

CERVICAL SPINE (SUSPECTED) INJURY: PATIENT MANAGEMENT

PRACTICE GUIDELINE[®]

DOCUMENT SUMMARY/KEY POINTS

Quick reference [C-Spine Management FLOWCHART](#)

- An injured paediatric patient needs a mechanism of injury and clinical findings consistent with a neck injury to be considered at risk of cervical spine(C-spine) injury
- The potential for cervical spine injury must be **considered** in all head injured patients
- ANZCOR, ILCOR and ITIM, through ACI, State Spinal Cord Injury Service (SSCIS), Intensive Care NSW (ICNSW) Spinal surgeons of NSW (RNSH & POW) no longer recommend rigid cervical collar use and support the use of foam collars in initial cervical spine immobilisation
- If the patient is considered at risk apply a foam collar to minimise unnecessary movement and to highlight the need for caution
- The majority of patients can be cleared with history and examination, and when indicated, plain x-ray
- Unconscious and intubated patients may need more detailed imaging
- For admitted patients fill in the form Spinal Precautions Orders so the care can be continued on the ward. This form also needs to accompany the patient when attending the radiology department. **Spinal Precautions Orders form:**
http://chw.schn.health.nsw.gov.au/o/forms/ctcper/spinal_precaution_orders.pdf

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

Approved by:	SCHN Policy, Procedure and Guideline Committee	
Date Effective:	1 st November 2018	Review Period: 3 years
Team Leader:	CNC Trauma	Area/Dept: Trauma

CHANGE SUMMARY

- This is a new SCHN guideline replacing CHW and SCH site-specific guidelines.
- Rigid collars are no longer recommended for the purpose of minimising unnecessary movement of the C-spine in infants & children with suspected C-spine injury.
- Infants & children arriving with a rigid C-collar insitu may either be clinically cleared and collar removed as per the C-spine management flow sheet, or changed to a foam cervical collar if prolonged time to clearance is anticipated.
- If there is a high index of suspicion of C-spine injury on presentation, based on the criteria outlined in the SCHN C-spine management flowchart, apply a foam cervical collar as outlined in Appendix 1 of this guideline.
- Patients with a confirmed C-spine injury may still be appropriate for foam collar application. However, alternate semi-rigid collars are also available & may be requested by the Senior Spinal Team Clinician. Instructions for application & care of two piece semi-rigid collars is outlined in Appendix 2 of this guideline.
- All patients whose C-spine has not been cleared during the initial secondary survey need to have a Spinal Precautions Orders form completed so the care can be continued on the ward. This form also needs to accompany the patient when attending the radiology department. **Spinal Precautions Orders form:**
http://chw.schn.health.nsw.gov.au/o/forms/ctcper/spinal_precaution_orders.pdf

READ ACKNOWLEDGEMENT

- Clinical staff caring for patients with (suspected) spinal injuries should read and acknowledge they understand the contents of this document.

