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PURPOSE: Prone positioning is a therapeutic maneuver to improve oxygenation by reducing lung ventilation/perfusion mismatch, promote recruitment of non-aerated lung regions to optimize ventilation.

SCOPE: ICU

ASSOCIATED DOCUMENTS & PROCEDURES:

- EPM – Patient Positioning: Supine or Prone;
- Proning the Intubated Patient SOP

DEFINITIONS:

- NIV: Non-invasive ventilation; Bipap or Cpap

PROCEDURE: Awake Prone Positioning

INDICATIONS: Hypoxic respiratory compromise with increasing O_2 requirements (increasing O_2 needs to maintain $SpO_2 \geq 90\%$) or increased work of breathing

INCLUSION CRITERIA:

- Appropriate mentation; Preferably alert and cooperative; May proceed if patient lightly sedated with appropriate pharmacologic agent as ordered by provider
- Able to move independently or with minimum assistance; May proceed if patient moves with 2 or more assistance
- Able to communicate distress, discomfort, or feeling of short of breath
- Hemodynamically stable: HR 50-120; SBP 90-180; MAP > 65; No new cardiac arrhythmia

EXCLUSION CRITERIA:

- Pregnancy
- Massive hemoptysis
- Intracranial pressure >30mmHg, cerebral perfusion pressure <60mmHg or conditions with concerns for increasing ICP (intra-cranial hemorrhage)
- Tracheal surgery or sternotomy during the previous 15 days
- Recent abdominal surgery during the previous 15 days
- Serious facial trauma or facial surgery during the previous 15 days
- Cardiac pacemaker inserted in the last 48 hours
- Fractures: femur, cervical, thoracic, pelvic, facial or unstable spine
- Limited neck ROM
- Wounds requiring frequent assessments that would be inhibited by position
- Hemodynamic instability: MAP < 65mmHg (May proceed if patient on vasoactive medications to keep MAP > 65mmHg)
- Frequent ventricular arrhythmias
- End of life care/considerations
- Chronic respiratory failure on home O_2 or home BIPAP/CPAP
- Extreme obesity > 135kg
- Deep venous thrombosis treated less than 48 hours
- Chest tube
- Restraints or patient combative
- Inability to tolerate position (If patient states or deemed intolerant by healthcare provider/nursing staff)
- Relative contraindication:
  - Recent nausea/vomiting
  - Severe reflux; High risk for aspiration
  - Delirium; Confusion

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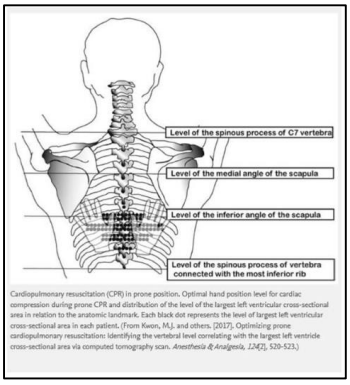
SPECIAL CONSIDERATIONS (Clarify with provider):

- Continuous tube feedings; consider post-pyloric feeding tube and gastric tube for to keep stomach empty
- Avoid repositioning to prone position after meal/large food consumption (Wait 30minutes prior to proning)
- CPR in Prone Position; ***Temporarily until sufficient staff are available to reposition to supine position***:
  - Compressions can be delivered on thoracic spine
  - Same rate and force as during supine position
  - Hard surface should be under patient to provide sternal counter pressure
- Sedation for positioning: May consider using low-dose precedex 0.4-0.7 mcg/kg/hr
- Patient on NIV: May require additional supportive devices to prevent pressure injuries and for comfort



Cardiopulmonary resuscitation (CPR) in prone position. Optimal hand position level for cardiac compression during prone CPR and distribution of the level of the largest left ventricular cross-sectional area in relation to the anatomic landmark. Each black dot represents the level of largest left ventricular cross-sectional area in each patient. (From Kwon, M.J. and others. [2017]. Optimizing prone cardiopulmonary resuscitation: Identifying the vertebral level correlating with the largest left ventricle cross-sectional area via computed tomography scan. *Anesthesia & Analgesia, 124*[2], 520-523.)

