Proning Patients in Critical Care

This guideline is consistent with the FICM/ICS Guidance for *Prone Positioning in Adult Critical Care* 2019 which can be accessed at:
https://www.ficm.ac.uk/sites/default/files/prone_position_in_adult_critical_care_2019.pdf

INDICATION

ARDS with PF ratio (PaO_2/FiO_2) <20kPa and FiO2 > 0.6, ideally within <48h of onset of respiratory failure.

ABSOLUTE CONTRAINDICATIONS

Spinal instability
Open chest/abdomen
Less than 24h after open cardiac surgery
Central cannulation for VA ECMO
Pelvic external fixation
Pharyngo-laryngo-oesphagectomy (PLOG)

RELATIVE CONTRAINDICATIONS

Major trauma including significant pelvic, chest, brain or maxillofacial injuries
Raised intracranial or intra-ocular pressure
Fulminant hepatic failure
Frequent seizures
Tracheostomy < 24h
Cardiovascular instability
Morbid obesity
$2^{nd}/3^{rd}$ trimester pregnancy

DURATION

Responders: Aim for 16 hours in prone position if PF ratio improves within 60 minutes of proning

Non-responders: If no improvement in PF ratio within 60 minutes of proning consider returning patient to supine position

PREPARATION- REFER TO THE PROCEDURE SAFETY CHECKLIST

Patient

Ensure Incapacity Form has been completed.
Take a baseline ABG.
Pre-oxygenate patient (FiO2 1.0).
Note grade of intubation and position of ET tube/tracheostomy tube.
Secure ET tube with a tube tie. Do not use tape or Anchor Fast.
Ensure patient has a closed suction system in-situ. Suction airway.
Perform eye and mouth care as per NHS Lothian policy.
Eyes cleaned, lubricated and taped to prevent drying and ulceration.
NG Tube: stop feed (ideally 1 hour before proning) and aspirate; change NG tube tape before turn.
Perform oropharyngeal suction.
Ensure patient is adequately sedated and consider neuromuscular paralysis.

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Equipment

Therapeutic mattress required, ideally Pro Nimbus.
Ensure that reintubation equipment has been checked and is available.
Disconnect any unnecessary equipment/lines; adjust and secure any remaining lines to prevent kinking or disconnection.
Raise the bed to appropriate height as per manual handling guidelines.

Team

Five healthcare workers are required to turn a patient plus an airway doctor at the patient's head. Nominate a leader (usually the doctor at the airway) to instruct manoeuvres. The leader should now decide with the team the safest direction to slide the patient. Three individuals should stand at the side where the patient will be moved to the edge of the bed.

PRONING PATIENTS

Variances in the proning guideline exist depending on the mattress the patient is on/or is available. Identify now whether the patient is on a Nimbus **or** Pro Nimbus mattress.

Step 1

Insert 2 glide sheets under the patient's bottom sheet (to allow sideways movement).

Step 2

Disconnect ECG and remove electrodes from the patients' chest. Prepare 5 new electrodes for placing on the patient's back, for use once the patient has been proned.
Bring lines from upper half of body to the top of the bed and lines from the lower half to the bottom.

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Step 3

Place a sheet over the patient, folded over and back, so that the patient's face is uncovered.
If the team wishes to 'wrap in' the pillows with the rolled-up sheet, this decision should be made now.

Step 4

At the side with 2 team members roll the top sheet edge under the bottom sheet, rolling top and bottom sheets together as close as possible to the patient (left image below).
At the side with 3 team members roll the bottom sheet edge up over the top sheet, rolling bottom and top sheets together as close as possible to the patient (right image below).
If chest drains are in-situ allocate one team member to check position throughout the manoeuvre.

