Yale New Haven Health

YNHHS ICU Leadership Committee

Adult Prone Positioning in ICU Intubated Patients

Procedure and Guidelines for Patient Care, Yale New Haven Health System

Original: 8/2017
Last Reviewed: 5/2020
Approved by: YNHHS ICU Leadership Committee

Purpose:

To provide the procedure and guidelines for patient care for the adult patient requiring prone therapy for ARDS. Pronation therapy optimizes distribution of ventilation and perfusion in the lung. Expected outcomes are improved oxygenation, improved lung compliance, alveolar recruitment, and improved secretion clearance.

Population:

Patients age ≥ 18 years old (younger patients will be considered on a case by case basis).

Background

Managing patients on the mechanical ventilator with refractory hypoxemia who are difficult to oxygenate is a challenge in the ICU setting. These patients often meet certain physiologic criteria (most often seen with severe ARDS) and can benefits from low tidal volumes of 6ml/PBW (ARDSnet trial), early sedation, neuromuscular blockade (NMB), and/or early prone positioning.

An overall clinical assessment should determine whether a patient is tolerating the current ventilation/oxygenation strategy in the supine position without NMB. To assist with this, there are 3 overall oxygenation goals:

- P:F > 150mmHg
- PEEP ≤ 10 cmH20
- FiO2 ≤ 0.6

If a patient fails to meet these goals, the ICU team should consider a trial of early NMB and/or early prone positioning. Both NMB (ACURASYS trial) and prone positioning (PROSEVA trial) have been shown to increase oxygenation, likely decrease risk of lung injury, and improve mortality. Further note that ARDS patients benefit from low tidal volumes (6mL/kg PBW) and all patients should be on low tidal volumes (ARDSnet trial) prior to NMB or proning.

Once proned the mechanical ventilator should be adjusted based on additional physiologic goals for refractory hypoxemia, which include:

- PaO2 ≥55-60 mm Hg
- SaO2 88-95%
- pH ≥ 7.15-7.20
- Pplat ≤30 cm H20

Note that exceptions are made for poor grade SAH and TBI with GCS < 8, who should have goal PaO2 > 70 and SaO2 > 90%

Additional important considerations of the patient receiving prone ventilation include:

- Prone ventilation should be implemented for > 16 hours per day at minimum (PROSEVA trial)
- Use a conservative fluid strategy (FACTT trial)
- Normalizing blood gas values for patients with ARDS does not save lives (ARDSnet)
- Sedatives and analgesics should be used to facilitate deep sedation (RASS -3 or lower)
- A daily Supine Positioning Trial (SPT) should be instituted

Procedure:

1. Inclusion Criteria
    a. Severe ARDS (as defined by PaO2/FiO2 ratio ≤ 150)
    b. Absence of contraindications
2. Contraindications (Note: The attending physician may override these contraindications on a case-by-case basis when benefit outweighs risks)
    a. Unstable spine
    b. Unstable pelvis
    c. Unstable femur fracture
    d. Hemodynamically unstable patient defined as SBP is < 90 or MAP < 60 despite vasopressor/fluid support or unstable dysrhythmias
    e. Open chest/unstable chest wall
    f. Cardiac pacemaker inserted in prior 2 days or need for percutaneous pacing
    g. Massive hemoptysis (requiring immediate intervention/procedure)
    h. Tracheal surgery (including tracheostomy) or sternotomy during prior 15 days
    i. Serious facial trauma or facial surgery during prior 15 days
    j. Abdominal hypertension/abdominal compartment syndrome
3. Relative Contraindications (further assessment needed by interdisciplinary team to determine if benefit outweighs risks)
    a. Anterior chest tube(s) with air leak (consider adverse effects on chest tube drainage)
    b. Weight ≥ 160 kg
    c. Problematic femoral vascular access
    d. Recent cardiovascular arrest
    e. Open abdomen
    f. Pregnancy
    g. Increased intracranial pressure (ICP > 30 mmHg or CPP < 60 mmHg) or increased intracranial pressure without invasive monitoring
    h. Bifurcated endotracheal tube
    i. Recent acute bleeding
    j. Burns/open wounds on ventral body surface
    k. Patient on maximum vent settings. To optimize patient's oxygenation prior to prone positioning, consider the following: deep sedation, neuromuscular blockade, inhaled pulmonary vasodilators.