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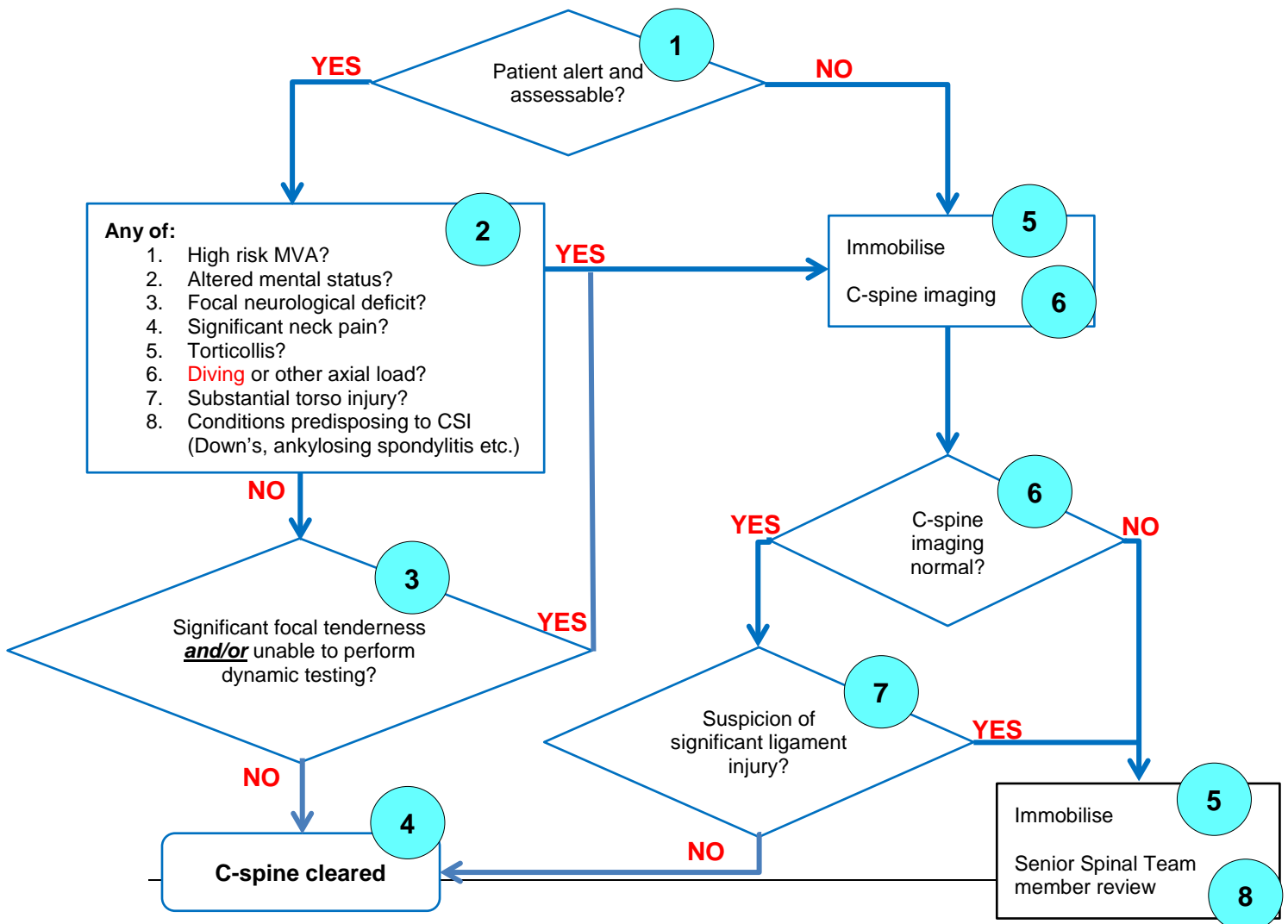
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Flowchart – Suspected Cervical Spine Injury



Key

- 1** There must be a relevant mechanism and appropriate clinical suspicion for cervical spine injury to need exclusion. **Children at risk of cervical spine injury who are unconscious, unco-operative, intoxicated, GCS < 14 or have received significant opiate analgesia are unsafe to assess for spinal injury and thus un-assessable.**
- 2** These features have a high association with cervical spine injury and if present need strong consideration of imaging. Their absence does not exclude cervical spine injury. Complaints of neck pain are more reliable than detection of midline neck tenderness and thus midline neck tenderness may not be a concerning risk factor.
- 3** Generalised midline or paraspinal tenderness is consistent with mild ligament or muscle strains. Significant focal tenderness in an area covering 1-2 vertebrae is more suspicious for a fracture or significant ligament injury. Dynamic testing is performed after palpation and involves rotation of head left and right 45 degrees and if this is achieved, an attempt to lift head off bed. A degree of mild tenderness or mild discomfort is acceptable for clearance, as would happen with a minor strain of any other joint.

4 A child at low risk of cervical spine injury, either without need for imaging, or after normal imaging, is entitled to be discharged with minor tenderness and/or discomfort, taking as needed regular NSAIDs and simple analgesia, but with instructions to return if any concerns and to avoid high contact activity/sport until repeat medical review in 5-7 days.

5 Keeping the cervical spine in an age appropriate, neutral, but comfortable position and avoiding any unnecessary movement, is the aim of immobilisation. In the unconscious child, appropriate attention to this relationship is needed for transfers and logrolls. It needs to be noted that immobilisation has not been shown to prevent deterioration or progression of a cervical spine injury. Enforced immobilisation in the young or unco-operative may aggravate injury. Prolonged immobilisation in firm collars can result in respiratory embarrassment, raised ICP, pressure sores and a stiff neck. Foam collars allowing the child self-regulated movements, appear to be best for the alert, assessable child awaiting clearance. Children with high suspicion or proven cervical spine injuries may require a specific immobilisation device – seek senior advice.

6 Cervical spine imaging principles

a.) Radiation and prolonged immobilisation are not without risk and need to be considered whilst weighing up the choice of imaging and degree, duration and type of interim immobilisation.

b.) Cervical spine x-rays involve a lateral (if urgent and able prior to intubation, surgery etc.), AP and odontoid (only if > 5yrs). Interpretation can be difficult as ossification centres, physiological variants etc. may need specialist radiological interpretation with senior clinical correlation.