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Step 5

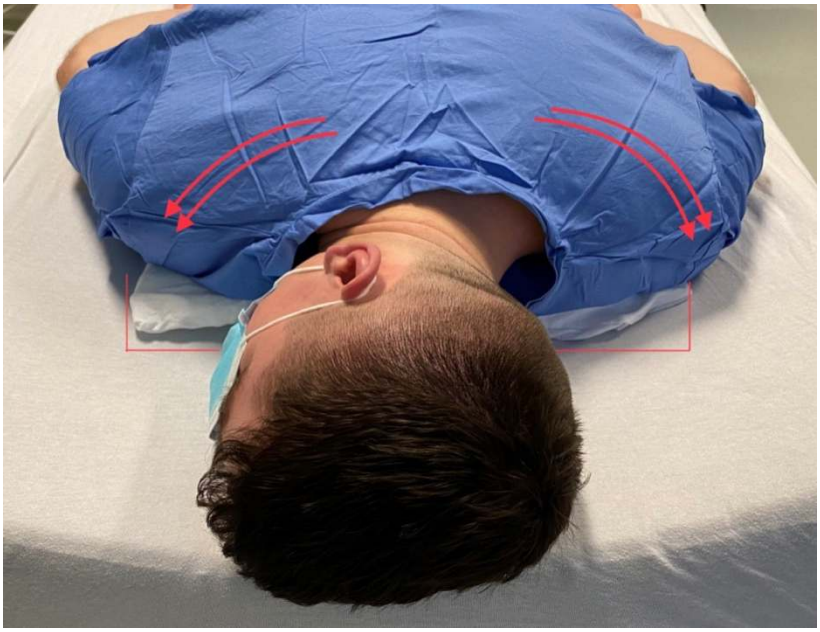
Agree as a team the steps for turning the patient prone.
The leader should reiterate with the team the safest direction to slide the patient to edge of bed.

Step 6

On instruction from the airway doctor, the three healthcare workers slowly bring the patient up onto their side, the patients back is then against the three members of staff with guidance and supervision of the remaining two.

Step 7 Pillow placement

All patients should have a pillow under the chest, folded in half, placed centrally so will be directly under the chest, between the shoulders as in the image below. Positioning the chest pillow this way, should allow the shoulders to fall slightly forward of the anterior capsule of shoulder joint, to reduce risk of brachial plexus injury. Depending on body habitus 2 pillows maybe required.



If Pro Nimbus Mattress unavailable

In addition to a chest pillow, if the patient is being nursed on a normal Nimbus mattress, two further pillows should be placed- one under hips (ensuring gentalia and abdomen are free) and one under lower legs. Depending on body habitus 2 pillows maybe required. Place mattress in 'transfer' (static) mode.

Step 8

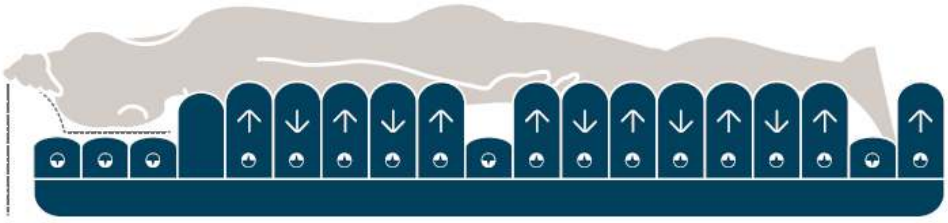
Three team members on one side should continue to rotate patient using the glide sheet until the patient is moved into a prone position. Ensure two team members are supporting and supervising the patient. Remove glide sheet as per manual handling guidance.

Step 9

Airway doctor and one nurse from each side should position patient's head and ET tube carefully to one side. Recheck position of ETT.
Place ECG electrodes on the patient's back as shown.
Inspect all lines including catheter for pressure issue.

Step 10 (Pro Nimbus Mattress only)

Deflate mattress cells under the patient's head (Tricell Head deflation: 3 head cells are deflated, shoulder support cells remain inflated), and one cell at the level of the genitalia and heel areas.



