Skin Integrity Assessment. f. Comfort and/or pain status. If patient conscious, implement 0-10 numerical scale or Wong Baker scale. If unconscious, utilize and assess for changes in vital signs, tearing, grimacing, diaphoresis, and/or the FLACC indicator. g. Ensuring security of all invasive lines and tubes. Additionally pay specific attention to position and skin integrity at site. 	<p>Imperative means of nursing care to ensure adequate patient safety. Assure sufficient patient and family education has been undertaken regarding basis for and management of therapy.</p>
<ol style="list-style-type: none"> 2. Provide Sedation and Analgesia pharmacotherapy as ordered. Sedate to SAS < 3 utilizing the Riker Sedation-Agitation Scale. Patients may require increased levels of sedation to support compliance while prone. 	<p>To assure adequate sedation and analgesia with this intensive therapy and to promote therapeutic compliance. Document interventions and patient responses promptly.</p>
<ol style="list-style-type: none"> 3. Provide Neuromuscular Blockade pharmacotherapy as ordered. See UTMC Standard of Care S1A and S1B. 	<p>Patients receiving NMBA therapy require specific care to minimize risk and potential complication associated with this therapy.</p>
<ol style="list-style-type: none"> 4. Assessment Parameters during RotoProne® therapy: <ol style="list-style-type: none"> a. Obtain Vital Signs and Urine Output every hour and prn. b. Hemodynamic parameters per protocol. Ensure accuracy of transduced pressure monitoring lines. c. Oxygenation and Ventilatory Status in conjunction with RT per protocol routine and prn. May require increased frequency of monitoring specific to compliance, PIP, SaO₂ (hourly at minimum), and secretion management. d. Suction and Secretion Management every 2-4 hours. Oral care every 2 hours additionally. e. Neurological assessment every four hours at minimum (LOC, mental status, pupillary response and movement of extremities). If patient under neuromuscular blockade follow see UTMC Standard of Care S1a and S1b. f. Adequacy of sedation and analgesia every hour. Sedate to SAS<3 and monitor for changes in vital signs, grimacing, tearing, and FLACC scale if 	<p>To ensure tolerance to therapy and appropriate monitoring in the critically ill patient.</p> <ol style="list-style-type: none"> a. Document all assessment parameters and patient response. b. Perfusion is essential to maintaining organ function. c. Adequate oxygenation and ventilation is vital in maintaining sufficient organ and tissue perfusion. d. Deep tracheal and pharyngeal suctioning should be undertaken to decrease risk of microaspiration, as well as removing those secretions to minimize risk for hypoxemia and infections such as ventilator associated pneumonia (VAP).

<u>Procedure</u>	<u>Point of Emphasis</u>
<p>indicated.</p> <p>g. Laboratory data as ordered (serum electrolytes, ABG's, etc.)</p> <p>h. Hold any tube feeds 45-60 minutes prior to proning pt. Check residual volume and intervene if indicated. Patient may resume tube feeding once prone. It is highly recommended to place the bed in reverse trendelenburg position if this is undertaken.</p> <p>i. Thorough skin assessment every four hours at minimum and prn. Carefully inspect pressure points and bony prominences. Be aware of dependent edema with proning (i.e., facial).</p>	
<p>5. Further nursing interventions in caring for the patient receiving RotoProne® therapy.</p> <p>a. Suction and secretion management every 2-4 hours and prn. Oral care every two hours, as well.</p> <p>b. Administer sedation and analgesia per physician orders with assurance of adequate pharmacotherapy.</p> <p>c. If patient is under neuromuscular blockade please refer to UTMC Standard of Care S1a and S1b.</p> <p>d. The patient should never be left in the same position for over two hours. Reposition every two hours in conjunction with skin assessment and intervention if indicated. Consider reverse trendelenberg positioning also, especially if feeding if continued while proning.</p> <p>e. Maintain skin hygiene. Oral Care and Skin Care every two hours, along with daily bathing.</p> <p>f. Continually assure adequate clearance, security, and position of all invasive lines, tubes (ie. ETT) and tubing.</p> <p>g. Clean proning packs and therapy packs daily (at 0200) with saniwipes or soap/water. Additionally, Face Packs should be changed every 72 hours and prn if they become saturated.</p> <p>h. Reorient the patient every one hour. Provide education as indicated to patient and family while explaining all procedures and nursing care.</p>	<p>Document all interventions performed, as well as the patient response.</p>
<p>6. Documentation.</p> <p>a. Document in the medical record the therapy/treatments performed</p> <p>b. The patient's response to therapies</p> <p>c. Any adverse reactions noted</p> <p>d. Care completed</p> <p>e. Family/patient education provided.</p>	

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Page 7

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References: Arasi, L. (et al). Automated prone positioning and axial rotation in critically ill, nontrauma patients with acute respiratory distress syndrome (ARDS). *Journal of Intensive Care Nursing*. 2010. Vol 25-2; 121-25.

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