4. **Prepositioning Assessment and Preparation** (See Appendix A for Procedure Checklist)
    a. Rule out contraindications to placing patients in the prone position.
    b. Confirm provider places orders using order set. Verify provider order for prone position includes frequency/length of time for patient to remain prone (ie. 16 hours).
    c. Ensure patient is on a low air loss bed if possible.
    d. For patients with a large body habitus, determine if a 180 degree turn can be accomplished within the width of the patient's bed. If not, consider transferring patient to a wider bed prior to proning.
    e. Explain procedure and its purpose to the patient/family.

f. Assemble equipment:
    i. Pronation therapy using Tortoise Prone™
        1. Tortoise prone kit (single patient use, contains one turning Tortoise pad, one prone pad and two fluidized positioners)
        2. ECG electrode pads
        3. Underpads
        4. Two full flat sheets
        5. Additional positioning devices (ie. pillows, foam positioners, wedges, towels)
        6. Foam dressings (for bony prominences or any potential pressure areas if appropriate)
    ii. Pronation therapy using pillows (alternate method)
        1. Two full flat sheets
        2. ECG electrode pads
        3. Underpads
        4. Additional positioning devices (ie. pillows, foam positioners, wedges, towels)
        5. Foam dressings (for bony prominences or any potential pressure areas if appropriate)
g. Assess mental status and pain. Ensure the patient is adequately sedated to promote comfort and prevent excessive movements during the turn and while prone.
h. Stop tube feeding and disconnect feeding pump tubing. Clamp feeding tube. Ideally, gastric feedings should be held for 1 hour prior to turn. It is not necessary to hold post pyloric tube feedings.
i. If patient has port accessed, deaccess port. Placement of additional central access may be necessary if patient does not have adequate vascular access when port deaccessed.
j. If patient is due to have any dressings changed that are not accessible when turned, perform dressing change(s).
k. If patient is receiving CRRT, return blood and disconnect tubing. (Note: CRRT can be resumed once patient has been turned prone and stabilized).
l. If patient has Arctic Sun pads in place, re-position pads so the patient will not be lying directly on the hoses. For optimal pad placement when prone, pads can be reversed with hoses running down the back. Can also consider use of universal pads where the hoses would run along the flank
m. Empty urine out of foley bag and tubing if patient has foley catheter present.
n. Empty colostomy or ileostomy bags if present.
o. Lubricate eyes using ophthalmic ointment as ordered.
p. Assemble staff who will prone patient and determine roles of each member of the team. Members of the team and their roles may include:
    i. Team Leader – RN who leads team during each step of prone procedure, stationed at foot of bed, who also continuously monitors patient's oxygenation and hemodynamics during the turn.
    ii. Respiratory Therapist – management of patient airway and ventilator tubing, stationed behind head of bed.
    iii. Four staff (may include RNs, assistive nursing personnel or providers), two stationed on each side of the bed to turn patient.
    iv. RN – sole role is to manage lines/drains during the turn.
    v. More staff may be needed due to patient's habitus.
q. Remove any unnecessary equipment from patient that is not required during the turn. Note: Patient will require continuous ECG and SpO_2 monitoring during the procedure since the patient can rapidly decompensate during the turn.
r. Ensure that emergency equipment is available at bedside.
s. Lines tubes inserted in upper torso are aligned with either shoulder with the exception of chest tubes.

t. Lines/tubes inserted in the lower torso, including chest tubes, are aligned with either leg and extend off the end of the bed.
u. Verify that airway and remaining lines are secure and that lines are long enough to reach during the turn.
v. If patient's tongue is protruding, insert a bite block if necessary.
w. Consider removing headboard of bed to allow easier access for stabilizing airway during turn.
x. Hyper-oxygenate patient with FiO_2 100%. Maintain hyper-oxygenation with FiO_2 100% throughout turn.
y. Prior to proning, collaborate with RT to assess facial skin integrity and optimize ETT securement device placement on face and ears/head. Commercially available ETT securement devices may contribute to increased skin breakdown when prone; consider alternative methods to secure ETT when prone.
z. Confirm that ETT is at the correct centimeter marking at the lip or gums.
aa. Perform any necessary pulmonary hygiene (oral and ETT suction).
bb. Loop ventilator tubing above the patient's head.
cc. Remove any pillows/positioning devices.
dd. Apply foam dressing and/or barrier cream/spray to bony prominences and pressure points.
ee. Maximum inflate bed if patient is on a low air loss surface.

5. Pronation Therapy using Tortoise Prone™ (See Appendix B for Procedure Checklist)

a. Tortoise Prone – Turning supine to prone
   i. Complete pre-procedure steps.
   ii. Prepare supplies.
   iii. Ensure a flat sheet is under the patient.
   iv. Place tortoise pad (black side facing down) under patient making sure that the patient is properly centered with the top of the pad aligned at the shoulders, the black edges are at the sides of the mattress and tail is untucked. A flat sheet is placed between the tortoise pad and the patient. See figure 1.

Figure 1

   v. Turn the patient slightly away from the ventilator with the sheet on top of the tortoise pad. Slide the prone pad between the sheet and the tortoise pad with the black side facing downward (make sure top edge of prone pad is aligned with tortoise pad). See figure 2

Figure 2

Figure 3

vi. The staff on the opposite of the ventilator grasps the handles of the prone pad and slides the patient towards them while the staff on the ventilator side holds the white handles on the tortoise pad holding it stationary (see figure 3).

vii. Once the patient is at the side of the opposite the ventilator, the staff on the opposite side of the ventilator will hold the prone pad stationary while the staff on the ventilator side are simultaneously pulling the tortoise pad away from the patient. This motion will expose the center maker (a black spine image) that will eventually align with the patient's sternum when the patient is turned into the prone position (see figure 4). Tuck sheet that is on top of the tortoise pad on the ventilator side under the patient.

