Guideline for Prone Positioning (Adult Patients) in Critical Care (ICU/HiDU)
Table of Contents

ACKNOWLEDGEMENTS ................................................................. 3

1.0 POLICY STATEMENT .................................................................. 3

2.0 PURPOSE .................................................................................. 3

3.0 SCOPE .................................................................................. 4

4.0 LEGISLATION / OTHER RELATED POLICIES.............................. 4

5.0 GLOSSARY OF TERMS / DEFINITIONS / ABBREVIATIONS ............. 4

6.0 ROLES AND RESPONSIBILITIES .............................................. ERROR! BOOKMARK NOT DEFINED.

7.0 PROCEDURE .............................................................................. ERROR! BOOKMARK NOT DEFINED.

7.1 TYPE YOUR SUB HEADING HERE ................................................. ERROR! BOOKMARK NOT DEFINED.

7.2 TYPE YOUR SUB HEADING HERE ................................................. 6

7.3 TYPE YOUR SUB HEADING HERE ................................................. ERROR! BOOKMARK NOT DEFINED.

7.4 TYPE YOUR SUB HEADING HERE ................................................. ERROR! BOOKMARK NOT DEFINED.

8.0 IMPLEMENTATION PLAN ......................................................... ERROR! BOOKMARK NOT DEFINED.

9.0 REVISION AND AUDIT .............................................................. ERROR! BOOKMARK NOT DEFINED.

10.0 REVISION HISTORY (ONLY RELEVANT IF DOCUMENT IS BEING REVISED) .......... 12

11.0 REFERENCES ........................................................................ 12

12.0 BIBLIOGRAPHY ...................................................................... 13

13.0 APPENDICES ......................................................................... 13

14.0 APPENDIX I: WORKING GROUP ........................................... 13

15.0 APPENDIX II TYPE TITLE OF APPENDIX HERE ...................... 14

SIGNATURE PAGE ......................................................................... 18
Acknowledgements

This p/p/g must be read in conjunction with the following regulatory, professional and legislative documents and other key reference documents.

**Regulatory Documents:**
- Code of Professional Conduct and Ethics for Registered Nurses and Registered Midwives (Nursing and Midwifery Board of Ireland, 2014)
- Scope of Nursing and Midwifery Practice Framework (Nursing and Midwifery Board of Ireland, 2015)
- Practice Standards for Midwives (Nursing and Midwifery Board of Ireland, 2015)
- Recording Clinical Practice Guidance to Nurses and Midwives (Nursing and Midwifery Board of Ireland, 2015)
- Guidance to Nurses and Midwives on Medication Management (An Bord Altranais, 2007)

**Professional Documents:**
- Infection Control Policy for Acute Hospitals (most recent)
- HSE Code of Practice for Healthcare Records Management (2010) Abbreviations.
- Health Service Executive, National Consent Advisory Group (2013) National Consent Policy. Dublin.

**On Line Resources:**
- HSE COVID Standards and Guidelines for Critical Care [https://www.hse.ie/eng/about/who/cspd/ncps/critical-care/resources/](https://www.hse.ie/eng/about/who/cspd/ncps/critical-care/resources/)
- The Faculty of Intensive Care Medicine; Guidance for Prone Positioning in Adult Critical Care [https://www.ficm.ac.uk/sites/default/files/prone_position_in_adult_critical_care_2019.pdf](https://www.ficm.ac.uk/sites/default/files/prone_position_in_adult_critical_care_2019.pdf)

**Section 1.0 Guideline Statement**

It is the policy of University Hospital Waterford (UHW) that patients requiring prone positioning receive optimal and safe treatment from appropriately trained and qualified staff.

**Section 2.0 Purpose**

The purpose of this guideline document is to set out the standards and recommendations for practice in UHW which aim to ensure that health care professionals (medical, nursing and ancillary staff) comply with local, national and international guidance on the care of patients who require prone positioning.
Section 3.0 Scope

This Policy applies to all healthcare practitioners (HCPs) in their delivery of patient care who have a remit to care for patients who may require prone positioning.