If you are ordering an X-ray, it should be that the clinical risk is low and any findings of mild pain, tenderness and dysfunction are acceptable, and will allow clearance, if the x-ray is normal. A normal x-ray does not mean that a patient's signs and symptoms miraculously disappear, as this would not occur with a sprain or contusion of any other body part. If you do not feel comfortable clearing the cervical spine despite a normal x-ray, speak to a senior doctor. Trial of analgesia, application of a foam collar and follow up or further imaging are possible options for consideration in this circumstance

c.) CT is best for those with high clinical suspicion of fracture/dislocation with inadequate or abnormal X-ray. CT may be considered if there is a need for cervical spine imaging in a child having another body part imaged with CT (in this case omit any c-spine x-ray). Very few children should need CT and most can be cleared once the CT is reported as having no evidence of injury.

d.) MRI is best if there are neurological findings suggestive of cord or nerve root injury or high suspicion of significant/unstable ligament injury. In such cases proceeding directly to MRI and omitting CT is suggested, but will depend on MRI availability, the need to sedate and length of time in immobilisation device.

7 Children of any age exposed to significant or unusual force may need consideration of ligamentous injury even if initial bony imaging appears normal. Unconscious, unco-operative, intoxicated patients usually need to return to an assessable status before the neck can be cleared of potential ligamentous injury. In the assessable child, ligamentous injury may be suspected at the point of dynamic testing with reluctance to move or significant tenderness. A number of age related anatomical variances such as shallow facet joints and lax ligaments can allow ligamentous stretch in an AP and/or caudocranial axis without bony injury. These can be real with the right MOI and clinical findings or false, such as pseudosubluxation detected on plain or flex/ext xray. Seek senior advice in interpretation and the consideration of any further imaging.

8 Consultants, Fellows and Senior registrars in the fields of Emergency Medicine, Orthopaedics, Trauma and Neurosurgery, with appropriate training and experience, may be designated as a Senior Spinal Team Clinician and have the responsibility of ultimate decisions for cervical spine clearance. These same senior clinicians are responsible for signing the spinal precaution form indicating that the C-spine has been cleared once this has been determined.

Introduction

Significant cervical spine injury following blunt trauma in children is uncommon, occurring in approximately 1% of all paediatric blunt trauma (1). Of this 1%, the majority are stable injuries, with only 20% requiring bracing or operative fixation (2; 3). Identification of this small group of patients with clinically significant spinal injuries is difficult, but important given the potential morbidity these injuries may cause.

Cervical Spine Collar Application

Purpose

- A cervical collar is applied to minimise unnecessary movement of the cervical spine, mitigate further injury or to highlight the potential existence of a cervical spine injury. However, **no available cervical collars will provide complete immobilisation but they may lead to significant complications and morbidity**. There is lack of evidence for the efficacy for spinal immobilisation in the prevention of spinal cord injury (SCI). Also, as with all mechanical trauma to the skeleton, deformations causing spinal cord injury or ischaemia occur at the time of the initial injury resulting in massive angulating/displacing forces, and are unlikely to be reproduced during normal handling. Furthermore, **there is evidence that rigid collars can lead to potential complications including:**
 - Patient discomfort & distress
 - Pressure areas
 - Increased intracranial pressure
 - Increased neck pain
 - Can cause/worsen SCI (e.g. ankylosing spondylitis)
 - Impaired ventilation
 - Aspiration risk
 - Masking of neck/occipital injuries

As **foam cervical collars mitigate some of these issues**, whilst still acting as a warning of the potential existence of a cervical spine injury, they are now the **PREFERRED DEVICE** for application in children with a **suspected cervical spine injury**.

Who requires cervical collar application?

Determining the risk for spinal cord injury in the paediatric trauma patient requires synthesising the history, presentation, and physical examination. The Paediatric Emergency Care Applied Research Network (PECARN) has identified 8 risk factors for cervical spine injury in children after blunt trauma with an associated 98% sensitivity for these risk factors (2). These 8 risk factors are as follows:

- **Altered conscious state** – decreased GCS, history of head trauma, intoxication

- **Focal neurological deficits** – abnormal reflexes, strength or sensation; paraesthesia
- **Neck pain** – which differs from midline tenderness on palpation, and is a common symptom in low risk paediatric cervical spine injury. PECARN found patient initiated complaint of posterior neck pain to be a significant risk factor for true PSCI.
- **Torticollis**
- **Substantial torso injury** (associated with risk of thoraco-lumbar injury)
- Children with **pre-existing disorders** that predispose them to CSI – Down syndrome, ankylosing spondylitis (common in adults)
- **Diving and sporting injuries**– axial load to head or neck, also consider fall from a height and forced hyperflexion such as can occur in a rugby scrum collapse
- **High risk motor vehicle accident (MVA)** – head on collision, rollover, ejected from vehicle, death in same crash, or speed greater than 60km/hr

Any child demonstrating any of these risk factors should be considered for cervical spine immobilisation (using a soft collar) and radiographic evaluation.