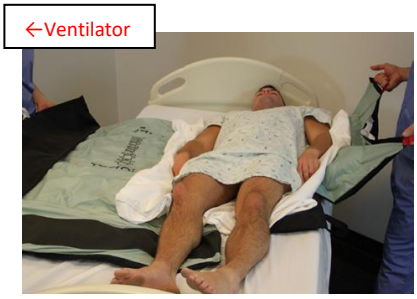


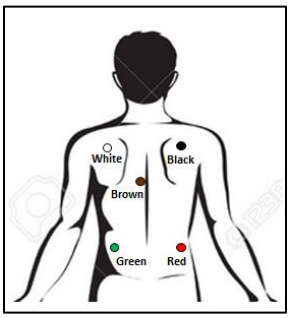
Figure 4

Figure 5

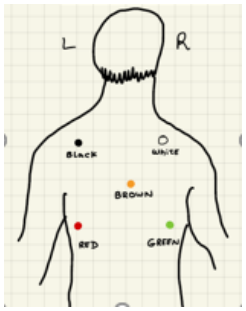
viii. Place a clean flat sheet and underpad on the exposed part of the tortoise pad and tuck under the prone pad

ix. Tuck patient's hand on the ventilator side of the bed under their hip, grasp red handles on prone pad on the opposite side of bed as the ventilator, turn onto patient's side (see figure 5).

x. Remove ECG leads/pads from patient's torso, attach ECG leads/pads to patient's back. ECG limb lead placement can be done on either side (see figure 6a and 6b).



(Option 1)



(Option 2)

Figure 6

xi. Confirm ETT and head position is optimal in preparation for continuing to the turn patient in to the prone position.

xii. Continue to turn patient onto abdomen until patient is prone (see figure 7).

Figure 7

xiii. Remove old sheet and prone pad.
xiv. Center the patient on the bed using the white handles on the tortoise pad. The black edges of the tortoise pad should be at the sides of the mattress.
xv. Slightly turn the patient using the long handles on the tortoise pad away from the ventilator. Place the prone pad between the mattress and the tortoise pad keeping the top of both pads aligned (this will provide more pressure relief). Prone pad can be folded in half underneath the patient's chest/breast area or abdominal area to provide more pressure relief.
xvi. Interlock long red handles of tortoise pad through short red handles of prone pad (see figure 8). Tuck the tail of the tortoise pad so that the anti-skid strip is against the mattress. Tuck the black side panels of tortoise pad underneath the body of the tortoise pad.

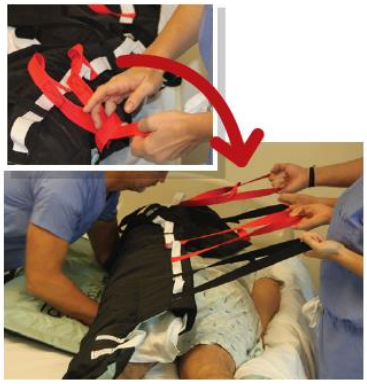


Figure 8

xvii. Turn patient's head to the side. To reduce pressure to the face:
    1. Offload cheeks/ears using a head positioner (See below for options). Use pillow case or incontinence pad between the positioner and face.
        a. Small fluidized head pillow. Indent/mold the fluidized head pillow to decrease pressure against the patient's cheek/ear.
        b. Foam head cradle
        c. Folded towels or rolled bath blankets under forehead and cheeks
    2. Elevate chest/shoulders on the side the head is turned towards by placing a wedge or pillow under the shoulder/chest area.
xviii. Place patient's arms in the swimmer's position: one arm raised with elbow flexed and head rotated towards the raised arm; the other arm is positioned alongside the patient's body. Avoid any arm extension that may cause a brachial plexis injury.
xix. Position legs to off load pressure points on knees and feet:
    1. To offload knees, use pillows under thighs and shins or use a foam donut positioner underneath each knee cap.
    2. To offload feet, place roll/wedge under the lower shin to raise ankles off bed.
xx. Confirm patient is not lying on any medical devices (ie. securement devices, SCD plastic tubing) and secure all tubes and devices away from patient's skin. If unavoidable, cushion/protect device to avoid direct contact/pressure with the skin.

xxi. Discontinue maximum bed inflation.
xxii. Position bed in slight reverse Trendelenburg.

b. Tortoise prone – Turning prone to supine
   i. Prepare supplies.
   ii. Untuck the sides and tail on tortoise pad.
   iii. Remove any positioning devices.
   iv. Complete pre-procedure checklist.
   v. Unlock the red handles.
   vi. Hold the white handles on one side of the tortoise pad stationary while someone on the opposite side removes the prone pad using its white handles to slide it out (see figure 9).