This guideline only applies to patients who are 18 years old and over.

Section 4.0 Glossary of Terms / Definitions / Abbreviations

Prone position: A body position in which the person lies flat with the chest down and the back up.

ARDS: Acute Respiratory Distress Syndrome

ALI: Acute lung Injury

Capnography: Measurement of expired carbon dioxide

CVVHDF: Continuous Veno-Venous HaemoDiaFiltration

ECG: Electrocardiogram

ETT: Endotracheal tube

FiO2: Fraction of Inspired Oxygen

FRC: Functional residual capacity

kPa: Kilopascals

LMA: Laryngeal Mask Airway

PaO2: Partial pressure of oxygen

V/Q: Denotes ventilation and perfusion ratio.

Section 5.0 Rationale

Patients who experience profound hypoxaemia secondary to acute respiratory distress syndrome (ARDS) and acute lung injury (ALI) present significant challenges for staff working within the intensive care environment. (Bloomfield et al 2015) Evidence has shown that prone positioning mechanically ventilated patients is effective in ameliorating hypoxaemia and reducing mortality in those patients with severe ARDS/ALI. (Scholten et al 2016, Gattinoni L et al 2013)

Prone ventilation is an adjunct in medical management for patients with severe ARDS and may depend for its effect on other aspects, such as lung protective ventilation, permissive hypercapnia, restrictive fluid management, sedation +/- paralysis. Proning is not without risk and can have life threatening complications. The risk benefit ratio needs to be carefully considered. The decision to prone or not to prone a patient with ARDS is made by the responsible consultant.
(Possible) Physiologic Effects

- increased V/Q matching (increased blood flow to the dependent lung)
- increase in FRC
- reduced atelectasis
- facilitates secretion drainage
- less lung deformation in the prone position (increased homogeneity) -> increased effective ventilation and less repetitive strain
- abdomen is less likely to distend when in prone position -> increase in FRC
- heart sits against sternum (rather than left lung) therefore lung is less compressed
- recruitment manoeuvers may be more effective in the prone position
- alterations in chest wall mechanics leading to improvements in static compliance

Indications and Contraindications

Indications

Patient admitted to the intensive care unit and are intubated and ventilated due to moderate to severe ARDS (acute respiratory distress syndrome) as defined by

- Bilateral infiltrates not due to pulmonary oedema or nodules
- Acute onset (within 7 days of the acute illness causing ARDS)
- Requiring FiO2 over 0.65 to maintain PaO2 above 8kPa
- Peak Airway Pressure of above 30mmhg

(Relative) Contraindications

- Increased intracranial pressure
- Neurotrauma with labile intracranial pressure
- Increased abdominal pressure - gross ascites
- Recent abdominal surgery
- Abdominal and chest wounds
- Anterior chest drain/s
- C spine precautions
- Eye or facial injury
- Morbid obesity
- Pregnancy in 2nd or 3rd trimester
- Intra-Aortic balloon Pump
- Pelvic fracture
- Haemodynamic instability
- Insufficiently experienced/trained staff or insufficient numbers of staff

Section 6.0 Roles and Responsibilities
Section 7.0 Resources and Equipment

7.1 Personnel Able To Perform Procedure

Minimum of 7 staff members, amongst whom;

- At least one medical officer with intubation skills (ICU consultant or experienced Registrar)
- At least 2 critically care trained nurses
- At least 3 qualified nurses
- At least 1 other staff member

7.2 Equipment

- 4 pillows (special proning pillows are no longer used)
- ECG dots
- Proning pillow for patient head (special proning pillow to be used)
- Eye protection- lacrilube, mepitil, eye pads and low tack tape
- Disposable absorbent pads (if required)
- Mirror
- Slide sheets x 2
- 2 bed sheets

7.3 Preparation

- Ensure patient is on a pressure relieving mattress
- Explain the procedure to patient and relatives where possible
- Gather equipment