The majority of children with a **clinically significant cervical spine injury will be symptomatic**. Furthermore, the conscious infant, child or adolescent will be acutely aware of pain & dysfunction, and will initiate self-protective posture. The pre-verbal child can be a particular challenge for the clinician. Relevant history may be gained from parents or others witnesses, however subjective symptomatology may be difficult to elicit. Therefore, history and objective examination findings must be synthesised to determine the need for investigations. Whilst the incidence of CSI in this age group is lower, the sensitivity of plain films for injury or instability is also lower. Therefore it is critical that the clinician pays close attention to subtle signs of neck pain, torticollis, and the combination of irritability and reluctance to move the head after trauma.

When to initiate cervical collar application

The cervical spine is immobilised as part of airway assessment with cervical spine control. This is the A for Airway at the start of the ABCDE primary survey as part of EMST teaching (Early Management of Severe Trauma). Unstable patients, patients with altered conscious state, and patients with specific neurological deficits suspicious for SCI require immobilisation until their situation changes to enable interactive assessment of function. Patients who are stable from an ABC perspective should be examined from head to toe (secondary survey), with consideration of the risk factors as per the PECARN criteria.

Specifics of cervical spine management

In those children who are identified as at risk of cervical spine injury, **initial immobilisation preference includes application of a foam cervical collar** (See [sizing & fitting of foam collars](#)). If tolerated, and deemed necessary, this can be supplemented with:

- in line manual immobilisation (always required when log rolling or intubating)
- sand or fluid bags alongside the head

It may also be necessary to provide additional padding to achieve a neutral neck position, see below.