Figure 9

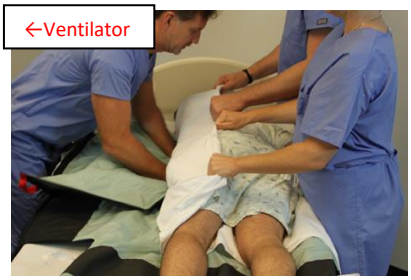


Figure 10

   vii. Slightly turn the patient using the sheet to the side, and slide the prone pad between the sheet and the tortoise pad (make sure the top of the prone pad is aligned with the top edge of the tortoise pad). See figure 10.
   viii. Using the white handles on the prone pad, slide the patient to the edge of the bed opposite of the ventilator while the staff on the ventilator side of the bed holds the tortoise pad stationary (see figure 11).

Figure 11

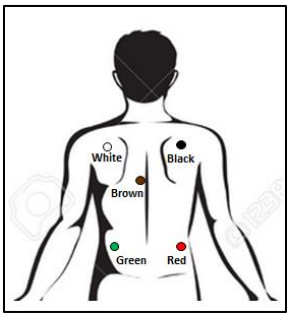
Figure 12

   ix. Once the patient is on the side of the bed opposite of the ventilator, hold the prone pad on that side of the bed stationary while the staff on the ventilator side of the bed pull the tortoise pad away so that the center marker on the tortoise pad (black spine image) is exposed (see figure 12).
   x. Place a sheet and underpad on the exposed part of the tortoise pad on the ventilator side of the bed and tuck under the prone pad.
   xi. The staff on the ventilator side of the bed will turn the patient on the side using the red handles on the opposite side of the prone pad.
   xii. The staff on the side of the bed opposite the ventilator will remove the ECG leads and pads off the patient's back and places new ECG pads and leads on the patient's chest.
   xiii. Gently continue to turn the patient onto the back. Pull the half of sheet and underpad tucked under the patient out to cover the tortoise pad.
   xiv. Remove old sheet and prone pad.

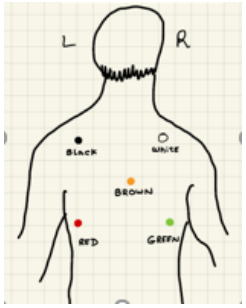
xv. Center the tortoise pad on the bed using its white handles so that the black edges are at the sides of the mattress.
xvi. Ensure patient is properly aligned on tortoise pad and tuck the tail so that the anti-skid strip is against the hospital mattress.
xvii. Position patient appropriately.
xviii. Discontinue maximum inflation of bed.

6. Pronation Therapy Using Sheet & Pillows (See Appendix C for Procedure Checklist)

a. Sheet & Pillows – Turning supine to prone
   i. Complete pre-procedure checklist.
   ii. Prepare supplies.
   iii. Pull patient/undersheet to the side of the bed opposite from the ventilator.
   iv. Tuck remaining portion of undersheet under patient.
   v. Place new sheet and incontinence pad on side of bed nearest to ventilator (including pad for under head), tuck ½ vertical half of sheet and pads under patient.
   vi. Tuck patient's hand on the ventilator side of the bed under their hip.
   vii. Turn patient fully onto side closest to ventilator while monitoring for any signs of respiratory or hemodynamic decompensation.
   viii. Remove ECG leads/pads from patient's torso, attach ECG leads/pads to patient's back. ECG limb lead placement can be done on either side (see figure 6a and 6b).



(Option 1)



(Option 2)

Figure 13

   ix. Depending on patient's body habitus, at this point, can consider placing pillows at chest and hips for the patient to roll on to.
   x. Confirm ETT and head position is optimal in preparation for continuing to the turn patient in to the prone position.
   xi. Slowly turn patient onto the stomach on new sheet with head turned towards either side. Pull folded portion of new sheet and underpads out from under the patient to center patient on bed and remove sheet and pads that were previously under the patient.
   xii. Turn patient's head to the side. To reduce pressure to the face:
      1. Offload cheeks/ears using a head positioner (See below for options). Use pillow case or incontinence pad between the positioner and face.
         a. Small fluidized head pillow. Indent/mold the fluidized head pillow to decrease pressure against the patient's cheek/ear.
         b. Foam head cradle
         c. Folded towels or rolled bath blankets under forehead and cheeks
      2. Elevate chest/shoulders on the side the head is turned towards by placing a wedge or pillow under the shoulder/chest area.
   xiii. Place patient's arms in the swimmer's position: one arm raised with elbow flexed and head rotated towards the raised arm; the other arm is positioned alongside the patient's body. Avoid any arm extension that may cause a brachial plexis injury.
   xiv. Position legs to off load pressure points on knees and feet:
      1. To offload knees, use pillows under thighs and shins or use a foam donut positioner underneath each knee cap.

