

Key Competency 4. Cervical Collars

Through discussion, demonstration and observation, workbook completion and Q&A, the healthcare professional must demonstrate;

1.0 Knowledge and understanding of the anatomy and physiology of the Cervical Spine

1.1 Demonstrate knowledge and understanding of the cervical spine, including:

- 1.1.1 Anatomy, structure and function of the cervical spine
- 1.1.2 Anatomy, structure and function of the head and neck
- 1.1.3 Normal alignment and curvature
- 1.1.4 Cranio-cervical junction
- 1.1.5 Atlantoaxial spine
- 1.1.6 Sub-axial spine
- 1.1.7 Cervico-thoracic junction
- 1.1.8 Movements of the cervical spine
- 1.1.9 Spinal cord
- 1.1.10 Spinal nerves and distribution
- 1.1.11 Cranial nerves
- 1.1.12 Cervical and brachial plexuses
- 1.1.13 Motor and sensory function (head, neck, upper limbs)
- 1.1.14 Muscles supporting the neck
- 1.1.15 Vascular supply of the neck
- 1.1.16 Central and peripheral nervous systems
- 1.1.17 Cervical spine biomechanics

1.2 Describe the pathological spinal conditions that can affect the application and use of a collar on the cervical spine including;

- 1.2.1 Ankylosing Spondylitis
- 1.2.2 Osteoporosis
- 1.2.3 MSCC/metastases
- 1.2.4 Rheumatoid arthritis
- 1.2.5 Torticollis/subluxation
- 1.2.6 Cervical spine deformities

1.3 Demonstrate knowledge and understanding of the mechanisms of injury to the cervical spine, including:

- 1.4.1 Compression injury
- 1.4.2 Hyperflexion injury
- 1.4.3 Extension injury
- 1.4.4 Rotational injury

1.4 Demonstrate knowledge and understanding of cervical spine injury with reference to;

- 1.4.1 Type of injury (level, structures involved and stability)
- 1.4.2 Signs and symptoms of SCI
 - Dermatomes
 - Myotomes
 - Tone
 - Reflexes
 - Coordination
 - Shock (spinal/neurogenic)
 - Autonomic/Somatic nervous systems
 - Respiratory compromise
 - CV status
- 1.4.3 Signs and symptoms of peripheral nerve injury (sensation, muscle strength and motor coordination)
- 1.4.4 Signs and symptoms of vertebral artery insufficiency/injury (VBI)

2.0 Demonstrate the Principles of Safe Cervical Spine Immobilisation with a Rigid Cervical Collar

2.1 Demonstrate knowledge and understanding of the indications for use with reference to;

- 2.1.1 Intended use/purpose
- 2.1.2 Post- operative/ surgical management
- 2.1.3 Conservative management of spinal fractures (stable)
- 2.1.4 Acute Spinal column/cord injury (unstable injuries)
- 2.1.5 Spinal malignancy (MSCC, TB, Infection)
- 2.1.6 Transition between different orthotic devices

2.2 Demonstrate knowledge and understanding of the contra-indications for use in terms of;

- 2.2.1 Absolute Contraindications
 - Cervical angulation (fixed)
 - Impaled foreign object in the neck
 - Massive soft tissue injury/swelling to the neck/underlying structures
 - Compromised airway
 - Hypersensitivities/allergies to any of the collar materials
- 2.2.2 Relative Contraindications
 - Unsecured airway
 - Vomiting
 - Mandible or soft tissue injuries with potential for airway compromise
 - Pre-existing anatomical abnormalities

2.3 Demonstrate knowledge and understanding of the precautions for use in patients with underlying conditions acute or chronic with reference to;

- 2.3.1 Fractures to head/face/base of skull/ proximal clavicle/manubrium
- 2.3.2 Soft tissue trauma to head/face/neck

- 2.3.3 TBI/head injuries/raised inter-cranial pressure
- 2.3.4 Agitated/confused patients/uncooperative patients
- 2.3.5 Respiratory compromise
- 2.3.6 CVS stability
- 2.3.7 Vertebral artery injury
- 2.3.8 Previous surgery
- 2.3.9 Neurological disorder or injury
- 2.3.10 Skin conditions (acute or chronic)
- 2.3.11 Distraction injuries
- 2.3.12 Additional equipment (tracheostomy, central lines, drains, ICP bolt)
- 2.3.13 Ankylosing Spondylitis/ Cervical spine deformity

2.4 Demonstrate knowledge and understanding of cervical spine immobilisation with reference to;

- 2.4.1 Positioning/Spinal alignment
- 2.4.2 Effects of postural changes/deformity
- 2.4.3 Fracture/spinal injury classification
- 2.4.4 Level of fracture/spinal injury
- 2.4.5 Function of a collar
- 2.4.6 Limitations of a collar
- 2.4.7 Immobilisation and its physiological effects on the respiratory system
- 2.4.8 Immobilisation and its physiological effects on nutrition and hydration
- 2.4.9 Hygiene and skin care