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5852913/

SUPPLIES:

- Continuous pulse oximetry, suction equipment, and/or supplemental oxygen or NIV (if clinically indicated)
- Continuous telemetry; Additional ECG leads to be place on back when patient in pone position for continuous monitoring (if clinically indicated)
- Supportive devices for pressure injury prevention (patient dependent)
  - Pillows
  - Wedges: Regular or Bariatric available
  - Glide sheets: Regular or Bariatric available
  - Maxi slides
    - MaxiTube Flites 30" (preferred)
    - MaxiSlide Flites 45"
  - Head Positioners
    - Foam head positioners
    - Z-Flow pillow

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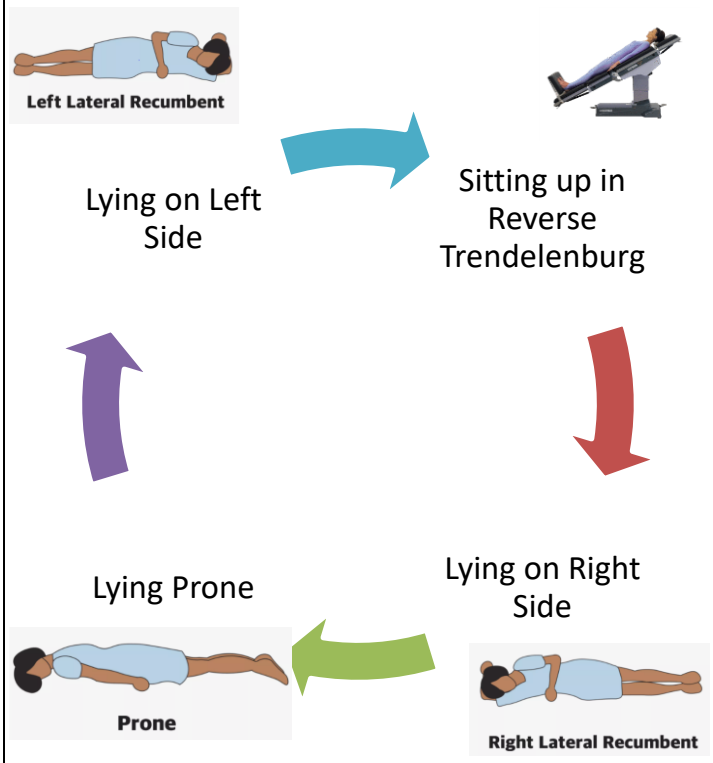
CONSIDERATIONS FOR DISCONTINUING PRONE THERAPY:

- Pneumothorax identified or suspected
- SBP <60mmHg x5 minutes
- Cardiac arrest
- Urgent need for transportation arises
- Inability to drain patient's bladder after troubleshooting
- End of life decision made
- Patient requires dialysis
- Patient develops massive hemoptysis

Patient Positioning:

For 30 minutes – 2 hours: Reverse Trendelenburg 35-45°
For 30 minutes – 2 hours: lying laterally on right side
For 30 minutes – 2 hours: lying on your belly
For 30 minutes – 2 hours: lying laterally on left side



https://gomerblog.com/2014/01/reverse-trendelenburg/
https://www.thoughtco.com/anatomical-position-definitions-illustrations-4175376