2. To offload feet, place roll/wedge under the lower shin to raise ankles off bed.

xv. Confirm patient is not lying on any medical devices (ie. securement devices, SCD plastic tubing) and secure all tubes and devices away from patient's skin. If unavoidable, cushion/protect device to avoid direct contact/pressure with the skin.

xvi. Ensure abdomen is unobstructed (one hand width separates the abdomen from the mattress) and hips and chest are elevated/cushioned (see Figure 14).

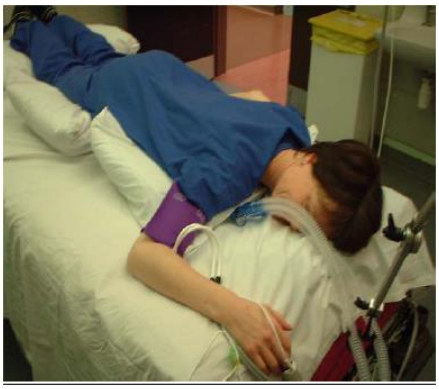


Figure 14

xvii. Discontinue max inflation of bed.

xviii. Position bed in slight reverse Trendelenburg.

b. Sheet & Pillows: Turning prone to supine

i. Complete pre-procedure checklist.

ii. Remove any positioning devices.

iii. Prepare supplies.

iv. Pull patient/undersheet to the side of the bed farthest away from the ventilator.

v. Place new sheet on side of bed nearest to ventilator (including underpad for under buttocks), tuck under patient.

vi. Place patient's arms at their side.

vii. Turn patient fully onto side closest to ventilator with arm on side turned down tucked under body while monitoring for any signs of respiratory or hemodynamic decompensation.

viii. Remove ECG electrode pads from the back of the patient and place new electrode pads on the front of the patient and connect leads.

ix. Tuck vertical half of sheet closest to ventilator under patient.

x. Slowly turn patient onto back on new sheet.

xi. Remove sheet and underpads that were under the patient and pull new sheet/pads under patient to center patient in the middle of the bed, and reposition patient as appropriate.

xii. Position patient appropriately.

xiii. Discontinue maximum inflation of bed.

7. **Ongoing care and assessment:**

a. Assess artificial airway for migration.

b. Assess patient response to prone position including SpO_2, ABGs, vital signs and hemodynamics (hemodynamic measurements are accurate in the prone position as long as the zero reference point is calibrated at the phlebostatic axis).

c. If patient's oxygenation does not return to baseline prior to turn after 30 minutes, contact provider.

d. Resume tube feedings (if patient prone, patient can be placed in reverse Trendelenburg position to prevent aspiration).

e. Resume CRRT if patient receiving therapy.

f. Pressure Injury Prevention in Prone Position (see appendix D for quick tip sheet):
    i. **Reposition patient a minimum of every 2 hours**. Patient may have small position changes to the right or left using pillows/wedges as tolerated. Maintain body alignment.
    ii. **Reposition head every 2 hours.**
        1. Rotate head side to side. If limited neck ROM, redistribute pressure by slightly moving head and repositioning positioners/changing pads underneath head.
        2. Two people are needed during head repositioning; one to hold up the head and stabilize the airway and the other to reposition padding under head.
        3. Assess skin on face with every head position change.
        4. To reduce pressure to the face:
            a. Offload cheeks/ears using a head positioner (See below for options). Use pillow case or incontinence pad between the positioner and face.
                i. Small fluidized head pillow. Indent/mold the fluidized head pillow to decrease pressure against the patient's cheek/ear.
                ii. Foam head cradle
                iii. Folded towels or rolled bath blankets under forehead and cheeks
            b. Elevate chest/shoulders on the side the head is turned towards by placing a wedge or pillow under the shoulder/chest area.
    iii. **Reposition arms** every 2 hours. Perform passive range of motion. Alternate arm positioning using swimmer's position: one arm raised with elbow flexed and head rotated towards the raised arm; the other arm is positioned alongside the patient's body. Avoid any arm extension that may cause a brachial plexis injury.
    iv. **Reposition legs** every 2 hours.
        1. To offload knees, use pillows under thighs and shins or use a foam donut positioner underneath each knee cap.
        2. To offload feet, place roll/wedge under the lower shin to raise ankles off bed (Figure 15).