Fig 1. - Achieving a neutral neck position in an infant

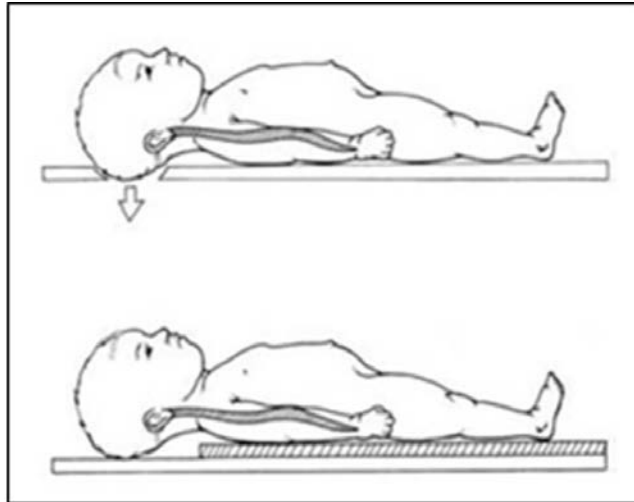


Fig 2. Achieving neutral neck position in a child

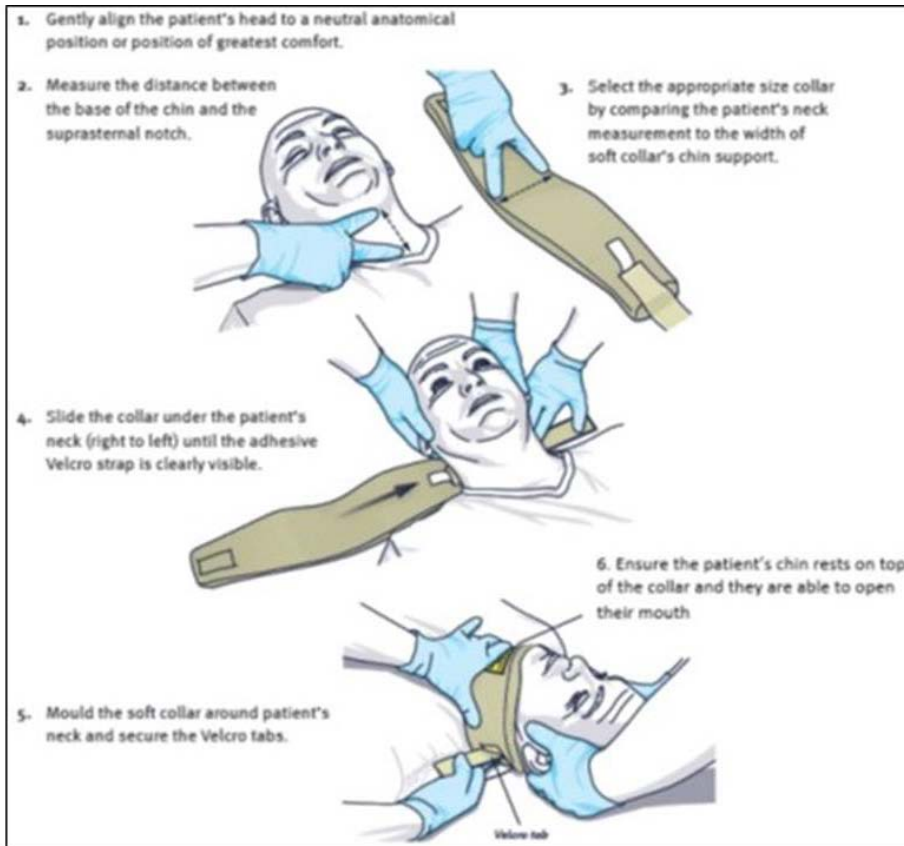


Fig 3. Achieving neutral neck position in an older child/adolescent



Sizing and Fitting of Foam Collars

- Correct sizing is important for patient comfort
- The head is to be maintained in a neutral position (in-line immobilisation)
- Refer to the appropriate sizing chart & select collar based on the closest match to the measurement taken, if between two sizes, select the smaller of the two sizes
- Following placement of a collar, ensure the patient's neck is in correct alignment & sandbags are re-positioned



Measure A. height of your neck from chin to the top of your shoulder, and B. circumference of your neck

Sizing Guide			
Model #	Height	Length	Size
CX23	2"	12"	Toddler
CX46	2"	15"	Juvenile
CX712	2 1/2"	19"	Child
CX1316	2 1/2"	21"	Adolescent

Transferring patients

Transfer from one bed to another of patients at high risk of a spinal injury needs to take place carefully to minimise spinal movement. Sliding on a sheet using a PAT slide, whilst providing in line immobilisation and maintaining body alignment, is acceptable. When patients are taken outside of the ward environment, such as to medical imaging or theatre, the same technique is used for transfer from the patient's bed to the table. When attending medical imaging, consideration needs to be given to the number of trained clinical staff required to ensure safe patient transfer. If the requirements for patient transfer differ from those outlined here, the treating clinician must provide clear instructions for the requisite technique. These orders should also be documented on the "Spinal Precaution Orders" form (M73P). The spinal precaution order form should be completed after the finalisation of a full assessment & a decision has been made by the Neurosurgical or Spinal Consultant with regards to what spinal precautions need to be initiated. These orders are to remain in place until reviewed & updated by the issuing team. Spinal precaution orders should be reviewed daily to ensure timely & efficient transition in clinical care, and to minimise the risk of complications associated with immobility & rigid collar use. The spinal precaution form needs to be signed at the time of implementation, and again with each order change by a member of the relevant team.

Assessing and Clearing the Cervical Spine

Clinical clearance

Children with none of the eight risk factors as per the PECARN criteria are considered low risk for cervical spine injury but still need dynamic testing.

If any of the eight PECARN criteria is found on history or examination, or they fail dynamic testing, the cervical foam collar should remain in place & spinal precautions should be observed.

Assessment of suspected cervical spine injury

Examination includes a careful neurologic examination including motor, sensory, reflex examination of the peripheral nervous system.

The neurologic examination is coupled with a thorough secondary survey, appreciating the presence of painful distracting injuries in patients with a significant mechanism of injury. Distracting injuries need to be considered in an appropriate circumstance. A child with a fracture lower limb may still be very capable of discerning a hair being pulled on their forearm, and given we would not regard their abdominal examination as unreliable in this circumstance, we should not feel the neck cannot be assessed and cleared. An inconsolable child in pain, however, would be too distracted for meaningful and accurate assessment.

Examine the child for neurological deficit and ask about pain. Paraspinal muscular pain and tenderness is often elicited and is **not** indicative of spinal column injury. If the degree of pain or tenderness is acceptable, and the neurological examination is normal, the patient is asked to actively move their head and neck through the range of motion – lateral rotation left and right, and if successful, flexion and extension. If these movements do not cause **significant** pain or neurological symptoms the cervical spine may be clinically cleared.

