

MGH Emergency Department Intubated Prone Positioning Guidelines

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Massachusetts General Hospital
Prone Positioning Guideline

Designated Clinical Areas:

Emergency Department

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 ED clinicians about prone positioning of critically ill ARDS patients. In most circumstances, proning will occur in the ICU. In the event that an ICU bed is not readily available, and the patient would benefit from prone positioning, the procedure can be performed in the ED.

Contraindications:

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

Equipment:

- Minimum 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 and HEPA filter
- Gel Donuts

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

Assessment

1. Assess hemodynamic status
2. Assess mental status.
3. Assess size and weight to determine the ability to turn within the bed frame. Ensure whether a 180-degree turn may be safely accomplished within the confines of the stretcher.
4. If the patient is too large to turn on one stretcher, the two-stretcher method can be considered.
5. Evaluate for absolute/relative contraindications (noted above).

Preparation

1. Ensure order for prone positioning.

The patient must be deeply sedated; strongly consider neuromuscular blockade. The healthcare team should effectively manage agitation to provide a safe proning environment.

2. Endotracheal tube must be firmly secured with a commercial device. Note the position of the tube (cm at teeth).

3. Ensure orogastric tube in place to protect from drainage of oral secretions. Sump stomach prior to turn to reduces the risk of aspiration.

4. Apply lacrilube and tape eyelids horizontally closed

5. Keep 5 leads on anterior chest wall and remove remaining V2-V6 leads.

6. Empty ileostomy/colostomy bags, if applicable.

7. Secure tubes and catheters. Disconnect nonessential tubing. Foley should be at the end of the stretcher with slack.

8. Apply 3M Cavilon moisture barrier to patient's face. 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.

9. Place foam dressing to upper chest/clavicles, shoulders, pelvis, elbows, knees, forehead, and tops of feet. The foam dressing will reduce the risk of friction and shear (Refer to appendix A).

10. Disconnect arterial line from the pressure bag. Cap the arterial line at the t-piece.

Method for turning the patient in the prone position (five-step method)

1. Determine if a second stretcher will be needed. If so, bring the second stretcher to the side of the patient's stretcher and lock both.

2. Start with a flat sheet under the patient. Have all 5 staff members at bedside.

3. Position the staff at the sides of the bed, 2 on each side, and the respiratory therapist at the head of the stretcher. The RT at the head of the bed is responsible for securing the ETT, ventilator tubing. 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.

4. Pull patient using the underlying flat sheet while in the supine position to the side of the bed away from the ventilator, ultimately to turn the patient in the direction of the ventilator.



5. Cross the patient's outer leg over the inner leg at the ankle. Chest and/or pelvic support can be done by placing a pillow at the abdomen before completing the turn.
6. Keep both patients arms straight against the body
7. Tuck a new flat sheet underneath the old flat sheet, as if the bed is being made, 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.



New flat sheet being tucked

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.

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. 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.

When patient is lateral, place waffle, inside a pillowcase, on chest prior to proning (waffle may need to be tucked slightly so that it is centered on patients chest).



The staff member at the head of the bed supports the head during the turn and ensures all tubes and lines are intact. Note that this person is not pictured in these illustrations.

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.



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.
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10. Every attempt is made to prevent pressure injuries. Alternate arms and head every 2 hours. Utilize gel donuts to support the shoulders, abdomen, penile tip and pelvis where necessary.

There is 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

Interruption of therapy

1. Unintended extubation
2. Unintended right mainstem intubation
3. ETT obstruction
4. Hemoptysis
5. Cardiac arrest

Cardiac Arrest Management for Patients in Prone Position

Since 2005, the AHA Guidelines for CPR and ECC recommended that CPR in the prone position may be reasonable when the patient cannot be replaced in the supine position without prejudice, particularly in hospitalized patients with an advanced airway in place. There has not been significant comment since.

1. Turn to supine if able to do so without risk to patient or responder.
2. If unable to immediately turn to supine, consider placing defibrillator pads in the anterior-posterior position and provide CPR with patient prone – hands in the standard position over the T7-T10 vertebral bodies.
3. Await additional responders before attempting to turn to supine position.
4. Follow all other standard ACLS guidelines.

Unanticipated Airway Loss

This is an indication for emergency rotation to supine positioning

1. All clinicians must be wearing full PPE to protect against aerosolizing procedures
2. Use the full sheet under the patient to turn the patient.
3. Cover the patient fully with the sheet, bringing together the edges on the side toward you.
4. Pull out the slack.



5. Rotate the patient toward the ceiling and then supine



6. Center in the bed.

7. Manage the airway

Nursing Considerations

1. Collaborate with the team to assess the patient's response to the prone position:

- Pulse Oximetry
- Mixed venous oxygenation or central venous mixed oxygenation saturation (Scvo₂)
- Hemodynamics
- Arterial blood gases
- PaO₂/FiO₂ ratio (P/F ratio)

The team will determine the frequency of blood gases and enter the order as indicated.

2. Assess skin frequently for areas of nonblanchable redness or breakdown.
3. Provide frequent oral care and suctioning of the airway as needed. The prone position promotes postural drainage.
4. Maintain eye care to prevent corneal abrasion. It is important to maintain lubrication to prevent dryness and corneal abrasions.
5. Maintain tube feedings.
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.

Preparation for Returning to Supine

Position

1. Position the staff at the sides of the bed and the respiratory therapist at the head of the bed.
2. Maximally inflate the bed
3. Disconnect arterial line from the pressure bag. Cap the arterial line at the t-piece
4. The person on the side of the bed closest to the patient maintains body contact with the bed at
5. 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.
6. Pull patient using the underlying flat sheet while in the prone position to the side of the bed away from the ventilator.
7. When turning patient supine, head must be facing the direction patient is being pulled (you want the face up when patient is lateral, not down)
8. Cross the leg next to the edge of the bed over the opposite ankle.
9. Keep both patients arms straight against the body
10. 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.
11. In order to turn the patient in the direction of the ventilator.
12. 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 anterior thorax. Evaluate the quality of waveform and assess for arrhythmias. May consider delaying the reposition of the patient’s 5 lead
13. ECG until the patient is in the supine position based on clinical stability and ease of turn.
14. 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.
15. The patient is now supine. Pull and center the patient. Straighten and connect lines and tubes.
16. Collaborate with the team to assess the patient’s response to the supine position:
 - Pulse Oximetry - Mixed venous oxygenation or
 - central venous mixed
 - oxygenation saturation (Scvo2)

- and hemodynamics
- Arterial blood gases - PaO₂/FiO₂ ratio (P/F ratio) - If P:F > 150 mmHg and Driving
- Pressure (P_{plat} – PEEP) < 15 cm H₂O after two hours in supine positions consider not returning to prone position, in collaboration with team.

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