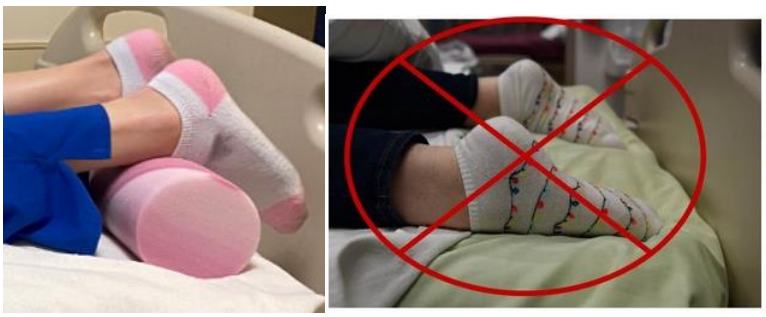


Figure 15

    v. Confirm patient is not lying on any medical devices (ie. securement devices, SCD plastic tubing) and secure all tubes and devices away from patient's skin. If unavoidable, cushion/protect device to avoid direct contact/pressure with the skin.
g. Provide frequent oral care and suctioning of mouth and airway. Patients tend to drain oral and nasal secretions. Change pad under face as needed to keep area dry.
h. When patient supine:
    i. Obtain ABG per provider order to assess if oxygenation/ventilation goals are being met.
    ii. Obtain CXR.

i. If patient experiences a cardio-pulmonary arrest when in the prone position, initial responders may start CPR in the prone position (When appropriate number of personnel are at the bedside, consider turning the patient to the supine position to continue resuscitation efforts):
    i. Location of compressions: Over T7 the level of the inferior border of scapula (Figure 16)
    ii. Location of defibrillator pads:
        1. Posterior-apical position
        2. Posterior-anterior position (left side) (Figure 16)

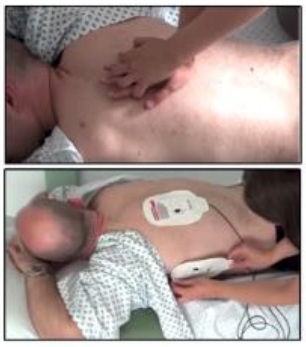


Figure 16

j. It is preferred to perform standard 12-lead EKGs while in the supine position. If need to obtain a standard 12-lead EKG while in the prone position, the following posterior 12-lead placement is recommended (Figure 17)

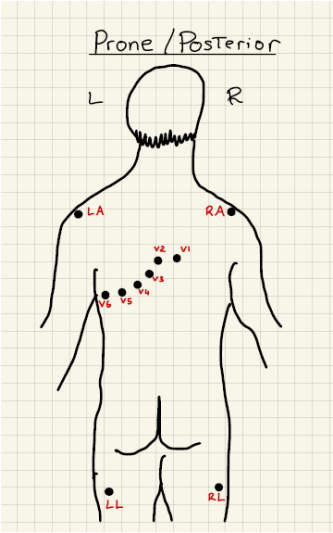


Figure 17

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Appendix A: Prepositioning Checklist

Prepositioning Assessment and Preparation (Supine to Prone/Prone to Supine)

- ☐ R/O contraindications for prone positioning.
- ☐ Confirm provider order to prone patient including length of time/frequency of prone positioning using appropriate prone order set.
- ☐ For patients with a large body habitus, determine if a 180 degree turn can be accomplished within the width of the patient's bed. If not, consider transferring patient to wider bed prior to proning.
- ☐ Explain procedure to patient/family.
- ☐ Assemble equipment.
- ☐ Ensure patient has adequate sedation and pain control to maintain comfort and prevent excessive movements when prone.
- ☐ Stop tube feedings 1 hour before turn if patient receiving gastric feedings. (It is not necessary to hold post pyloric feedings).
- ☐ If port accessed, deaccess port. (Consider additional central access if necessary).
- ☐ Change any dressings that are due to be changed while the patient is lying prone and will not be accessible to change.
- ☐ If patient is receiving CRRT, return blood and disconnect tubing during turn.
- ☐ If patient has Arctic Sun pads in place, re-position pads to prevent patient lying on hoses when prone. Pads can be reversed with hoses with hoses running down the back. May also consider using universal pads where hoses will run along the flank.
- ☐ Empty colostomy or ileostomy bags if present.
- ☐ Lubricate eyes as ordered.
- ☐ Assemble team members and assign roles.
- ☐ Remove any unnecessary equipment from the patient not required during the turn.
- ☐ Ensure emergency equipment is available at bedside.
- ☐ Lines inserted in the upper torso, are aligned with either shoulder (except chest tubes).
- ☐ Lines inserted in the upper torso, including chest tubes, are aligned with either leg and extend off the end of the bed.
- ☐ Verify airway and remaining lines are secure and lines are long enough to reach during the turn.
- ☐ Consider placing a bite block in the patient's mouth if the tongue is protruding.
- ☐ Consider removing headboard of bed for easier access to airway.
- ☐ Hyper-oxygenate patient with FiO_2 100%, perform any necessary pulmonary hygiene. Maintain FiO_2 at 100% throughout the turn.
- ☐ Assess skin integrity on face with RT and optimize ETT securement device placement on face, ears and heat. Note: Commercially available securement devices may increase risk of skin breakdown when prone, may consider alternative methods to secure ETT when prone.
- ☐ Confirm that ETT is at the correct centimeter marking at the lip or gums.
- ☐ Loop ventilator tubing above the patient's head.
- ☐ Remove any pillows/positioning devices.
- ☐ Apply foam dressing and/or barrier cream/spray to bony prominences and pressure points.
- ☐ Maximum inflate bed if patient is on a low air loss surface.

