Prone Position for Ventilation in Adult Critical Care

Statement of best practice: Patients considered for prone ventilation should be clinically assessed by the intensive care senior medical team prior to the procedure.

Indications
- Ventilated patients with Acute Respiratory Distress Syndrome
- FIO2 greater than 60%
- Ventilator settings optimised
- Paralysed and recruitment manoeuvres attempted
- Unable to keep peak airway pressure <30cm H2O
- Positive end expiratory pressure >5cmH2O

Potential Contraindications
- Head injury with raised ICP
- Increased intra-abdominal pressure
- Open abdomen
- Pregnancy
- Morbid obesity
- High risk of cardiopulmonary resuscitation or defibrillation

Absolute Contraindications
- Unstable spine fractures
- Multiple trauma
- External pelvic fixation
- Chest or pelvic fractures
- Recent tracheal surgery
- Sternotomy or pacemaker

Pre-Manoeuvre Care
- Explain procedure to family
- Stop feed
- Aspirate NG
- Change ET ties
- Mouth Care
- Eye Care (eyes closed)
- Recirculate CICA
- Invasive lines secure
- Allocate team roles
- Procedures completed prior to proning: CXR, CVC insertion.
- Sedation/Paralysing agent
- Pre-oxygenate

Equipment
- Sheets x2
- Glide sheet
- Soft ET ties
- Pillows x3 (chest, abdomen, Knee)
- 5 ECG dots
- Eye lubricant
- Eye pads
- Eye tape
- Kerrapro for pressure points
- Intubation trolley at bedside
- Minimum x5 staff (1x with airway skills)

Post Maneouvre Care
- Relieve pressure points
- Apply face protection
- Check ET position
- Apply ECG dots
- Reapply monitoring
- Head tilt
- Recomence infusions
- Recomence Feed
- Recomence CICA
- Tilt bed 15-30 degrees to reduce oedema and ng aspiration
- ABG 30-60 minutes
- 4 hourly head turns by staff competent in airway skills

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'Cornish Pasty' Technique

1. Identify turn leader / coordinator.
2. Identify person to manage airway during the procedure.
3. 2x staff each side of the bed.
4. Patient’s limbs to have lines protected with towel/pad.
5. Pre-oxygenate
6. Place spo2 probe onto the limb.
7. Remove all other monitoring.
8. Remove pillow.
9. Insert slide sheet using concertina technique.
10. Place 1 sheet on top of the patient.
11. Roll sheets together on each side of the patient.
12. Slide patients to the side of the bed (ideally away from the ventilator).
13. Turn patient onto side by pulling patient up towards you, then away from you in a ‘C’ shape.
15. Check head position- deflate top cells if needed.
16. Check ETT, lines etc.
17. Position into the 'swimmers' position.
18. Put pillows under the flank.
19. Place pillows/repose under shins (to keep toes off the bed).
22. Tilt bed at 15-30 degree angle.
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'Routine' prone position

1. Identify turn leader / coordinator
2. Identify person to manage airway during the procedure
3. 2x staff each side of the bed.
4. Patients arm to have lines protected with towel/pad
5. Pre-oxygenate
6. Place spo2 probe onto the limb
7. Remove other monitoring
8. Remove pillow
9. Insert slide sheet using the concertina technique.
10. Slide patients to one side of the bed (ideally away from the ventilator).
11. Place new sheet onto the bed.
12. Turn patient onto side by pulling patient up towards you, then away from you in a ‘C’ shape.
13. Rotate patient on to the front, onto new sheet until in the prone position.
14. Check head position- deflate top cells if needed
15. Check ETT, lines etc.
16. Position into the ‘swimmers’ position.
17. Put pillows under the flank.
18. Place pillows under shins (to keep toes off the bed).
20. Reattach cables and infusions.
21. Tilt bed at 15-30 degree angle.
Critical Care Services
The James Cook University Hospital

Date: 01/03/2020
Revision Due: 01/03/2023

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The delivery of CPR in prone position ICU patients in cardiac arrest.

Cardio pulmonary arrest is a very time sensitive situation. Once cardiac arrest is confirmed all guidance for the adult resuscitation states commencing effective CPR immediately to maintain brain perfusion increasing the chance neurological recovery should a Return of Spontaneous Circulation (ROSC) occur. However for the ICU patient that is in the prone position a significant amount of time maybe lost turning the patient supine especially when tubes and invasive devises are present. This also required a significant number of people to achieve.

There is a growing body of evidence suggesting the commencement of CPR whilst the patient is in the prone position is an effective immediate response especially in the intubated patient. Some studies suggest CPR in the prone position can be more effective in generating effective perfusion than in the supine position. There appears to be no specific evidence to suggest that a different level of hand position, depth or rate of CPR will be of greater benefit than what is currently recommended in the supine position. To aid in the retention of skills it also make since to try to achieve the current rate and depth of compression only in the opposing position between the thoracic and cervical spine.

1. Call for help
2. Confirm cardiac arrest
3. If air mattress deflate / use CPR feature on bed frame to lower to a reasonable height to perform CPR.
4. Deliver CPR in the centre of the upper spine at a rate of 100-120 / min aiming for 5-6 cm of compression (standard recommendation).
5. If arterial blood pressure monitoring present and ETCO2 observe monitor for perfusion wave form generation.
6. If no effective perfusion suspected or airway management ineffective when sufficient help and skills present, consider rapidly tuning the patient supine and recommencing standard approach to CPR.
7. Defibrillator pad placement in corresponding positions over the right scapula and left mid axilla. Also, anterior / posterior or right and left mid axilla can be used in the prone position.
This Critical Care Services guideline contains the use of this guideline is subject to professional judgement and has been developed for the benefit of those working in the healthcare field.

