

# UAB SICU MANUAL PRONING GUIDELINE

## I. Background

Prone positioning has an immediate benefit on oxygenation for many patients with ARDS and COVID-19 pneumonia. Prone position can protect functional lung tissue and promote improvement in ventilation to perfusion (V/Q) mismatch. Proning for 16 or more hours/day may reduce mortality.

## II. Clinical Practice Guidelines

### 1. Indications for manual proning

- a. One or more of the following: Moderate to severe ARDS with PEEP >10, Fio2 >0.6, inability to maintain PaO2/FiO2 ratio  $\geq$ 150mmHg

### 2. Absolute contraindications to manual proning

- a. Unstable facial, cervical, thoracic, lumbar or pelvic fracture
- b. Skeletal or cervical traction
- c. Sustained intracranial pressure >30mmHg or cerebral perfusion pressure <60mmHg

### 3. Relative contraindications to manual proning

Decision to proceed with proning in the setting of 1 relative contraindication is at the discretion of the provider; avoid proning if > 2 relative contraindications are present

- a. Hemodynamic instability with progressive increase in vasopressor use
- b. Severe acute arrhythmia
- c. Unstable chest wall
- d. Open chest or abdomen
- e. Pregnancy
- f. Massive hemoptysis
- g. Tracheal surgery or sternotomy during the previous 7 days

### 4. Sedation during proning

Dosing recommendations should be used as a general guide. Patient response may warrant dosing outside of the provided dosing ranges

- a. Fentanyl 150-400mcg/hr; hydromorphone 1-2 mg/hr; titrated prior to neuromuscular blockade to a nonverbal pain score of 3 or less
- b. Propofol 40-50mcg/kg/min; Midazolam 4-8mg/hr, MD/APP to titrate prior to neuromuscular blockade to target RASS -5 for proning period
- c. Cisatracurium 3 mcg/kg/min titrated to maintain train of four of 1-2 twitches to a maximum of 10 mcg/kg/min

### 5. Nutritional support during proning

- a. Place post-pyloric enteric tube
- b. Keep patient positioned in Reverse Trendelenberg at 25-30 degrees
- c. Initiate tube feeds after first hour of proning and titrate per protocol
- d. Discontinue tube feeds 1 hour before returning to supine position

### 6. Complications requiring return to supine position

- a. Cardiac arrest

- b. Acute arrhythmia
- c. Massive hemoptysis
- d. Suspected break in ventilator circuit
- e. Unplanned extubation, displacement or obstruction of endotracheal tube

7. Continuing/Discontinuing therapy

- a. Patient must be re-evaluated daily to determine need to continue/discontinue therapy
- b. A new order must be placed daily to continue proning
- c. Patients should be placed in prone position for 16 hours and returned to supine for 8 hours during proning protocol
- d. Therapy is discontinued when the patient's clinical status is unresponsive to the position change or significant improvement has been achieved and maintained

**III. References**

1. Girard, R., Baboi, L., Ayzac, J., Richard, C., & Guerin, C. (2014). The impact of patient positioning on pressure ulcers in patients with severe ARDS: Results from a multicenter randomized controlled trial on prone positioning. *Intensive Care Medicine.*, 40(3), 397-403.
2. Guérin, C., Reignier, J., Richard, J., Beuret, P., et al. (2013). Prone positioning in severe acute respiratory distress syndrome. *The New England Journal of Medicine.*, 368(23), 2159-2168.
3. Kallet, R. (2015). A comprehensive review of prone position in ARDS. *Respiratory Care.*, 60 (11). 1660-1687.
4. Sud, S., Friedrich, J., Taccone, P., Polli, F., et al. (2010). Prone ventilation reduces mortality in patients with acute respiratory failure and severe hypoxemia: Systematic review and meta-analysis. *Intensive Care Medicine.*, 36(4), 585-599.