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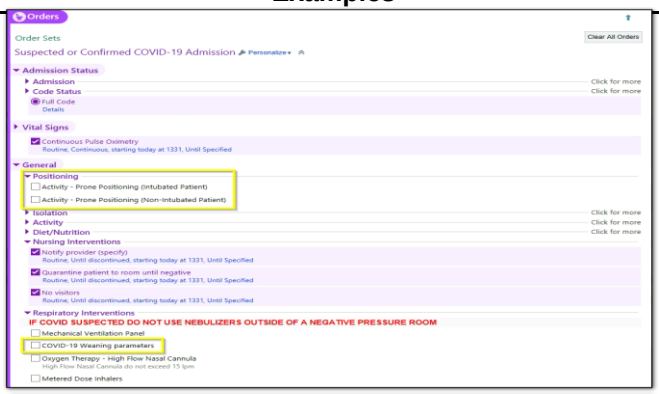
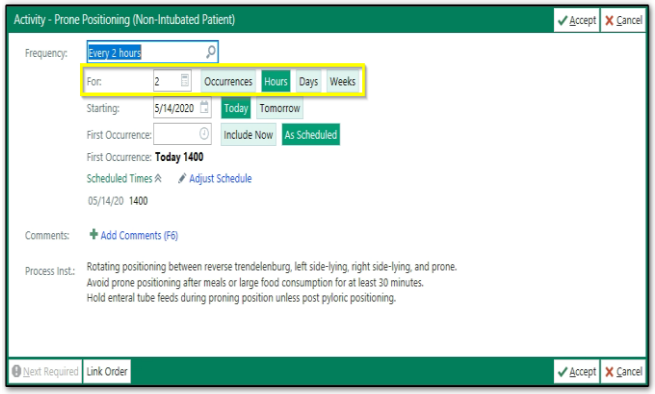
	Activity / Task	Examples
1	**Step 1: Provider order: Obtain and verify**	 
2	**Step 2: Gather supplies**	
3	**Step 3: Patient education** • Benefits of prone position • Importance of calling for assistance if experiencing increased shortness of breath • Returning to face up position if experiencing shortness of breath or discomfort • To minimize interruptions during prone positioning have the patient use the bathroom, call bell within reach, phone or other devices within view, and utilize music or television as a distraction • Review anticipated turn schedule with patient	

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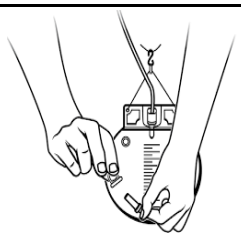
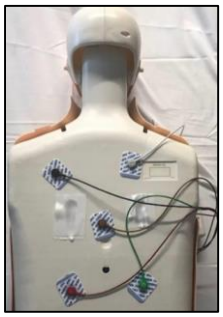
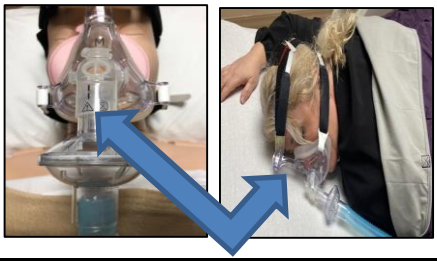
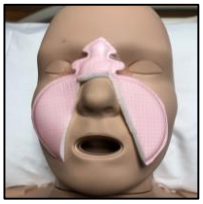
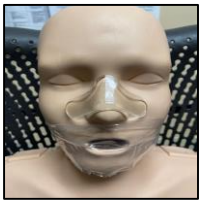
	Activity / Task	Examples
4	**Step 4: Safety** • Avoid prone positioning immediately after food consumption • Ensure patient has no contraindications as listed above or as deemed by provider • Assure adequate number of staff for assistance; 2 if laterally; 3-4 if prone position • Ensure bed is flat and locked • Empty drains if applicable; Have patient EMPTY BLADDER • Assure suction is set-up and ready to use if necessary • Determine direction of turn and ensure support devices are well-secured (Ex. IV access, urinary catheter) • Remind patient to notify of any discomfort or distress if able • Ensure monitoring devices are in appropriate location; reposition ECG leads to back if in prone position • If the patient cannot communicate, avoid any type of arm extension that might result in a brachial plexus injury • If patient on NIV: assure exhalation port of filter between circuit and mask is always facing up toward the head. • If patient is on NIV: use preventative dressing and perform frequent assessment of mask pressure points	  
		
		Exhalation Port 
		   

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Activity / Task	Examples
Lateral Positioning 1. Move patient to center of bed and turn to lateral side lying position 2. Position supportive devices; AVOID placing pillows directly in front or under abdomen; ensure pressure points are padded and elevated 3. Position arm side lying above the head and other arm across chest/abdomen	   

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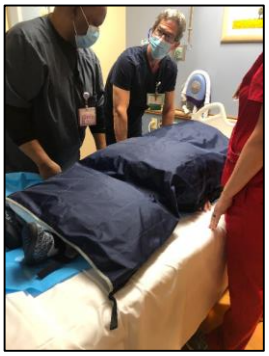
6 **Step by Step for Prone Positioning**