Step 11 Limb and head positioning

Upper limbs

With careful limb handling, arms to be placed in swimmer's position, the head turned towards a raised arm, as follows: to elevate the arm, support the weight of the arm at the elbow and the hand throughout the movement (1). Gently bring the arm out to the side so that the hand comes over the edge of the bed (2). Allow the elbow to bend, bringing the hand forward (3), towards the head of the bed (4). Place the hand, palm down, to rest onto the mattress (5).


(1)


(2)


(3)


(4)


(5)

Finally, place the patient's raised arm so that the shoulder is in approximately 45-70 degrees abduction with the elbow gently flexed (6). If there is resistance or lack of range to be able to move the patients limbs in this way, it may be appropriate to leave both arms by the patients side (7) until limb repositioning can be discussed with a physiotherapist. Ensure the elbow is adequately cushioned.

(6)


(7)

Lower limbs

To reduce excessive pressure around the knee (which can lead to foot drop), place an open Prolevo pressure relieving boot at each knee. The knee will sit in the traditional 'heel' space, with the short section of the boot up under the thigh, and the lower leg resting into the longer section as shown. If not already insitu, a pillow should then be placed under the legs to support the ankle into a neutral position.

Head and neck
Place a head supporting aid (such as gel-pad, donut or foam headrest) under head if needed so that neck remains in as neutral position as possible and isn't overly rotated or flexed.

ONGOING CARE- REFER TO THE POST PRONING CHECKLIST

Check ABG after 30 mins.
Tilt bed upwards at 30 degrees (reverse Trendelenburg) to limit the development of facial oedema.
Ensure no direct pressure on the eyes and that ears are not bent over.
Perform 2-4 hourly mouth and eye care, and ensure ETT and NGT ties remain secure.
Observe the position of drainage tubes and ensure the surrounding skin is adequately protected.

Changing position (aim for 2-4 hourly)
There is a risk of long term peripheral nerve damage so careful limb repositioning is crucial; early physiotherapy input is important to provide input/advice on this.
Perform 2-4 hourly turns to prevent cheek, ears, nose and neck pressure sores, oedema and potential peripheral nerve injures.

Firstly, carefully return the raised arm back alongside the patients body as follows: support the weight of the arm at the elbow and the hand throughout the movement (1). Gently bring the arm out to the side so that the hand comes over the edge of the bed (2). Allow the elbow to bend, bringing the hand downward (3), towards the foot of the bed (4). Place the hand, palm up, to rest onto the mattress (5).