## Manual Proning Instructions

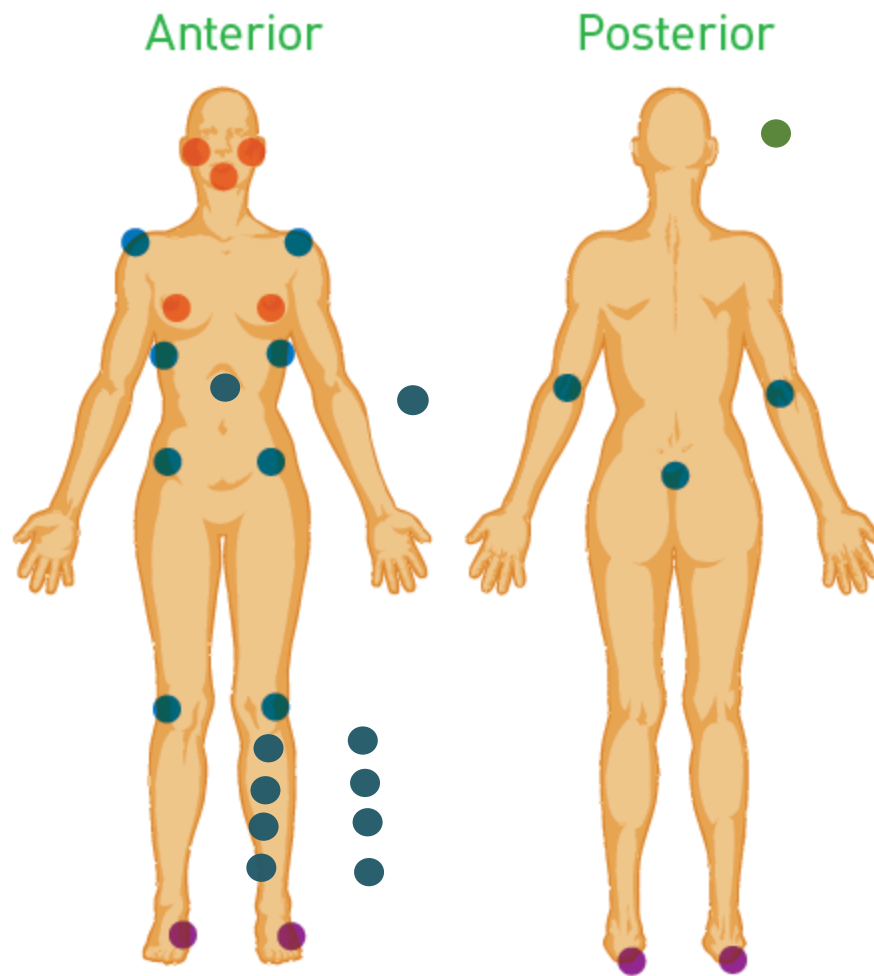
**\*\*\*READ THIS FIRST:** Complete the steps before 'Proning Maneuvers' before assembling the entire team. Once team assembled, have checklist person start at the beginning of checklist to make sure each step was completed. **Each step should be stated aloud with verbal confirmation from team members.**

### 2 Principles of Proning:

1. All tubing and attachments to the patient need to travel out of the top or bottom of the bed, not across the patient. This maintains a consistent distance of your lines so they won't get pulled out during proning.
2. Never complete a 360° rotation of your patient. You should prone towards the ventilator and supine towards the ventilator. A full circle of turning would cause your lines to fully twist.

Before Proning:	
**Consult WOCN prior to proning if possible to assist in pressure injury prevention interventions specific to the trauma patient population (i.e. Aspen collars, PEG tubes, abdominal drain tubes, burn injuries). **	
**If patient is not on an ICU low air loss mattress, consider if patient should be moved to one prior to proning. For safe patient handling, a fitted sheet should NOT be used**	
1) Gather Supplies: 4-6 orange pillows (not disposable white pillows), blue chux pads, 2 sheets, gown, eye mask, ECG lead stickers, extensions for all tubing as needed (including ART line), lots of sacral mepilex, ETT tape and 2-4 tongue depressors.	
2) Obtain and verify any lines needed: all patients should have adequate, dependable access. Consider an ART line if MDs will be monitoring with frequent ABGs.	
3) Order gel head pillow, called a Z4 (Lawson # 189673) <ul style="list-style-type: none"> <li>• If patient has an Aspen collar, ensure anterior sections of collar are well padded with Mepilex</li> <li>• If patient has Aspen collar, creative padding to elevate chest and keep head in alignment while ensuring OETT is secure and patent will have to occur.</li> </ul>	
4) Change OETT holder for cloth tape. Secure OGT with same tape. If patient has an NGT, consider replacing with OGT. If NGT is kept, tube must be floated and nares assessed frequently <ul style="list-style-type: none"> <li>• Pad OETT around area of occiput with Mepilex Border Flex (4x4); folded over tape</li> <li>• Pad cheeks with Mepilex Lite (4x4) cut in half (one half on each cheek)</li> </ul>	
5) Place extensions on all tubing and re-arrange tubing and room as follows: <ul style="list-style-type: none"> <li>• Pull the bed out and adjust vent and IV pumps/poles so respiratory can get to head of bed easily and safely at all times (they will be doing this frequently).</li> <li>• Make sure all tubing travels out the top or bottom of the bed so it will rotate along the axis of the bed and not across the patient.</li> <li>• Make sure suction tubing is long enough to be able to emergently suction the patient at any point during the proning process.</li> <li>• See note after 'Proning Maneuvers' for discussion of CRRT machine placement.</li> </ul>	

