

# **Guide for Transporting Mechanically Ventilated Patients in the Prone Position**

STAT MedEvac Education  
3/2020



**UPMC** LIFE  
CHANGING  
MEDICINE

# 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



When patient requires  
> the 12 LPM

HFNC  
NIPPV



**Intubate**



Is this ARDS?  
PEEP > 10 and FiO<sub>2</sub> 0.6  
Is P:F < 150?

If ARDS = Prone

# What is a P/F Ratio

## PaO<sub>2</sub> / FiO<sub>2</sub>

Obtain an ABG

Ex. PaO<sub>2</sub> = 83      FiO<sub>2</sub> = 45%

Change FiO<sub>2</sub> 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



# MDOC Consult

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

## Checklist for Prone Patient Transport

Draw and ABG (if not done in last hour)

Ensure sedation to RASS-5

Donut Pillow if Available

Commercial Tube Holder

Apply foam to pressure points if necessary

Pillows for (Chest, Pelvis, Flank, Knees)

Wrist Restraints

Ensure all lines and extensions are secure

Ample Assistance, Coordinate movement with the local nursing staff

Extra End Tidal CO2 in-line

2 packs of electrodes

Suction equipment (Ballard preferred)

NG/OG Placement

Lube and Tape for eye lids

# Prone Preparation / Considerations

## 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/TE80TNI4>

\* 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

# Movement Continued – Supine to Prone

- 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

# Patient Movement – 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



# Prone to Prone Continued

- 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



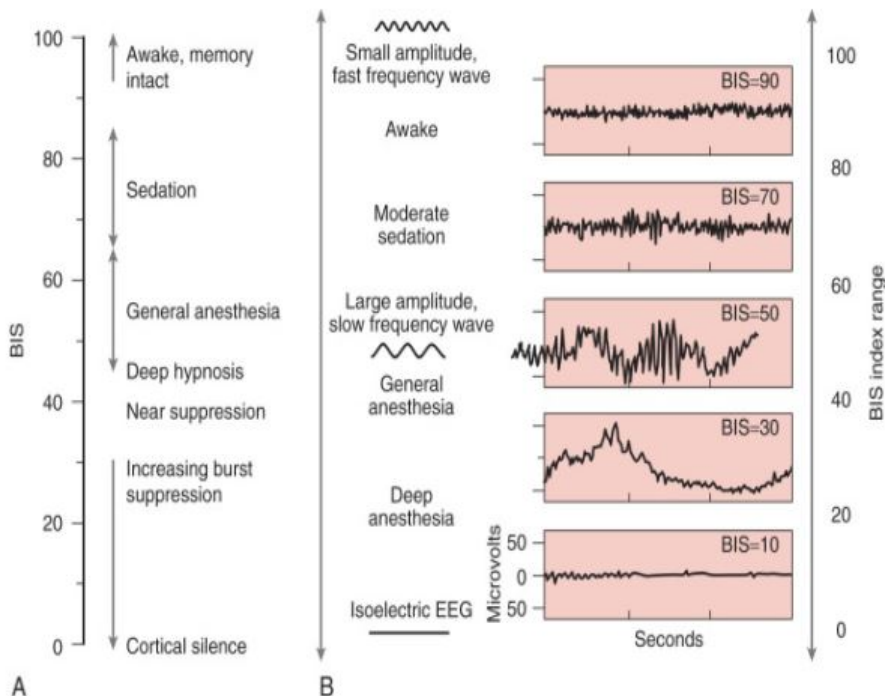
## Additional Info

- If patient is already prone the following is additional information you will want to obtain prior to consult:
  - Bispectral Monitoring Index
  - Train of Four Ratio
  - Riker ScorePreferred 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



# RICKER Score

- Per UPMC Policy for all Proned patients the score should be a **RICKER of 1.**

Score	Category	Description
7	Dangerous agitation	Pulling at endotracheal tube, trying to remove catheters, climbing over bedrail, striking at staff, thrashing side-to-side
6	Very agitated	Does not calm despite frequent verbal reminding of limits, requires physical restraints, biting endotracheal tube
5	Agitated	Anxious or mildly agitated, attempting to sit up, calms down on verbal instructions
4	Calm, cooperative	Calm, easily arousable, follows commands
3	Sedated	Difficult to arouse, awakens to verbal stimuli or gentle shaking but drifts off again, follows simple commands
2	Very sedated	Arouses to physical stimuli but does not communicate or follow commands, may move spontaneously
1	Unarousable	Minimal or no response to noxious stimuli, does not communicate or follow commands

# Train of Four Ratio

- 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

- <https://www.tandfonline.com/doi/full/10.3109/10903127.2016.1162888>