1. During repositioning: Assess O_2 saturation and cardiac rhythm continuously
2. Gather supplies
3. Consider exactly how patient's head, neck, and shoulder girdle will be supported after turned prone
4. Prepare all intravenous tubing and other devices for repositioning; Assure sufficient tubing length; Reposition intravenous tubing toward the patient's head, on the opposite side of the bed Turning procedure
5. Relocate drainage bags on opposite side of the bed
6. Place one (or more) people on both sides of the bed (to be responsible for the turning processes) and another at the head of the bed (to assure the lines and tubes do not become dislodged or kinked).
7. Place supportive devices:
    a. Position 3 pillows: one on chest; one on pelvis; one on shins
    b. Cover with absorbent pad if indicated
    c. Place glide sheet over patient forming a "burrito" with glide sheet on bottom (If unable to securely roll up bottom and top glide sheet closely to patient, use bariatric glide sheet)
    d. Place MaxiTube (or MaxiSlide) under patient
8. Roll the long edges of top and bottom glide sheets tightly together close to the patient forming a swaddle.
9. Person at head bead will count down to begin turn.
10. Pull the patient to the edge of the bed furthest from whichever lateral decubitus position will be used while turning.
11. Turn the patient to the lateral decubitus position with the dependent arm tucked slightly under the thorax. As the turning progresses the nondependent arm can be raised in a cocked position over the patient's head. Alternatively, the turn can progress using a log-rolling procedure.
12. Continue turning to the prone position.
13. Reposition in the center of the bed using the new draw/glide sheet.
14. Turn his/her face to one side; Assure airway is clear and patent; If on NIV, assure tubing is not kinked and exhalation valve is up
15. Support the face and shoulders appropriately avoiding any contact of the supporting padding with the orbits or the eyes.
16. Position the arms for patient comfort; preferably in swimmers position if patient tolerates.



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Activity / Task	Examples
17. Reposition pillows to avoid devices directly under abdomen but to support pressure areas (to maximize respiratory effort) 18. Adjust all tubing and reassess connections and function. 19. Reattach ECG patches and leads to the back. 20. Tilt the patient into reverse Trendelenburg; can decrease facial edema. 21. Reposition head from side to side and alternate arms in swimming position every 15-30mins for patient comfort. **Returning to Supine Position** 1. Repeat same process with the following considerations: a. Swaddle patient in same manner b. Assure the head is facing toward the direction of the bed you are sliding the patient. c. Replace maxi slide under sheets d. Turn to supine position in same manner as above	

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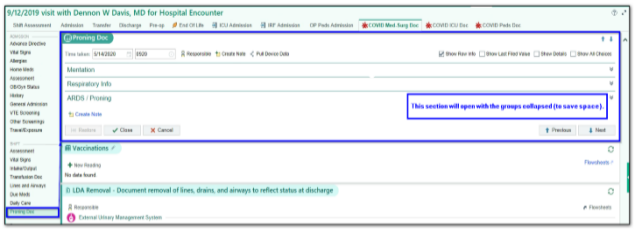
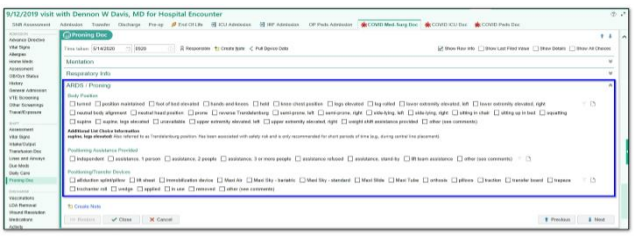
	Activity / Task	Examples

8	**Assessment after repositioning:**
	• Assess patient's response at least every 15minutes X2 and then at least every hour thereafter
	  ○ Respiratory status: SpO_2, $ETCO_2$ (if indicated), oxygen device, respiratory rate, and dyspnea.
	  ○ If patient experiencing any trouble breathing or is not tolerating per discontinuation considerations, assist back to supine position and raise HOB
	  ○ BP, HR, cardiac rhythm
	• Assess for pain and/or discomfort
	• Assess pressure areas to avoid skin breakdown; may use protective devices to avoid device-related pressure injuries	

9	**Documentation**
	• Vital signs
	• Respiratory status
	  ○ O_2 delivery method and amount
	  ○ RR
	  ○ SpO_2
	• Body Position: Left side; Right side; Prone; Reverse Trendelenburg
	• Positioning Assistance
	• Positioning/Transfer devices:
	• Mentation
	• Pain
	• Skin integrity
	• Patient toleration of repositioning
		