2.5 Describe the potential complications and adverse effects associated with immobilisation in a cervical collar in relation to;

- 2.5.1 Pressure sores/skin ulceration
- 2.5.2 Intra-cranial pressure
- 2.5.3 Vascular compromise/compression
- 2.5.4 Respiratory compromise/restriction (mechanical)
- 2.5.5 Neurological compromise
- 2.5.6 Psychological issues
- 2.5.7 Patient positioning

2.6 Describe the reasons for potential harm from wearing a Cervical Collar with reference to;

- 2.6.1 Application in the presence of contra-indications
- 2.6.2 Poor or incorrect application of a collar
- 2.6.3 Insufficient monitoring
- 2.6.4 Insufficient patient information/guidance
- 2.6.5 Incompetence/inexperience
- 2.6.6 Inappropriate collar
- 2.6.7 Complications of inappropriate manual handling

3.0 Practical Assessment of Cervical Collar Application Procedures

3.1 Undertake the following procedures correctly in line with local standards of practice;

Demonstrate comprehensive use of all the following pre-application checks

- 3.1.1 Correctly confirm the patient's identity
- 3.1.2 Introduction of self to patient
- 3.1.3 Gain appropriate consent (and check if patient has capacity)
- 3.1.4 Maintain all principles of infection prevention and control (IPC) procedures including hand hygiene and use of PPE.
- 3.1.5 Assess the need for pain relief prior to procedure, administer as appropriate and monitor its subsequent effect
- 3.1.6 Confirm collar requirements (with the spinal team- ensuring that instructions have been clearly communicated and documented) and injury sustained
- 3.1.7 Check for and identify indications, contra-indications and precautions
- 3.1.8 Explanation and discussion of the procedure to patient (identifies aim of collar intervention, what is happening and why) to the patient regardless of conscious state.
- 3.1.9 Check for faults/wear/damage/soiling of collar
- 3.1.10 Skin check prior to application
- 3.1.11 Pre-procedural neurological status/observations to be performed and documented
- 3.1.12 Assess and document patients pre-procedural pain (VAS score)
- 3.1.13 Routine observations
- 3.1.14 Where ICP bolt is in situ check ICP pressure and parameters before commencing Procedure)
- 3.1.15 Prepare all resources required in advance of the procedure (staff, equipment)

Demonstrate application of the collar: Unstable/stable Cervical spine injuries

- 3.1.16 Correct application in supine lying (2-person technique, no pillows unless postural support is required e.g. AS patients).
- 3.1.16 Spinal Precautions
 - Manual C spine immobilisation
 - Head hold/log roll

Demonstrate application of the collar for the cervical spine: Post-Operative

- 3.1.17 Correct application in supine lying/sitting (1-person technique)
- 3.1.18 Aspen Vista collar application
 - Preparation (perform the collar, check all plastic covered and pads in correct position)
 - Placement (back panel / front panel)
 - Sizing and height adjustment
 - Position/alignment
 - Verbal communication with patient

Demonstrate use of post application checks including;

- 3.1.19 Check correct fit of the collar:
 - Comfort and fit (secured)
 - Visible sternal notch
 - Collar height (flush with the chin)
 - Slack out/close fitting
 - Throat area clear (can speak and swallow)
- 3.1.20 Re-assessment of airway
- 3.1.21 Re-assessment of neurological status
- 3.1.22 Re-assessment of pain (VAS score)
- 3.1.23 Re-assess observations
- 3.1.24 Patient positioned correctly/spinal alignment
- 3.1.25 Patient comfortable
- 3.1.26 Patients care needs are addressed
- 3.1.27 Documentation of the mitigation for pressure area damage risk (with reference to *MASCIP Moving and Handling Guidelines (MASCIP 2015)* for correct evidence based manual handling procedures.

4.0 Assessment and Management of Patients Immobilised in a Cervical Collar

4.1 Practically perform and explain the underlying theory of;

- 4.1.1 Cervical immobilisation (aims and purposes)
- 4.1.2 Spinal precautions (aims and purposes)
- 4.1.3 Manual C-Spine immobilisation
- 4.1.4 Patient positioning
- 4.1.5 Head hold/log roll
- 4.1.6 Cardiac arrest procedures
- 4.1.7 Managing a vomiting/aspirating patient