6) Take off patient gown, mepilex pressure points as on diagram. Mepilex any points where patient will be lying on tubing. Remove ECG stickers from anterior chest, prepare new stickers on cables to place on posterior once prone. Cover patient with chux, pillows and top sheet: 1-2 pillows on the chest covering the shoulders, 1 on the pelvis/hips, and 1 across the shins. These are to free the patient's belly once prone; you may need multiple pillows if the patient has a large abdomen.	
7) Pause tube feeds.	
8) Gather your team.	
<p>The team:</p> <ul style="list-style-type: none"> <li>• 1-2 respiratory therapists at head of bed to manage airway and patient head.</li> <li>• 6 people along the side of the bed (3 each side) to turn the patient.</li> <li>• 1 person to read out and check off the checklist.</li> </ul>	



Minimal placement of Mepilex is seen above. Each patient should be assessed for high risk of injury areas.

## Preparation:

- Assess patient's individual risk factors for preventative measures
- Secure all tubes, drains, IV lines prior to prone/supine positioning
- Pad under devices with Mepilex® Border Flex dressings  
DO NOT cut padded areas of dressing.
- Place EKG leads on back per hospital guidelines

## Assesment and Application Guidelines:

### Prior to prone positioning:

- Perform head to toe assessment
- Document in EMR on Doc Flow Sheet areas of breakdown/concern
- Perform Skin Risk Assessment Scoring
- Cleanse and dry skin prior to dressing application
- No skin prep or barriers under dressings
- On preventative dressing initial, date, and place a "P" prior to placement
- Document prevention utilization in EMR (including specific location/dressing size)
- Once per shift and PRN: Assess skin under preventative dressings
- Consult wound care for any alterations in skin integrity
- Dressings to be changed every three days and PRN
- After prone positioning is discontinued may remove anterior dressings.
- Place Mepilex® Border Sacrum (8.7x9.8) and Mepilex® Border Heel dressings for PIP when patient is to be placed in supine position
- Place Tortoise® T&P System under patient and utilize Z-Flo® Fluidized Positioner for repositioning

<b>Proning Maneuver:</b>	
1) Place bed mattress on max-inflate, hyperoxygenate patient on 100% for 2 minutes prior to turning, as well as remain on 100% for duration of turn.	
2) Verify ECG stickers are removed from anterior of patient and potential pressure points are prepped.	
3) Suction patient.	
4) Verify ambu bag present and connected. Verify suction set up with enough extension for potential emergent suctioning.	
5) Tuck patients' hands under their buttocks.	
6) Bring Foley catheter and BMS up into foot of bed to prevent possible dislodgement (if present).	
7) Roll up sides of top and bottom sheets to form a tight burrito.	
8) Verify verbally the turn plan. Patient should prone <b>towards</b> the ventilator. Turn is a 3 step process on Respiratory's count: <ul style="list-style-type: none"> <li>• Pull patient to edge of bed away from turn direction.</li> <li>• Lift patient to lateral position, turning towards ventilator. Pause so team can switch hand-holds.</li> <li>• Lower patient prone.</li> </ul>	
10) Prone patient in 3-step maneuver.	
11) Shift patient so they are balanced flat with pillows supporting them so abdomen can expand and head has room to drop from shoulders.	
12) Start swimming position: <ul style="list-style-type: none"> <li>• Turn patient with 2 pillows. Pillows go on same side as head is turned towards.</li> <li>• Place arm up toward head with elbow below shoulder height to prevent joint stress (the arm the head is turned towards).</li> </ul>	

<ul style="list-style-type: none"> <li>• Rest opposite arm at side with palm facing upward.</li> <li>• Slightly bend leg on same side as raised arm. Support legs with pillows so feet are able to float without pressure on toes. SCDs are ok to use, ankle boots don't usually work.</li> </ul>	
13) Confirm ETT position.	
14) Place and adjust gel head pillow so pressure taken off ears and eyes. "Carving out" area for ears may be needed.	
15) Replace ECG leads on back. Reconnect any lines or drains that were disconnected. Straighten out any lines that have become twisted.	
16) Cover patient with gown. <ul style="list-style-type: none"> <li>• For male patients, ensure there is adequate space between the legs if genital edema is present and preventative measures are taken to avoid pressure injury</li> </ul>	
17) Place bed in Reverse Trendelenburg of 10 degrees.	
18) Apply eye mask if needed.	
**Once patient has been proned, have another RN assess the patient to ensure pressure injury prevention measures are in place (i.e. patient is not lying on tubing, ears are not folded, OGT or NGT, OETT are not applying pressure on skin, Z pillow is positioned correctly**	