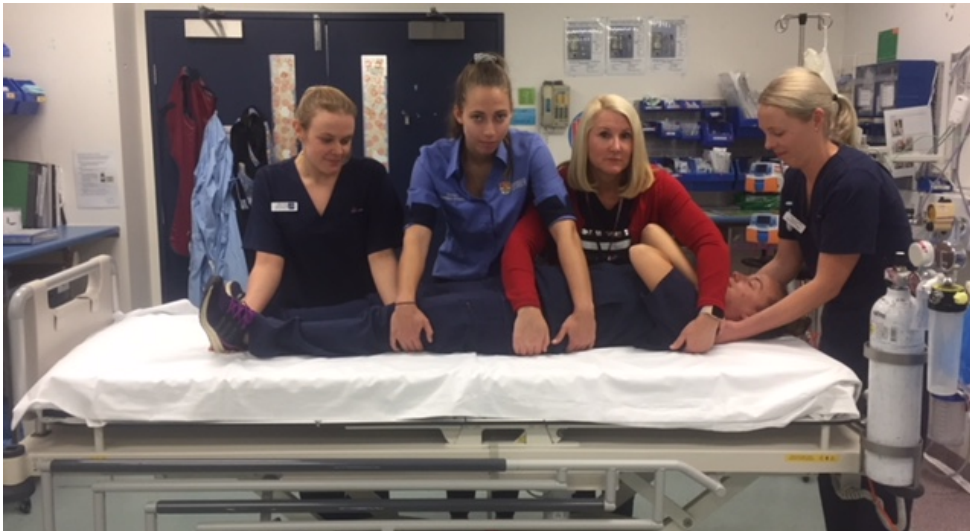
Log Rolling

The objective of the log roll procedure is to try as best as possible to maintain correct anatomical alignment in patients with suspected or confirmed SCI in order to prevent the possibility of further neurologic injury, enable assessment for posterior hidden injuries, removal of clothes and debris, cleansing, as well as assessment for and prevention of pressure injuries.

ALERT: Patients in CICU at SCH with suspected/confirmed Spinal Cord Injury are to have log rolling undertaken as per [Log Rolling Patients In CICU With Suspected/Confirmed Spinal Cord Injury – SCH procedure.](#)

If unable to clear the spine as above, the patient is log rolled with the cervical collar in place and the spine is assessed for tenderness, swelling or bruising and visible or palpable signs of step deformity. **If indicated** the tone of the anus is inspected – with a patulous anus suggesting spinal injury. While the child is in this position the rest of the back and the back of the head is inspected. The renal angles are examined for tenderness or bruising. Perineal and rectal examination is performed if there is suspicion of a major pelvic injury with bowel involvement (for blood) or urethral injury in males (position of prostate in adolescents).

A log roll is performed by 5 people –one examining, one holding the head to minimise neck movement, three holding the shoulders, hips and legs respectively (see pictures below). Rolling is usually done away from the side of major injury to reduce pain.



Unconscious trauma patient

The unconscious trauma patient cannot have the spine cleared clinically because the symptoms of pain are absent. Intubation carries the risk of movement of the cervical spinal injury causing further damage.

Immobilisation and assessment within the limits of the patient's state follow the same process as noted above. Imaging should proceed rapidly if the patient is stable enough. These include:

- Lateral cervical radiographs which provide valuable rapid information on alignment and allow further detailed imaging to be defined.
- Cervical spine CT C1-T1 should be performed. This can be combined with cerebral CT scans.

Care of the unconscious, intubated patient is beyond the scope of this document. Refer to the relevant PICU documents

Disposition

Unstable patients, patients with altered conscious state, and patients with specific focal neurological deficits suspicious of spinal cord injury are straightforward in their management. They require admission with spinal immobilisation and spinal precautions and neutral handling until their situation changes to allow for interactive assessment of function.

Patients who have been clinically cleared, with or without C-spine imaging, are considered at low risk of CSI and may be discharged with appropriate advice regarding analgesia and expected recovery. Practically speaking however, many children are slow to mobilise following blunt trauma, particularly if they have been transported in a hard collar. In this group, removal of splinting, adoption of a sitting posture, simple analgesia, and gradual mobilisation is recommended, with repeat medical review including active range of motion prior to discharge.

Accepting the patient in the ward

The transferring nurse reads through the checklist with the accepting ward nurse to ensure all relevant information is documented. This includes clearance status, sitting/ mobilising restrictions and further investigations required as outlined in the Spinal Precautions Orders (form M73P). If this is unclear or incomplete the patient is nursed with full spinal precautions and the surgical or spinal team is contacted to clarify the situation. Orthotics or the Trauma CNC/CNS should be notified at the earliest convenience (during office hours) of patients admitted with a cervical collar in order to provide an initial assessment of adequacy of collar alignment & fit.

