Guide for Transporting Mechanically Ventilated Patients in the Prone Position

STAT MedEvac Education
3/2020
Objective

- The purpose is to provide educational guidance on how to safely transport a mechanically ventilated patient in the prone position.
Background

• Transporting a patient in the prone position is a safe and viable option when conventional methods of mechanical ventilation have failed.

• Transports can be completed in both the H135/H145 along with ground ambulance
Goals

- Improve V/Q mismatching
- Increase alveolar recruitment
- Aid in the distribution of extravascular fluid
Potential Complications

- Tube dislodgment
- Inability to access chest / airway
- Increase likelihood for mucus plug
- Increased risk of developing pressure ulcers
- Medication / Invasive line kinking
When to consider Prone Positioning
Patient Presentation

COVID-19 Patient Example

Patient placed on Nasal Cannula up to 6 LPM

Titrated to a NRB up to 12 LPM

Is this ARDS?
PEEP>10 and FiO2 0.6
Is P:F < 150?

If ARDS = Prone

When patient requires > the 12 LPM
HFNC
NIPPV
Intubate
What is a P/F Ratio

**PaO2 / FiO2**
Obtain an ABG

Ex.  PaO2 = 83     FiO2 = 45%

Change FiO2 to a decimal  0.45

83/0.45 = 184 P/F Ratio

P/F Ratio < 300 indicates an Acute Lung Injury
P/F Ratio < 200 indicates ARDS
Assessment & Report

- Following report:
  - Assess patient
  - Apply monitor
  - Obtain an arterial or venous gas on the iSTAT
  - Review Current Ventilator Settings
  - Consult MDOC
Discuss the following:

- Infection Prevention Issues
- Vital Signs
- Drips
- Patient ABG result
- Ventilator Settings
- Resources available to Prone
- Mode of Transport
Supplies Needed for Proning

- Ensure “bite block” ETT holder
- Place NGT when possible
- Pillows, Bath Blankets, Chucks (for Padding)
- Foam Anesthesia Donut (if available)
- Foam Cushions for tubes, drains and pressure points
- Extra electrodes
- Mega Mover
## Supine to Prone Checklist

<table>
<thead>
<tr>
<th>Checklist for Prone Patient Transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draw and ABG (if not done in last hour)</td>
</tr>
<tr>
<td>Ensure sedation to RASS-5</td>
</tr>
<tr>
<td>Donut Pillow if Available</td>
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<tr>
<td>Commercial Tube Holder</td>
</tr>
<tr>
<td>Apply foam to pressure points if necessary</td>
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<tr>
<td>Pillows for (Chest, Pelvis, Flank, Knees)</td>
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<tr>
<td>Wrist Restraints</td>
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<tr>
<td>Ensure all lines and extensions are secure</td>
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<tr>
<td>Ample Assistance, Coordinate movement with the local nursing staff</td>
</tr>
<tr>
<td>Extra End Tidal CO2 in-line</td>
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<tr>
<td>2 packs of electrodes</td>
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<tr>
<td>Suction equipment (Ballard preferred)</td>
</tr>
<tr>
<td>NG/OG Placement</td>
</tr>
<tr>
<td>Lube and Tape for eye lids</td>
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</tbody>
</table>
Application of the monitor:

- If anticipation of arrhythmias apply quick combo pads prior to moving patient

Troubleshooting:
- Adjust gain by increasing when utilizing electrodes on patients posterior
- Quick combo pads can be used for monitoring instead of limb leads
Prone Preparation / Considerations

• Make sure you have ample assistance
  – Someone to manage ETT
  – 2 individuals on each side of the patient
  – Depending on gross weight additional assistance may be needed

• Dedicate one provider to patients head
  – Guide patient movement
  – Clear ETT
  – Maintain good ETT control
Prone Preparation / Considerations

- Prepare the STAT stretcher
  - Utilize the Mega Mover

- Review video on preparing STAT Stretcher

https://videopress.com/v/TE80TNl4

* Cut and paste link into browser to view
Prone Preparation / Considerations

- Tuck patients arm in line with prone position to the side you are rolling toward
- Make sure all lines are clear for patient movement / transfer infusions to transport pump
- 2-3 staff are stationed on each side of patient's chest, abdomen, and legs.
- The nurse will lead and direct.
Patient Movement – Supine to Prone

- Prone video available on UPMC Infonet

https://infonet.upmc.com/search/Pages/results.aspx?k=manual%20prone%20positioning%20in%20ARDS#video-modal-player