Appendix B: Procedure Checklist Using Tortoise Prone™

Tortoise Prone – Turning Supine to Prone

- ☐ Place flat sheet under patient if one not already in place.
- ☐ Place tortoise pad (large pad in kit) with black side facing down under the patient with patient centered and top of pad aligned with the shoulders.
- ☐ Place a flat sheet between the tortoise pad and the patient.
- ☐ Turn patient slightly away from ventilator using sheet on top of tortoise pad.
- ☐ Slide prone pad (smaller square pad in kit) between the sheet and the tortoise pad. Keep top of tortoise and prone pad aligned.
- ☐ Staff on side on bed opposite of ventilator grasp white handles of prone pad and slides patient towards them while the staff on the ventilator side of the bed holds the tortoise pad stationary using the white handles on the tortoise pad. Image of spine on tortoise pad will be exposed. Tuck sheet on top of tortoise pad on ventilator side under the patient.
- ☐ Place sheet on top of exposed part of tortoise pad and tuck under patient. (Underpad may be under hips when placing sheet).
- ☐ Place patient's arm on ventilator side of bed at their side with hand tucked under their hip, grasp red handles on prone pad on the opposite side of the bed as ventilator, turn patient fully onto side, not yet prone.
- ☐ Remove ECG pads and place new pads on back and connect leads.
- ☐ Confirm ETT and head position is optimal in preparation for turning the patient into the prone position.
- ☐ Continue to turn patient onto abdomen until patient is prone.
- ☐ Remove old sheet and prone pad from on top of the patient.
- ☐ Center patient on bed using white handles on tortoise pad. Black edges of tortoise pad should be on sides of the mattress.
- ☐ Slightly turn patient using long handles on tortoise pad away from ventilator.
- ☐ Place prone pad between mattress and tortoise pad keeping top of both pads aligned.
- ☐ Interlock long red handles of tortoise pad through short red handles of prone pad. Tuck the tail of the tortoise pad so that the anti-skid strip is against the mattress. Tuck the black side panels of the tortoise pad underneath the body of the tortoise pad.
- ☐ Turn patient's head to side.
    - Offload cheeks/ears using head positioner.
    - Place pillow sheet between positioner and face.
    - Options for head positioners include a small fluidized air pillow (mode fluidized head pillow to decrease pressure against patient's ears/checks), a foam head cradle or folded towels/bath blankets under the shoulder/chest area.
- ☐ Elevate chest/shoulders on side head is turned towards by placing a wedge or pillow under the shoulder/chest area.
- ☐ Place patient's arms in swimmer's position (one arm raised with elbow flexed and head rotated towards the raised arm and the other arm is positioned alongside of the patient's body"
- ☐ Position legs to offload pressure points on knees or feet
    - Offload knees: place pillows under thighs and shins or use a foam donut underneath each knee cap.
    - Offload feet: place roll/wedge under the lower shin to raise ankles off bed.
- ☐ Confirm patient is not lying on any medical devices or tubing.
- ☐ Secure all tubing and devices away from skin. If unable to position any devices/tubing away from skin, cushion/protect device to avoid direct contact with skin.
- ☐ Discontinue maximum inflation of bed and place bed in slight reverse Trendelenburg position.

Tortoise Prone – Turning Prone to Supine

- ☐ Prepare supplies.
- ☐ Untuck sides and tail on tortoise pad.
- ☐ Remove any positioning devices.
- ☐ Complete pre-procedure checklist.
- ☐ Unlock the red handles.
- ☐ Hold white handles on one side of the tortoise pad stationary while someone on the opposite side removes the prone pad using its white handles to slide it out.
- ☐ Slightly turn patient using the sheet to the side, slide prone pad between the sheet and the tortoise pad keeping top of prone pad aligned with top of tortoise pad.
- ☐ Slide patient to edge of bed opposite of the ventilator using the white handles of the prone pad while the staff on the ventilator side of the bed keep the tortoise pad stationary by holding the white handles on the tortoise pad.
- ☐ Staff on side opposite of ventilator grasp the white handles on the prone pad and hold it stationary while the staff on the ventilator side grasp the white handles on the tortoise pad pull it and away so that the center mark on the tortoise pad (black spine image) is exposed.
- ☐ Place sheet and underpad on top of the tortoise pad on ventilator side of the bed and tuck under the prone pad.
- ☐ Staff on ventilator side of the bed grasp the red handles of the prone pad on the opposite side of the bed and turn the patient fully onto their side.
- ☐ The ECG lead pads are removed from the patient's back and new pads are applied on the chest and connected to the lead wires by staff on the opposite side of the ventilator.
- ☐ Gently turn the patient the remainder of the way onto their back. Pull the sheet and underpad tucked under the patient out to cover the tortoise pad. Remove old sheet and prone pad from on top of patient.