### Name

WRITE OR ATTACH ADDRESSOGRAPH
Surname_____________________________
Forenames____________________________
DOB dd / mm / yyyy Age______________
Hospital number_______________________
NHS number__________________________

### Aim

To ensure patient safety is maintained and best procedural practice is attained with the intention of minimising the occurrence of adverse effects.

### When

Throughout the procedure.

### By whom

All healthcare professionals responsible for the procedure.

### SIGN IN

- All members of the team introduced themselves
- Consultant/Senior nurse aware. If NO, explain reason.
- Any contraindications □ NO □ YES. If YES, explain
- Eyes taped and lubricated
- ETT taped/tied (ETT anchor devices removed)
- Re-intubation equipment available
- Other equipment available as per guideline

Are there any concerns about this procedure for the patient? □ NO □ YES - If YES, explain ______________________________________________________________________________________

### TIME OUT

- Minimum of 5 people plus 1 for chest drains
- All team members aware of role
- Appropriate ventilator settings
- Cardiovascular stability

### Verbal confirmation between team members before start of procedure

- Team members familiar with procedure
- Adequate sedation (i.e., RASS -5)
- Adequate muscle relaxation – consider need for bolus
- Pillows positioned correctly – chest, pelvis, knees

### SIGN OUT

- Capnography & monitoring re-established
- Ventilator settings reviewed
- Lines secured
- Chest drains below patient and unclamped
- Slide sheet removed
- Reverse Trendelenburg 30°
- NG position confirmed
- Enteral feed resumed

### Pressure areas checked:

- ETT not pressing against lips
- No pressure on eyes
- Ears not bent over
- NG not pressed against nose
- Penis between legs & urinary catheter secured
- Lines & tubing not resting against skin
- Pillows positioned correctly

#### PRINT NAME / SIGN / REG NO

Checklist completed by_________________________ Date _____________ Time _____________

Other team members ____________________________________________

Location __________________________________________________________________________

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Procedures Checklist / General Critical Care / 06/02/2020

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### Proning Checklist / General Critical Care / 06/02/2020

<table>
<thead>
<tr>
<th>AREA</th>
<th>CHECK POINT</th>
<th>Checked / Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Head/Face</strong></td>
<td>Check ETT/Tracheostomy is accessible/not kinked (ETT cm at teeth ______)</td>
<td></td>
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<tr>
<td></td>
<td>All connections between ETT and ventilator circuit secure</td>
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<tr>
<td></td>
<td>Note ETT/tracheostomy cuff pressure</td>
<td></td>
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<tr>
<td></td>
<td>ETT positioned in middle of mouth, not compressing lips</td>
<td></td>
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<tr>
<td></td>
<td>Dermal gel pads placed between ETT cotton ties and patient’s skin</td>
<td></td>
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<tr>
<td></td>
<td>Confirm ears are not bent over</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perform ETT/tracheal suctioning immediately post proning</td>
<td></td>
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<tr>
<td></td>
<td>Eyes taped shut</td>
<td></td>
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<tr>
<td></td>
<td>No direct pressure on the eyes</td>
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<tr>
<td></td>
<td>Ensure 30° foot down positioning (Reverse Trendelenburg)</td>
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<tr>
<td></td>
<td>Move patient’s head from side to side 2 hourly to relieve pressure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NG tube secure and not displaced (cm at nose ______)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NG tube not causing pressure to nostril</td>
<td></td>
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<tr>
<td><strong>Neck</strong></td>
<td>Verify that patient’s lower back and neck are not hyper-extended</td>
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<tr>
<td></td>
<td>Front of neck free from compression</td>
<td></td>
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<tr>
<td></td>
<td>Central line secure</td>
<td></td>
</tr>
<tr>
<td><strong>Chest</strong></td>
<td>Chest drains patent and on correct suction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Breasts supported and free from pressure</td>
<td></td>
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<tr>
<td><strong>Abdomen</strong></td>
<td>Abdomen free</td>
<td></td>
</tr>
<tr>
<td><strong>Pelvis</strong></td>
<td>Pelvis support cushion in place</td>
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<tr>
<td></td>
<td>Male genitalia positioned between legs</td>
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<tr>
<td></td>
<td>Catheter tubing is free and between legs</td>
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<td></td>
<td>Shoulders not rotated</td>
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<td></td>
<td>No compression over elbows</td>
<td></td>
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<tr>
<td></td>
<td>Wrists in neutral position</td>
<td></td>
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<tr>
<td></td>
<td>Hands free</td>
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<tr>
<td></td>
<td>Alternate Swimmers Position 2-4 hourly</td>
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<tr>
<td></td>
<td>No peripheral IV lines under patient</td>
<td></td>
</tr>
<tr>
<td><strong>Legs</strong></td>
<td>Pillows positioned under shins to prevent extension</td>
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</tr>
<tr>
<td><strong>Infusions and Monitoring</strong></td>
<td>All monitoring recommenced</td>
<td></td>
</tr>
<tr>
<td></td>
<td>All infusions connected and infusing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check CRRT lines patent</td>
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<tr>
<td></td>
<td>ECG leads not underneath patient</td>
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<tr>
<td></td>
<td>Ensure patient is well sedated and pain free</td>
<td></td>
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<td></td>
<td>Infusion lines not resting on patient’s skin</td>
<td></td>
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<tr>
<td></td>
<td>Mattress is in dynamic mode</td>
<td></td>
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<td></td>
<td>Check ABG 20-30 mins post prone positioning</td>
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