- The goal will be to maintain prone positioning for 16-20 hours. Subsequently, the goal will be to have daily 4-6 hour rests in the supine position as the patient tolerates.
- If your patient is on CRRT, use your best judgement about where the machine will go. For a Right IJ site, you can place the machine on the left of the patient so they prone towards the machine. For femoral sites, you can push the machine towards the foot of the bed so the 'tubing goes out the bottom of the burrito.' The power cord of the CRRT machine may require you to put the patient bed at more of an angle to achieve this. In a code situation, you can clamp the CRRT lines and disconnect while waiting for other team members to arrive.
  - **CRRT extention tubing (utilize Level 1 Trauma Tubing Lawson #15692, need 2 sets). – NOTE: this can increase the risk of clotting due to greater time exposed to artificial material – only use if absolutely necessary**
- Risks of proning remain:
  - Accidental removal of OETT, OG, CVL, etc.

- Pressure ulcers on anterior locations.
- Facial, limb, and chest edema.

## ***What if my patient codes?***

- 1) **STAY CALM**
- 2) Call for help, and when adequate staff has arrived begin to safely return patient to supine positioning.
  - 1) **Ensure that someone can manage the patient's head/airway before beginning the supine process.**
- 3) If you feel that a code may be imminent you should suggest returning to supine BEFORE it is emergent.

<b>Turn Every 2 Hours:</b>	
The team: Turns require –	
<ul style="list-style-type: none"> <li>• Respiratory Therapist</li> <li>• 2-4 people (RN, PCT)</li> </ul>	
1) Respiratory should be at head of bed with control of head and tube. Respiratory leads the motions.	
2) Return bed from reverse Trendelenburg to flat. Undo last swimming position, return patient to neutral.	
3) Bring Foley and BMS up into foot of bed.	
4) Slide patient up in bed until head is floating off the top.	
5) Respiratory slowly turns head to other side.	
6) Slide patient back onto bed.	
7) Place pillows and limbs for swimmer's position.	
8) Raise head in Reverse Trendelenburg to 10 degrees.	
9) Confirm ETT position.	
**Once patient has been turned/swim, have another RN assess that patient for pressure injury prevention measures are in place (i.e. patient is lying on tubing, ears are not folded, OGT or NGT, OETT are not applying pressure on skin, Z pillow is positioned correctly**	

<b>Return to Supine Maneuver:</b>	
1) Gather supplies you may need while supine: fresh OETT tape, sacral mepilex, ECG stickers, sheets, gown, eye mask, any dressings that will require changing. You can complete the patient's bath during either the supine event or the following prone event (bathe one side, flip, and bathe the other side).	
2) Place bed mattress on max-inflate, hyperoxygenate patient on 100% for 2 minutes prior to turning, as well as remain on 100% for duration of turn. Turn off tube feeding.	
3) Gather your team.	



<p>The team:</p> <p>Return to Supine requires –</p> <ul style="list-style-type: none"> <li>• 1-2 respiratory therapists at head of bed to manage airway and patient head.</li> <li>• 4-6 people along the side of the bed (3 each side) to turn the patient.</li> <li>• 1 person to read out and check off the checklist.</li> </ul>	
4) Return bed from reverse Trendelenburg to flat. Undo last swimming position, return patient to neutral.	
5) Take off gown, remove ECG stickers, and cover patient with chux and a sheet.	
6) Place BMS and Foley up into foot of bed.	
7) Roll up sides of top and bottom sheets to form a tight burrito.	
<p>8) Verify verbally the turn plan. Patient should supine <b>towards</b> the ventilator. Turn is a 3 or 4 step process on Respiratory’s count:</p> <ul style="list-style-type: none"> <li>• If the last swimming position has <b>patient’s head turned away from the ventilator</b>, the supine process is: <ul style="list-style-type: none"> <li>○ Slide patient up so head off bed</li> <li>○ RT turns head towards vent</li> <li>○ Pull patient to edge of bed near ventilator away from turn direction.</li> <li>○ Lift patient to lateral position with face towards ventilator. Pause for team to switch hand-holds.</li> <li>○ Lower patient supine.</li> </ul> </li> <li>• If the last swimming position has <b>patient’s head turned towards the ventilator</b>, there is no need to slide the patient’s head off the bed and turn it first. <ul style="list-style-type: none"> <li>○ Pull patient to edge of bed near ventilator away from turn direction.</li> <li>○ Lift patient to lateral position with face towards ventilator. Pause for team to switch hand-holds.</li> <li>○ Lower patient supine.</li> </ul> </li> </ul>	
9) Supine patient.	
10) Confirm ETT position.	
11) Replace ECG leads. Straighten / Reconnect tubing.	
12) Cover patient with gown.	
13) Raise head of bed.	