4.2 Undertake the following procedures correctly in line with local standards of practice

- 4.2.1 Ensure the bed is at the correct height for the designated head holder and collar applicator
- 4.2.2 Position patient in correct starting position (flat supine, in spine neutral) for the procedure (describe chosen technique and when to use other techniques)
- 4.2.3 Request that the patient lay still and avoid resisting or assisting during the procedure.
- 4.2.4 Pre-procedural neurological assessment and observations
- 4.2.5 Clear verbal communication is highlighted to patient and staff on application/removal of the collar.
- 4.2.6 Skin checks/ pressure area management
- 4.2.7 Cleaning/washing/hygiene care of patient and collar
- 4.2.8 Change of pads

- 4.2.9 Pre and post collar checks
- 4.2.10 Correct hand positioning of the head for C spine immobilisation.
- 4.2.11 Correct execution of head hold log roll procedure (maintenance of neutral alignment with no rotation of spinal segments)
- 4.2.12 On completion of the procedure ensure the patient is in alignment.
- 4.2.13 Assessment and documentation of findings, pre, peri and post procedure
- 4.2.14 Re-assessment of patient, collar and observations at timed intervals
- 4.2.15 Accurate completion of care plan/bed chart/patient documentation
- 4.2.16 Advice and information to patient
- 4.2.17 Patient position, pain, observations
- 4.2.18 Patient care needs addressed

4.3 Document the following post-procedure in line with local and professional standards of practice

- 4.3.1 The assessment of the patient's risk of pressure damage and awareness of high risk areas
- 4.3.2 Use of a local risk assessment tool and mitigating action plan required in accordance with local policy
- 4.3.3 Mitigation for pressure area damage risk
- 4.3.4 With reference to *MASCIP Manual Handling Guidelines (reference)* for correct evidence based manual handling procedures
- 4.3.5 Include in medical notes/nursing notes/care plans intervention and care needs

4.4 Demonstrate knowledge and understanding through discussion with reference to;

- 4.4.1 On-going patient and collar assessment (2 BD twice daily – once per shift)
- 4.4.2 Any changes communicated, documented and handed over
- 4.4.3 Clear instructions and relevant patient information provided to patient and family/carers
- 4.4.4 Patient and family/carers self-management on collar safety
- 4.4.5 Escalation of complications/issues on discharge (who to contact/where to go)
- 4.4.6 Collar care plan on discharge
- 4.4.7 Follow up provisions/post discharge
- 4.4.8 Patients/carers understanding of information provided and resolution
- 4.4.9 Handover/information requirements to community healthcare professionals

Appendix 1. Recommended Reading

- National Trauma Competencies. Adult ward nursing competencies for the major trauma patient
<http://nebula.wsimg.com/3e0ac2e3371037b6f8864ba5bb5535b5?AccessKeyId=3902D5FF5C6A88146946&disposition=0&alloworigin=1>
- CC3N competency framework. National competency framework for registered nurses in adult critical care. Trauma speciality competencies.
https://www.cc3n.org.uk/uploads/9/8/4/2/98425184/step_1_trauma_competencies.pdf
- MASCIP guidelines on manual handling of suspected or actual spinal injured patients
<https://mascip.co.uk/wp-content/uploads/2015/02/MASCIP-SIA-Guidelines-for-MH-Trainers.pdf>
- Aspen Medical Products: Vista Cervical Collar Instruction sheet
https://www.aspenmp.com/media/wysiwyg/downloads/instruction_sheets/AC0028G_Cervical_Collar_Vista_TX_IFU.pdf
- Aspen Vista Collar Guidelines: Check the fit
https://www.aspenmp.com/media/wysiwyg/downloads/sizing_sheets/Vista-PD-Application-Poster.pdf
- Bennett J., Beattie L.K. (2016) Cervical Collar Placement. In: Ganti L. (eds) Atlas of Emergency Medicine Procedures. Springer, New York, NY. https://doi.org/10.1007/978-1-4939-2507-0_36. Chapter Cervical Collar placement pp 219 – 222.
- Nice Guidelines: Trauma QS166 2018
<https://www.nice.org.uk/guidance/qs166/chapter/Quality-statement-4-Assessment-for-cervical-spine-injury>
- Nice Guidelines: Spinal injury: assessment and initial management NG41 2016
<https://www.nice.org.uk/guidance/ng41/resources/spinal-injury-assessment-and-initial-management-pdf-1837447790533>
- The British Association of Prosthetists and Orthotists (BAPO). Standards for best practice 2018.
<https://www.bapo.com/wp-content/uploads/2018/01/Standards-for-Best-Practice-FINAL-.pdf>

- Medicines and Healthcare Products Regulatory Agency (MHRA). Devices in Practice: Checklists for using medical devices, 2014.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/403401/Devices_in_practice.pdf
- Physiopedia Cervical Anatomy and Cervical Spine Structure and Function: physio-pedia.com
https://www.physio-pedia.com/Cervical_Anatomy
https://www.physio-pedia.com/Structure_and_Function_of_the_Cervical_Spine