		
		 
		
		 
		
		 

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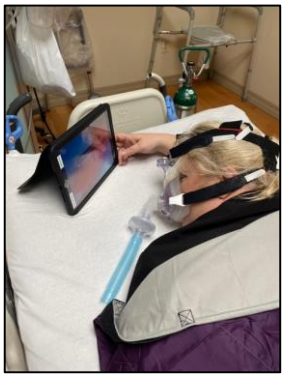
	Activity / Task	Examples
10	**Other considerations** • Reposition personal items for easy availability during position changes as much possible • Communication boards • Choice of music • Tablets or cell phone near patients • Hearing aids or glasses • Additional comfort strategies • Call light in reach	

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Figure A: Dayshift Sample Turn Schedule

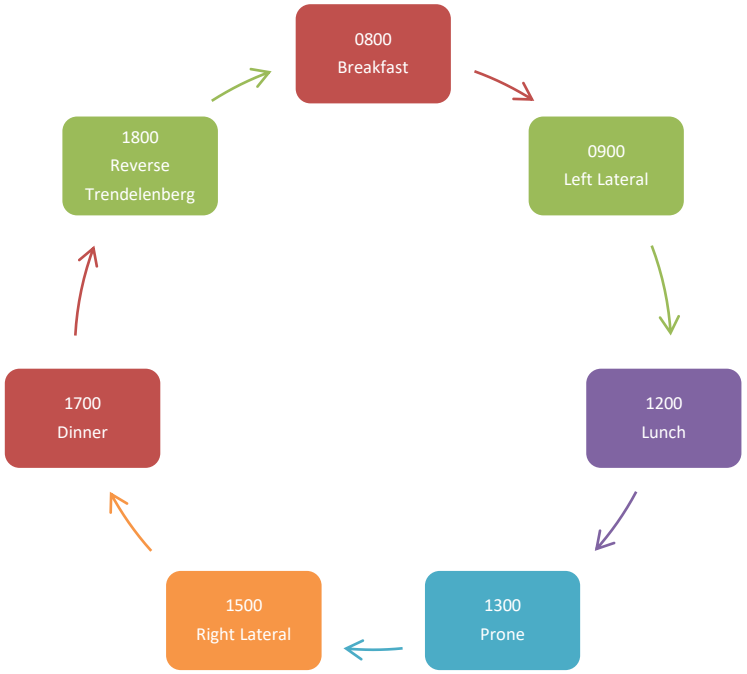
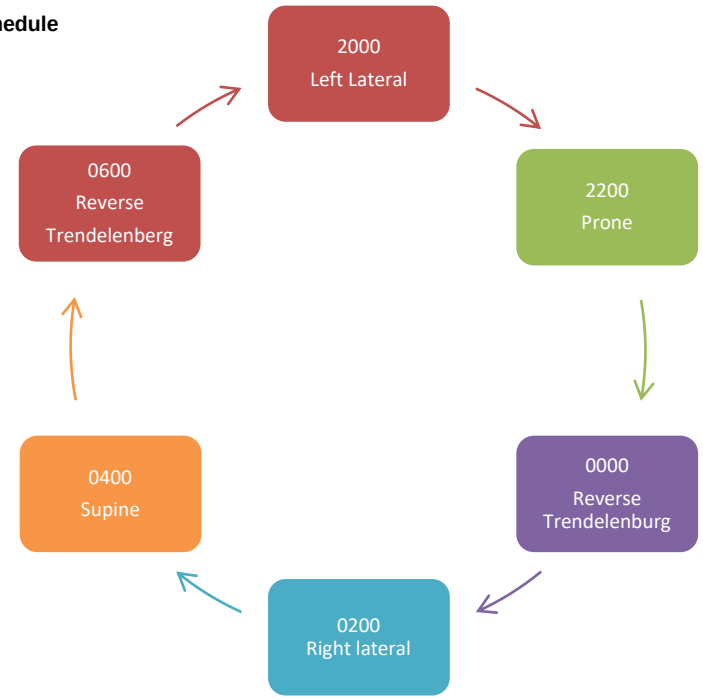


Figure B: Nightshift Sample Turn Schedule



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