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**MASSACHUSETTS
GENERAL HOSPITAL**

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Massachusetts General Hospital
Prone Positioning Guideline

Designated Clinical Areas:

All areas caring for critically ill ARDS patients

Introduction/Purpose:

Many ICU patients have acute respiratory distress syndrome (ARDS) requiring advanced therapies to improve oxygenation. Most interventions and therapies do not improve mortality or better long-term patient outcomes. Prone positioning of ARDS patients leads to improved oxygenation and has recently been found to decrease mortality.^{1,2} This document serves to inform our ICU clinicians about prone positioning of critically ill ARDS patients.

Contraindications:

- Spinal instability
- Facial or pelvic fractures
- Open chest or unstable chest wall
- Uncontrolled intracranial pressure
- *Relative contraindications:* Severe hemodynamic instability

Equipment:

- Minimal of 5 staff members to safely position the patient
- At least 5-10 foam dressings for padding
- 3 Waffle cushions: 2 for upper extremities and 1 for head
- 2 flat sheets
- EKG stickers
- Ambu with mask
- Nova Plus Jellies pillow (blue gel pad) for side of face/nose
- Additional off-loading may be needed around nose to protect from ETT/NGT, use: (1) Allevyn foam strip to cover nares/tip of nose, and (1) Allevyn foam strip to cover bridge of nose

Link to Video:

- https://www.youtube.com/watch?v=E_6jT9R7WJs or search “Prone Positioning in Severe Acute Respiratory Distress Syndrome” NEJM

Nursing Actions/Special Considerations

<u>Nursing Action</u>	<u>Special Considerations</u>
<p><u>Assessment</u></p> <ol style="list-style-type: none"> 1. Assess hemodynamic status 2. Assess mental status. 3. Assess size and weight to determine the ability to turn within the bed frame. 4. Evaluate for absolute/relative contraindications (noted above). <p><u>Preparation</u></p> <ol style="list-style-type: none"> 1. Ensure order for prone positioning. 2. Discuss with team use of bolus dose of a paralytic to ensure safety of staff and patient during the procedure 3. There is no requirement for ongoing paralytic once patient is in prone position. 4. If possible, turn off enteral feeding 1 hour prior to proning. 5. Disconnect enteral feeding 6. Keep 5 leads on anterior chest wall and remove remaining V2-V6 leads. 7. Perform eye care (lubrication and taping of the eyelids horizontally closed). 8. Protect and secure the airway. Note the position of the tube. 9. Empty ileostomy/colostomy bags. 10. Secure tubes and catheters. Disconnect nonessential tubing. 	<p>The healthcare team should effectively manage agitation to provide a safe proning environment. Ensure whether a 180-degree turn may be safely accomplished within the confines of the bedframe.</p> <p>Reduces the risk of aspiration during turn.</p> <p>Limb leads may be placed lateral on all limbs so as not to require removal with each turn</p> <p>Frequently assess commercial endotracheal securement device during prone positioning because of the possibility of skin breakdown and potential of adhesive breakdown due to salivary drainage.</p>

<p>11. Apply 3M Cavilon moisture barrier to patient's face.</p> <p>12. Place foam dressing to upper chest/clavicles, shoulders, pelvis, elbows, knees, forehead, and tops of feet. Place Novaplus Jellies gel pad under side of face/nose.</p> <p>13. Disconnect arterial line from the pressure bag. Cap the arterial line at the t-piece.</p>	<p>Will protect from drainage of oral secretions.</p> <p>The foam dressing will reduce the risk of friction, shear, and pressure (Refer to appendix A).</p>
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Method for turning the patient in the prone position (five-step method)

1. Start with ensuring there is flat sheet under the patient.
2. Position the staff at the sides of the bed and the respiratory therapist at the head of the bed.
3. Maximally inflate the bed.
4. Pull patient using the underlying flat sheet while in the supine position to the side of the bed away from the ventilator.

5. Cross the patient's outer leg over the inner leg at the ankle
6. Keep both patients arms straight against the body
7. Tuck a new flat sheet, and the arm closest to the ventilator with palm facing up, underneath the patient to the side you are turning. The *new* flat sheet will pull through as you are turning the patient.

At least 5 staff members may be required to turn the patient.

The person on the side of the bed closest to the patient maintains body contact with the bed at all times to serve as a side rail. The RT at the head of the bed is responsible for securing the ETT, ventilator tubing.



In order to turn the patient in the direction of the ventilator.

Chest and/or pelvic support can be done by placing a pillow at the abdomen before completing the turn.



New flat sheet being tucked

Begin by turning patient towards the ventilator and onto their side THEN stop. With the patient in the lateral position, reposition the patient's ECG leads on the patient's posterior thorax, placing the limb leads laterally to prevent any pressure on the anterior portion of the body. Evaluate the quality of waveform and assess for arrhythmias. *May consider delaying the reposition of the patient's 5 lead ECG until the patient is in the prone position based on clinical stability and ease of turn.*


8. Under the direction of the person at the head of the bed, at the count of 3, the patient is carefully turned over by pulling the tucked arm and new flat sheet through.

Patient should be laying directly on the arm that is going to be pulled through. EKG voltage may be altered as the heart shifts within the thorax. If a 12 lead EKG is needed, place precordial leads on the posterior thorax.