- Decontaminate hands and wrists by applying an antiseptic detergent e.g. Chlorhexidine 4% or Povidone iodine 7.5% to wet skin for at least 15 seconds in accordance with manufactures recommendations. Follow by rinsing and drying using a disposable paper towel or Apply an alcohol based hand rub e.g. Spirigel on visibly clean hands for at least 15 seconds (HIQA 2009).
- Apply PPE as Hospital & HSE Policy, [Personal Protective Equipment /Clothing (PPE)2017] & [HSE Acute Hospital Infection Prevention and Control Precautions for Possible or Confirmed COVID-19 in a Pandemic Setting V.1.5. 22nd September 2020]
- Complete Procedure Safety Checklist ( Appendix 2)
- Replace ECG dots to lateral chest and shoulders
- Label all lines, tubes and drains and ensure patency
- Position lines and pumps
  - Lines above the waist upwards
  - Lines below the waist downwards

This document is designed for online viewing. Printed copies, although permitted, are deemed Uncontrolled from 14/08/2021. Please dispose of this printed document after this date
Ensure endotracheal tube correctly positioned and securely taped – check position at lips.

Ensure intravenous access is readily accessible and clearly labelled- use extension lines where necessary.

Ensure arterial access is readily accessible and clearly labelled

Ensure the patient is well sedated, and muscle relaxed for the turn (if requested by anaesthetic doctor)

Suction oropharynx, nasopharynx and ETT before turning

Stop enteral feed and aspirate NG tube

Regular mouth and eye care before turning

Lacrilube eyes, cover VERY GENTLY with mepitil and eye pads. Tape into place with low tack tape.

Ensure ventilator tubing is positioned to maintain airway when patient turned

7.4 Procedure

1. Explain procedure to patient.

2. Gather turning team – a consultant/experienced registrar must be allocated to the airway. Three staff members (nurses, Dr’s, ancillary staff members) are then allocated to each side of the bed (7 staff in total)

3. Place a sliding sheet under the sheet below the patient

4. Position the patient in the middle of the bed, supine, with top of the head close to top end of the mattress

5. The Doctor at the head of the bed is responsible for monitoring the stability and placement of the airway. Other staff to observe lines, drains etc and move tubes and lines towards patients head or feet

6. Place arms in line with patient’s body with hands tucked under their buttocks

7. Place proning pillow onto patient’s face. Bring ETT through the designated spot

8. Place two pillows centrally on patient’s chest, pelvic area and shins.
9. Place 1 bed sheet over the top of the patient’s body avoiding folds and creases

10. Place the slide sheet over the top bed sheet

11. Take the loose sides of the bottom sheet together with the covering sheet

12. Roll the sheet ends tightly together (creating the roll towards the bed)

13. A ‘cornish pasty’ has been created

14. While holding the sides of the ‘pasty’, move the patient towards one side of the bed (which side will depend on tubing and lines – the team leader will decide)

15. While keeping ALL hands on the sides of the ‘pasty’, turn patient 90 degrees onto his/her side whilst maintaining the integrity of the ‘pasty’

16. People with their hands under the patient are to carefully move 1 hand from under the patient to on top of the patient, whilst maintaining the integrity of the ‘pasty’.
17. People with both hands on top of patient are to carefully move 1 hand from the top of the patient to under the patient whilst maintaining the integrity of the ‘pasty’

18. Turn patient another 90 degrees so that patient ends up in a prone position

19. Position the patient in centre of the bed with the top of the patients head close to top end of mattress (using slide sheet)

20. During the proning process, the team leader at the top end of the bed will ensure tube stability and position of the proning pillow

21. Unwrap the ‘cornish pasty’

22. Remove bed sheet and slide sheet from top of patient and position head and arms in a “swimming “position.

23. Check face, eyes, chin, genitalia (especially important for male patients), hips, elbows and knees for correct positioning.