Right Click Link
Select Open Hyperlink

- Review the Manual Prone Positioning Guide provided
Supine to Prone – Transfer to STAT Stretcher

• Place pillows
  – Under chest
  – Pelvis
  – Knees
  – Right Flank to provide 30 degree lift

• Utilize transfer sheet with slider so patient can be moved as positioned in prone
• Ensure patients head is turned to right for transport
Once patient is secured to STAT stretcher reassess the following:

- Intravenous and invasive lines
- ETT placement
- Ventilator
- Vital signs on Zoll
- Reconsult if you encounter any issues
PRONE TO PRONE
Prior to patient movement complete the following

- Make sure you have ample assistance
- Place Donut Pillow and Chest Pillow prior to movement
- Dedicate 1 individual for management of ETT
Once ready slide patient

- Use sheet with slider (or Megamover) to move patient as one unit
- Place pillow under flank for 30 degree rotation
- Place pillows under pelvis and knees
- Insure all lines, drains, and tubes are clear with appropriate padding to prevent kinking and skin contact
- Apply wrist restraints
- Ensure head is turned to the right
• If patient is already proned the following is additional information you will want to obtained prior to consult:
  
  – Bispectral Monitoring Index
  – Train of Four Ratio
  – Riker Score
  
  Preferred a Riker of 1 = RASS -5
Bispectral Index Monitoring

- Assess depth of sedation. This is calculated by measuring cerebral electric activity via EEG.
  - 100 – 90 awake and responding
  - 80-70 responsive to loud commands
  - 70-60 Intense Tactical Stimulation Needed
  - 60-40 Unresponsive to verbal stimulus, low chance of recall
  - < 40 deep hypnotic state protective reflexes intact
  - < 20 Burst suppression, low resp. drive, possible protective reflexes
  - 0 Flat line = suppressed
Per UPMC Policy for all Proned patients the score should be a **RICKER of 1**.

<table>
<thead>
<tr>
<th>Score</th>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Dangerous agitation</td>
<td>Pulling at endotracheal tube, trying to remove catheters, climbing over bedrail, striking at staff, thrashing side-to-side</td>
</tr>
<tr>
<td>6</td>
<td>Very agitated</td>
<td>Does not calm despite frequent verbal reminding of limits, requires physical restraints, biting endotracheal tube</td>
</tr>
<tr>
<td>5</td>
<td>Agitated</td>
<td>Anxious or mildly agitated, attempting to sit up, calms down on verbal instructions</td>
</tr>
<tr>
<td>4</td>
<td>Calm, cooperative</td>
<td>Calm, easily arousalbe, follows commands</td>
</tr>
<tr>
<td>3</td>
<td>Sedated</td>
<td>Difficult to arouse, awakens to verbal stimuli or gentle shaking but drifts off again, follows simple commands</td>
</tr>
<tr>
<td>2</td>
<td>Very sedated</td>
<td>Aroused to physical stimuli but does not communicate or follow commands, may move spontaneously</td>
</tr>
<tr>
<td>1</td>
<td>Unarousable</td>
<td>Minimal or no response to noxious stimuli, does not communicate or follow commands</td>
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</tbody>
</table>
The purpose of this test is to test patients’ neuromuscular function while on NMBAs.

Testing sites most often used are the Ulnar and Facial Nerves.

- **2/4 – Adequate**
- **4/4 – needs additional paralytics or an increase in titration**
- **0/4 – too much, should decrease titration**
Transport Considerations

• Your ability to access the patient is now limited
  – For purposes of planning for potential rolling the patient supine, make sure patient is 30 degrees rotated with right side up.

• All operations for loading and unloading are cold and slow

• Have suction hooked up and ready for use due to the increase in secretions (Ballard Preferred)
Transfer of Care

• Have someone dedicated to patients head during patient movement.

• Patient will remain prone at destination so slide patient over to hospital bed with ample assistance being mindful of all lines currently connected

• Make sure you clamp ETT during switch over to prevent derecruitment, also place bedside and transport ventilator in stand by mode
Special Considerations – For Setting up STAT Stretcher

• Consider Flip if patient decompensates or arrests
  – See video
  – Alert pilot

• Known communicable disease
  – PPE
  – Consider 2 wraps to encapsulate the patient

• Morbid Obesity
  – Additional help to move
  – Reverse Trendelenburg if possible
  – 2 wraps
Reference