The staff member at the head of the bed supports the head during the turn and ensures all tubes and lines are intact.



<p>9. The patient is now prone. Pull and center the patient. Straighten and reconnect lines. Position the head to prevent pressure areas. Position arms in a modified swimmers position or aligned with the body. Utilize foam dressings to support the shoulders, abdomen, penile tip and pelvis where necessary.</p> <p><i>No minimum or maximum time in prone position. In most cases, improvement in oxygenation, defined as PaO₂/FiO₂ ratio > 150 mmHg with an FiO₂ <60% with ≤10cm of PEEP</i></p> <p>10. Reapply Prevalon boots inside out</p>	 <p>Every attempt is made to prevent pressure injuries. Alternate arms and head every 2 hours.</p> <p>*Additional off-loading may be needed around nose to protect from ETT/NGT, use: (1) Allevyn foam strip to cover nares/tip of nose, and (1) Allevyn foam strip to cover bridge of nose</p>
<p><u>Interruption of therapy</u></p> <ol style="list-style-type: none"> 1. Unintended extubation 2. Unintended right mainstem intubation 3. ETT obstruction 4. Hemoptysis 5. Cardiac arrest 	
<p><u>Nursing Considerations</u></p> <ol style="list-style-type: none"> 1. Collaborate with the team to assess the patient's response to the prone position: <ul style="list-style-type: none"> • Pulse Oximetry • Mixed venous oxygenation or central venous mixed oxygenation saturation (Scvo₂) and hemodynamics • Arterial blood gases • PaO₂/FiO₂ ratio (P/F ratio) 	<p>Recommended duration for proning is 16 hours, but note that longer periods have been used with no adverse events.</p> <p>The team will determine the frequency of blood gases and enter the order as indicated.</p>

<ol style="list-style-type: none"> 2. Provide frequent oral care and suctioning of the airway as needed. 3. Maintain eye care to prevent corneal abrasion. 4. Maintain tube feedings. 5. Assess skin frequently for areas of nonblanchable redness or breakdown. <ul style="list-style-type: none"> • Microshift sheets q 2 hours when turning head and repositioning arms. 6. Alternate side to side head position every two hours. 7. Alternate “swimmers arm” position every two hours. 8. Document the patient’s response to the prone positioning, ability to tolerate the turning procedure, length of time in the prone position, complications noted during or after the procedure, and patient and family education. 	<p>The prone position promotes postural drainage.</p> <p>It is important to maintain lubrication to prevent dryness and corneal abrasions.</p> <p>One arm raised and head rotated toward the raised arm; the other arm is positioned alongside the body</p>
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Preparation for Returning to Supine Position

1. PEEP on the ventilator is often decreased during periods of prone ventilation. This lower PEEP can be associated with de-recruitment and hypoxemia on return to supine position. Discuss with team increase of PEEP to at least half of pre-prone level PRIOR to supine.
2. Position the staff at the sides of the bed and the respiratory therapist at the head of the bed.
3. Maximally inflate the bed

Disconnect **arterial line** from the pressure bag. Cap the arterial line at the t-piece
4. Pull patient using the underlying flat sheet while in the prone position to the side of the bed towards the ventilator
5. Cross the leg next to the edge of the bed over the opposite ankle.
6. Keep both patients arms straight against the body

Note:

Plan to supine patients qAM (can be >24hrs prone with no adverse events)

Assess for any hypotension associated with the PEEP increase and consider returning to baseline PEEP should it be thought that the hypotension is directly related to the PEEP increase.

The person on the side of the bed closest to the patient maintains body contact with the bed at all times to serve as a side rail and prevent a fall. The RT at the head of the bed is responsible for securing the ETT, ventilator tubing.



In order to turn the patient away from the ventilator.

7. Tuck a new flat sheet, and the arm away from the ventilator with palm facing up, underneath the patient to the side you are turning. The *new* flat sheet will pull through as you are turning the patient



8. Begin by turning patient away from the ventilator and onto their side THEN stop. With the patient in the lateral position, reposition the patient's ECG leads on the patient's anterior thorax. Evaluate the quality of waveform and assess for arrhythmias. *May consider delaying the reposition of the patient's 5 lead ECG until the patient is in the supine position based on clinical stability and ease of turn.*



9. Under the direction of the person at the head of the bed, at the count of 3, the patient is carefully turned over by pulling the tucked arm and *new flat* sheet through towards the ventilator.

10. The patient is now supine. Pull and center the patient. Straighten and connect lines and tubes.



<p>11. Collaborate with the team to assess the patient's response to the supine position:</p> <ul style="list-style-type: none"> • Pulse Oximetry • Mixed venous oxygenation or central venous mixed oxygenation saturation (Scvo2) and hemodynamics • Arterial blood gases • PaO2/FiO2 ratio (P/F ratio) <p>If P:F > 150 mmHg and Driving Pressure (Pplat – PEEP) < 15 cm H2O after two hours in supine position, consider not returning to prone position, in collaboration with team.</p>	<p>Special Considerations</p> <p>If patient is not tolerating being placed supine from prone, discuss increasing proning length of time with the team.</p>
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Revision Detail:

APPROVED: Critical Care Operations Committee

(April 8, 2020)

Figure 1. – Areas at risk for pressure injury