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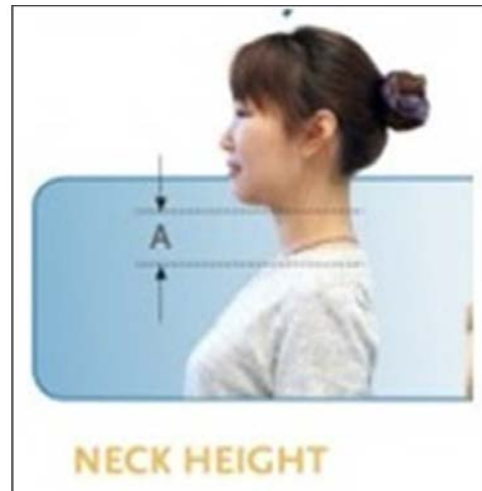
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Appendix: Alternative C-Spine Collars: Sizing and Fitting

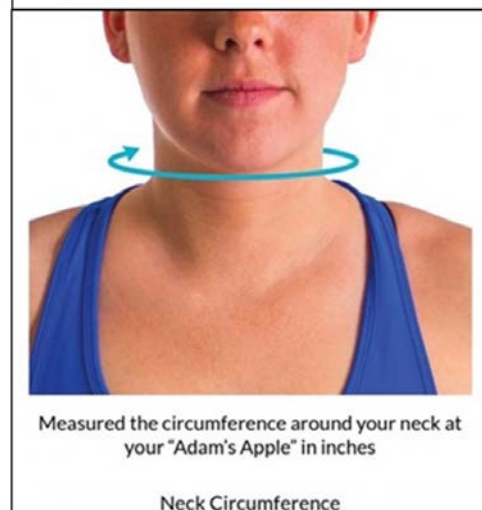
Please note, that although the preference is for a soft collar, even if a cervical SCI is suspected, a member of the Spinal Care Team may order the application of an alternative (rigid, two piece) collar. The following are those commonly utilised within the SCHN.

Philadelphia Collars

Collar height measurement: Measure (in inches) from the tip of the patient's chin to the top of the sternum in a straight line (as represented by A below).



Circumference measurement: Measure (in inches) around the child's neck



1. Take the piece labelled 'back'. Ensure arrow is pointing upwards. Gently slide the back of the collar in place under the patients neck (press gently on the mattress to create room to manoeuvre the collar)
2. Apply the 'front' piece of the collar with the chin centred in the recess, with the arrow pointing upwards. The front piece should overlap the back piece.
3. Fasten the Velcro straps firmly



Philadelphia Collar Sizing Chart

Size	Circumference	Height
Infant	6 – 8 inches	2 inches
Paediatric / Child	8 – 11 inches	2 ¼ inches
Small	10 – 13 inches	2 ¼ inches
		3 ¼ inches
		4 ¼ inches
		5 ¼ inches
Medium	13 – 16 inches	2 ¼ inches
		3 ¼ inches
		4 ¼ inches
		5 ¼ inches
Large	16 – 19 inches	2 ¼ inches
		3 ¼ inches
		4 ¼ inches
		5 ¼ inches
Extra Large	More than 19 inches	2 ¼ inches
		3 ¼ inches
		4 ¼ inches
		5 ¼ inches

Aspen (CHW preferred)

- Place sizing guide on the highest point of the shoulder muscle (trapezius) and flat against the side of the head.
- Draw an imaginary line from the bottom of the chin back to the sizing guide and select the proper size collar.
- Pre form the collar by rolling the back panel and the front panel like a hand towel-sides inward.
- The second nurse maintains neutral neck alignment and immobilizes the cervical spine while the collar is being applied.
- Apply the posterior section first, pushing down on the back panel with one hand and pull with the other hand until the back panel is centred between the ear and the top of the shoulder muscle.
- The end of the Velcro strap should reach the same position on both sides (confirms that the collar is level) and should be centred between the ear and the top of the shoulder muscle.
- Flare the sides of the front panel outward.
- Place the chin piece directly under the chin (the chin should not extend beyond the edge of the plastic).
- Hold firmly, push sides of front panel up over the shoulder muscles and around the neck
- While holding the collar front panel with one hand, centre the back panel and attach both sides to the front
- To ensure all slack is removed undo one Velcro strap at a time, and pull the strap laterally until all slack is removed
- The patient's chin should be flush with the collar and the inner trach bar should not be touching the thyroid cartilage (Adams apple).
- All slack should be removed from the collar back and the back panel should be centred (identified by symmetrical Velcro straps).