24. Check lower bed sheet ensuring all folds and creases are removed

25. Ensure good position of head proning pillow and pillows under chest and hips

26. A mirror can be used to check the position of the ETT in the proning pillow

27. Recheck all tubing, lines, urinary catheters and drains for patency, security and accessibility
28. Ensure that eyes are free of pressure

29. Confirm that IV access is still readily accessible

30. Recheck all vital signs, ventilation parameters, and skin pressure points and record on UHW Prone Positioning Care Chart.

31. Complete Post Prone Nursing Checklist (Appendix 3)

32. In the case of cardiac arrest in the prone position refer to the Prone Cardiac Arrest Flowchart (Appendix 3)

33. Decontaminate hands and wrists by applying an antiseptic detergent e.g. Chlorhexidine 4% or Povidone iodine 7.5% to wet skin for at least 15 seconds in accordance with manufactures recommendations. Follow by rinsing and drying using a disposable paper towel or Apply an alcohol based hand rub e.g. Spirigel on visibly clean hands for at least 15 seconds (HIQA 2009).

34. Remove PPE as Hospital & HSE Policy. [Personal Protective Equipment / Clothing (PPE) 2017] & [HSE Acute Hospital Infection Prevention and Control Precautions for Possible or Confirmed COVID-19 in a Pandemic Setting V.1.5. 22nd September 2020]

Section 8.0 Maintaining the Prone Position

- Reposition arms, legs and head 1-2 hourly, turn head 1-2 hourly to prevent pressure areas and nerve damage (follow image below A-D) After rotating through A-D, repeat with the opposite side of the body (i.e. right hand up instead of left)

- Record nursing care on the UHW Prone Positioning Care Record (Appendix 4)
Pressure necrosis may occur primarily to nose, chin, tongue tip, knee, shoulder, sternum and forehead.

**Section 9.0 Other Considerations**

- Use ETT ties to secure ETT.
- Ensure capnography is utilised at all times.
- Ensure accurate ECG lead placement on the back of the patient.
- Ensure patient is well sedated whilst prone.
- When turning the patient on CVVHDF place tubing and pump in a position that allows some slack to the lines.
- When returning to supine position follow the procedure in reverse.
- Diligent attention to the airway is required to prevent accidental extubation and obstruction.
- Emergency equipment to be checked and available.
- Positioning frequency and duration is based on the patient’s ability to sustain improvements in PaO$_2$ made in the prone position.
- The amount of time spent prone will depend on if and for how long the patient can sustain or maintain the improvement when turned from prone to supine; some evidence indicates that 16-18 hours spent prone is better for patients with ARDS.
- A PaO$_2$ improvement of >1.3kpa is considered a positive response.
- Arterial blood gases prn to check response to prone position.
- Facial oedema can be a significant problem with retinal ischaemia and corneal damage.
- Regurgitation may also be a problem so an NGT should be insitu.
- Prevent neck hyperextension and rotational injuries.
- Plantar overextension and peripheral damage need to be considered.
Section 10.0 Implementation Plan

This guideline policy will be available on Q-pulse to:

All Clinical Nurse Managers and nursing staff, Physiotherapy Manager, Anaesthetic Consultants and anaesthetic team will be informed that this guideline is available on the Q-pulse.

Revision and Audit

The content and structure of the policy will be evaluated and audited in 2 years from date of approval

| Date | Review Number | Section Number | Change/s |
|------|---------------|----------------|----------|
|      |               |                |          |