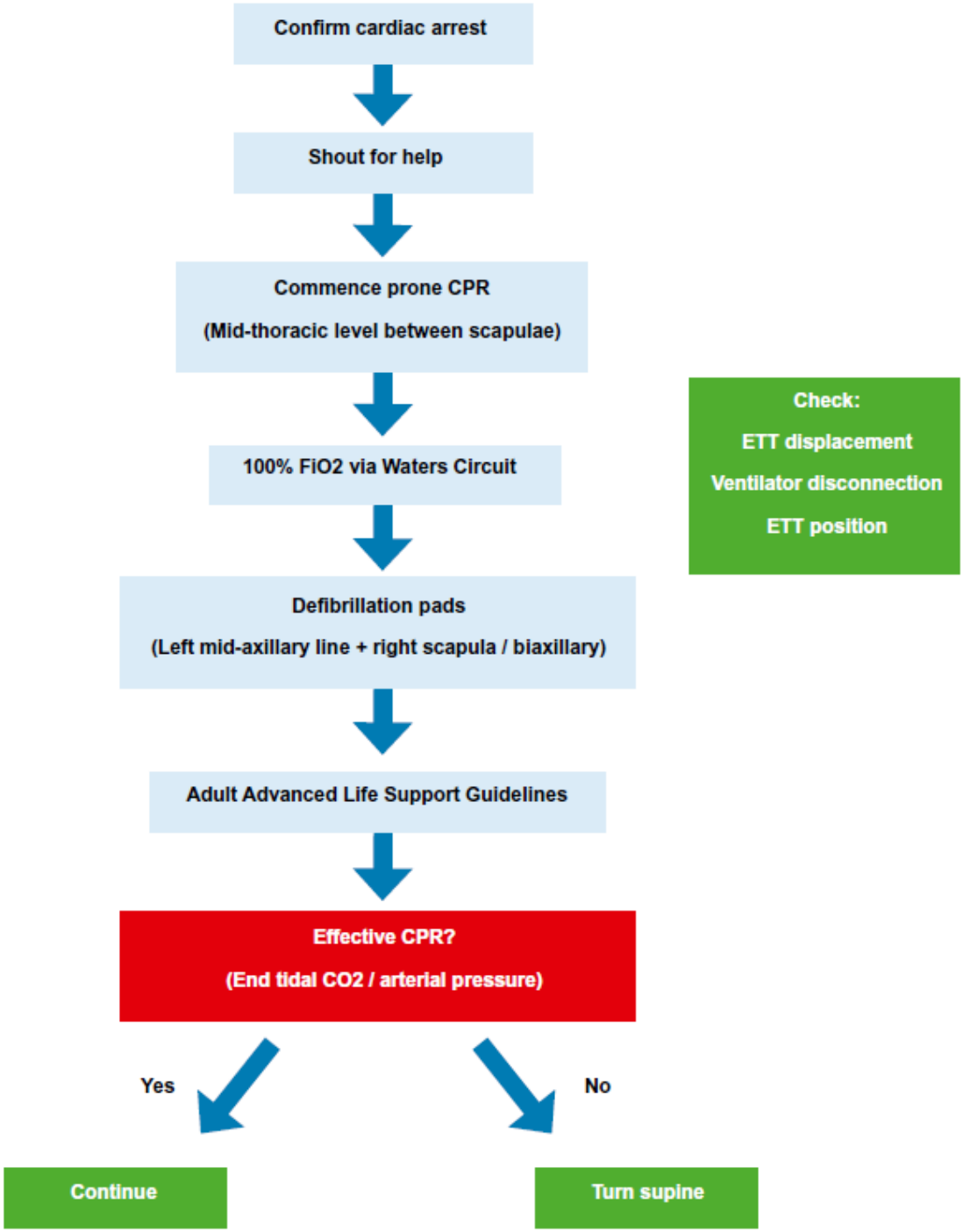
(1) (2) (3) (4) (5)

Secondly, with the assistance of 3 healthcare workers, use the sheet to lift patient's shoulders from the bed (ensuring sheet is free from the patient's throat and at shoulder level) then turn the patient's head to face the opposite direction (right image below). Carefully, raise the patient's other arm into the swimmer's position described in Step 11.

TURNING A PRONED PATIENT SUPINE

Preparation is the same as when turning a patient prone:
Insert glide sheet
Disconnect ECG electrodes
Place sheet over patient
Roll sheets tight to the patient
Clarify instructions with the nominated leader, usually airway doctor
Leader to decide with the team the safest direction to slide the patient to edge of bed
Continue to slide patient until they are in supine position
Remove glide sheet
Replace electrodes to chest
Assess breasts and male genitalia for pressure sores on return to supine position

CARDIAC ARREST IN THE PRONE PATIENT



Chest Compressions

If a proned patient has a cardiac arrest, chest compressions should be administered in the prone position.
Do not delay initial chest compressions in order to turn the patient supine.
Use a two-handed technique over the mid-thoracic spine (between the two scapulae).
If CPR in the prone position is ineffective, it may be necessary to turn the patient supine.

Defibrillation

Apply defibrillation pads as per the photo, with one in the left mid-axillary line and the other over the right scapula).

ACCIDENTAL EXTUBATION IN THE PRONE PATIENT

Accidental extubation should be managed initially with an I-Gel followed by de-proning to facilitate reintubation.

REFERENCES

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https://www.ics.ac.uk/ICS/ICS/Pdfs/Prone_Position_Guidance_in_Adult_Critical_Care.aspx

Guerin C (2013) Prone Positioning in Severe Acute Respiratory Distress Syndrome. New Engl Med J.
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