Appendix B (continued): Procedure Checklist Using Tortoise Prone™

- ☐ Center the tortoise pad on the bed using its white handles so that the black edges are on the sides of the mattress.
- ☐ Make sure patient is properly aligned on tortoise pad and tuck the tail so that the anti-skid strip is against the hospital mattress.
- ☐ Position arms and legs to off load pressure.
- ☐ Adjust lines and tubes.
- ☐ Discontinue maximum inflation of bed.

Appendix C: Procedure Checklist Using Sheets and Pillows

Sheets and Pillows – Turning Supine to Prone

- ☐ Complete pre-procedure checklist.
- ☐ Place foam dressings on any bony prominences or potential pressure areas when turned.
- ☐ Pull patient/undersheet to side of bed opposite of ventilator and tuck remaining portion of sheet under patient.
- ☐ Place new sheet/underpad on side of bed nearest to ventilator, tuck ½ vertically under patient.
- ☐ Place patient's arms at sides.
- ☐ Tuck patient's hand on the ventilator side of the bed under their hip.
- ☐ Turn patient fully onto side closest to ventilator.
- ☐ Remove ECG leads, place ECG pads and connect lead wires on back of patient.
- ☐ Depending on patient's body's habitus, at this point, can consider placing pillow as chest and hips for the patient to roll onto.
- ☐ Confirm ETT and head position is optimal in preparation to turning patient into the prone position.
- ☐ Slowly turn patient onto stomach on new sheet/pads, pull folded portion of new sheet/pads out from under patient and center patient on bed.
- ☐ Turn patient's head to side.
    - Offload cheeks/ears using head positioner.
    - Place pillow sheet between positioner and face.
    - Options for head positioners include a small fluidized air pillow (mode fluidized head pillow to decrease pressure against patient's ears/checks), a foam head cradle or folded towels/bath blankets under the shoulder/chest area.
- ☐ Elevate chest/shoulders on side head is turned towards by placing a wedge or pillow under the shoulder/chest area.
- ☐ Place patient's arms in swimmer's position (one arm raised with elbow flexed and head rotated towards the raised are and the other arm is positioned alongside of the patient's body"
- ☐ Position legs to offload pressure points on knees or feet
    - Offload knees: place pillows under thighs and shins or use a foam donut underneath each knee cap.
    - Offload feet: place roll/wedge under the lower shin to raise ankles off bed.
- ☐ Confirm patient is not lying on any medical devices or tubing.
- ☐ Secure all tubing and devices away from skin. If unable to position any devices/tubing away from skin, cushion/protect device to avoid direct contact with skin.
- ☐ Verify abdomen is unobstructed (one hand width separates abdomen from mattress) and hips and chest are elevated cushioned.
- ☐ Discontinue maximum inflation of bed and place bed in slight reverse Trendelenburg position.

Sheets and Pillows – Turning Prone to Supine

- ☐ Complete pre-procedure checklist.
- ☐ Remove any positioning devices.
- ☐ Prepare supplies.
- ☐ Pull patient/undersheet to the side of the bed farthest away from the ventilator.
- ☐ Place new sheet on side of bed nearest to ventilator (including underpad for under buttocks), tuck under patient.
- ☐ Place patient's arms at sides.
- ☐ Turn patient fully onto their side closest to ventilator with arm on side tuned down tucked under body.
- ☐ Remove ECG pads from back of patient and place ECG pads and connect ECG leads on patient's chest.
- ☐ Tuck vertical half of sheet closet to ventilator under the patient.
- ☐ Slowly turn patient onto pack on new sheet.
- ☐ Remove sheet and pads that were under patient and pull new sheet/pads under patient, center patient in middle of bed.
- ☐ Position patient appropriately.
- ☐ Discontinue maximum inflation of bed.

6/1/2020

Quick Tips for PI Prevention on Proned Patient

Prior to Prone Turn

Use foam dressings & barrier cream on anterior pressure areas (ie. clavicle, knees, hips, elbows)

Instill eye ointment. Close eye lids

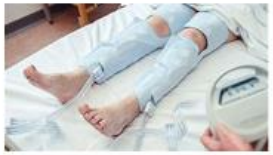
On anterior service of body, remove all removable devices (ECG electrodes, SCDs, Stat lock) and pad any devices that cannot be removed (ie. Peg Tube, colostomy bag, etc.)

Assess ETT securement device (cheeks, lips, ears); consider alternative methods to secure ETT

While in Prone Position

Place patient's arms in swimmers position. Elevate chest/shoulders on the side the head turned towards by placing a wedge or pillow under the shoulder/chest area. Rotate arm position q2h

Reposition devices so patient is not laying on tubing/hard areas (ie. SCD tubing/plastic; Arctic Sun pads)



Turn patient q2h using wedge or pillows

Offload cheeks/ears using a head positioner. If using gel pillow, be sure to indent at pressure areas. Reposition head q2h. Change pad under face if wet from oral secretions

Position and pad ankles and knees off bed. Reposition knees and feet q2h