References

- Bloomfield r, Noble DW, Sudlow A; Prone position for acute respiratory failure in adults (Review) Cochrane Database of systematic reviews 2015, Issue 11. Art.No: CD008095
- Brann G, Alexander C, González R & Tarmey N, Prone Position Ventilation in Critical Care, Version 2, 11th Nov 2016, Queen Alexandra Hospital Portsmouth University of Portsmouth
-Gattinoni L, Tognoni G, Pesenti A, Taccone P, Mascheroni D, Labarta V, Malacrida R, Di Giulio P, Fumagalli R, Pelosi P, Brazzi L, Latini R; Prone-Supine Study Group. Effect of prone positioning on the survival of patients with acute respiratory failure. N Engl J Med. 2001 Aug 23;345(8):568-73
- HSE PPE guidelines for COVID 19: https://www.hpsc.ie/az/respiratory/coronavirus/novelcoronavirus/guidance/infectionpreventionandcontrolguidance/ppe/
- Mancebo, J., Fernandez, R., Blanch L. et al. A Multicenter Trial of Prolonged Prone Ventilation in Severe Acute Respiratory Distress Syndrome. Am J Respir Crit Care Med (2006); 173: 1233–1239.
- Scholten EL et al; Treatment of ARDS with prone positioning. Chest; 2017 Jan;151(1):215-224.
- Taccone, P., Pesenti, A., Latini, R. et al. Prone–Supine II Study Group. Prone Positioning in Patients with Moderate and Severe Acute Respiratory Distress Syndrome: A Randomized Controlled Trial. JAMA (2009); 302: 1977–1984.
• The Faculty of Intensive Care Medicine UK; Guidance for Prone Positioning in Adult Critical Care. November 2019.
  https://www.ficm.ac.uk/sites/default/files/prone_position_in_adult_critical_care_2019.pdf

Bibliography

• Oxford Textbook of Critical Care. 2nd Ed. Webb A, Angus D, Finfer S, Gattinoni L, Singer M (Eds) Chapter 99, 2016, Oxford University Press.

Appendices

- Appendix 1: Working Group
- Appendix 2: Procedure Safety Checklist (Intensive Care Society)
- Appendix 3: Post Proning Nursing Checklist (Intensive Care Society)
- Appendix 4: Prone Cardiac Arrest Flowchart (Intensive Care Society)
- Appendix 5: UHW Prone Positioning Nursing Care Monitoring Record

Appendix I: Working Group

Developed by:

• Ms Caroline Lamb, Clinical Facilitator Critical Care, UHW

Reviewed by:

• Ms Patricia Gardiner, CPC, UHW
• Ms. Sandra McPherson, A/CNM2 ICU, UHW
• Ms Aileesh Corcoran, CNM2, HiDU

Consultation Trail:

• Dr Wahid Altaf, Consultant Anaesthetist, Critical Care, UHW.
• Joanne Long, ADON, Surgical and Orthopaedic Services, Peri Operative Directorate
• Ms. Dearbháile Ryan, CNM3, Surgical and Orthopaedic Services, Peri Operative Directorate
• Dr Michael Dockery, Clinical Lead, Peri- Operative Directorate
• Ms. Una O’Brien, ADON, NPDU
• I P&C

Approved by:

• Ms. Orla Kavanagh, Director of Nursing, UHW
• Dr Wahid Altaf, Consultant Anaesthetist, Critical Care, UHW
Appendix 2

Procedure Safety Checklist

To be inserted
Appendix 3

Post Proning Nursing Checklist

To be inserted
Appendix 4

Prone Cardiac Arrest Flowchart

To be inserted
Appendix 5

Prone Position Nursing Care and Monitoring Record

To be inserted
**Signature Page**

I have read, understand and agree to adhere to the attached 'UHW Guideline for Prone Positioning (Adults) in Critical Care (ICU/HIDU)

| Print Name | Signature | Area of Work | Date |
|------------|-----------|--------------|------|
|            |           |              |      |
|            |           |              |      |
|            |           |              |      |
|            |           |              |      |
|            |           |              |      |
|            |           |              |      |
|            |           |              |      |
|            |           |              |      |
|            |           |              |      |
|            |           |              |      |
|            |           |              |      |
|            |           |              |      |
|            |           |              |      |

This document is designed for online viewing. Printed copies, although permitted, are deemed *Uncontrolled* from 14/08/2021. Please dispose of this printed document after this date.