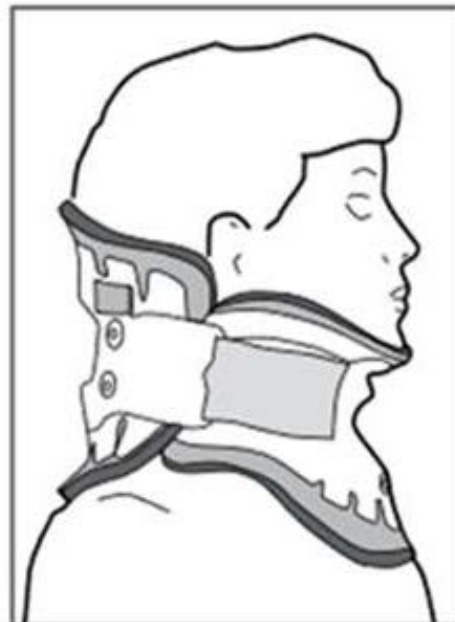
Aspen Collar care

In patients who are on bedrest, collar care needs to occur 4/24, and pressure area surveillance should occur at the same time. In mobile patients collar care & pressure surveillance should occur at least once a day. Collars are to be cleaned & foam inserts changed at the time of collar care if moist or soiled. You will need a second nurse to assist you to ensure/maintain spinal alignment. You should also inform the patient of the procedure

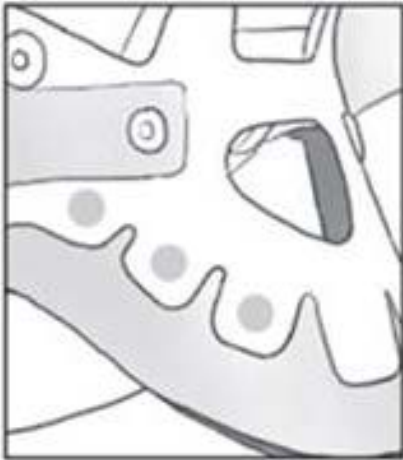
Pressure, moisture, heat, and dirt can all lead to skin redness and sores. To avoid this, keep your skin clean, dry, and cool. At least once a day, remove the collar and wash your neck and face. At this time, moist or dirty pads should be changed. Check with your doctor or nurse on how to keep your head and neck still while the collar is off. If you notice any skin redness or sores, call your doctor or nurse.

Instructions for Removal, Skin Care, and Re-Application

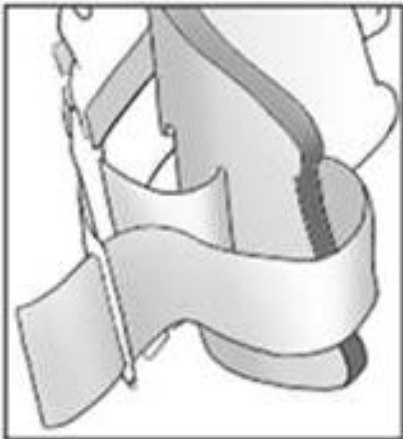
- Before taking off your collar, gather the supplies you will need: soap, wash cloth, towel, and pads.
- Stand or sit in front of a sink with a mirror. Release the strap on one side. Remove the collar and set it aside.
- Keep your head and neck straight and still. Use a wash cloth to clean your face and neck.
- Rinse away soap and gently dry your skin.
- Remove moist and/or dirty pads. If needed, clean and towel dry the plastic and straps. Attach the clean pads.
- Place the front of the collar so your chin comes to the front edge of the chin piece.
- Place the back panel behind your neck.
- Connect the straps on both sides and tighten.
- *Tighten the Support Strap until secure and comfortable (Aspen only).*



Pad Replacement



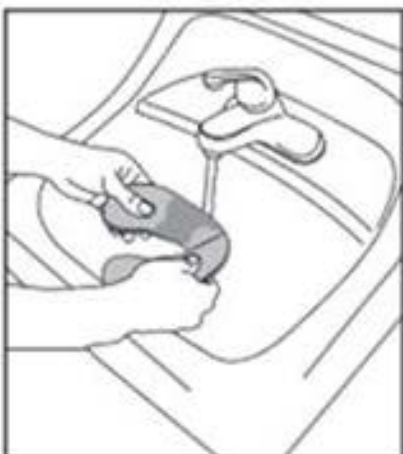
Adjust the pads so grey/green color material side grips the hook dots. The pads must cover all edges of the plastic to avoid touching skin.



To change the back pad, push the hookstraps through the slits in the pad, and then through the slots in the outer edge of the plastic.

NOTE: The padding on the Cervical Collar has a notable white cotton side and a notable gray or green side that covers the foam. The white cotton will always face out and have contact with the skin. Adjust the pads as needed to make sure no plastic touches the skin.

Pad Cleaning

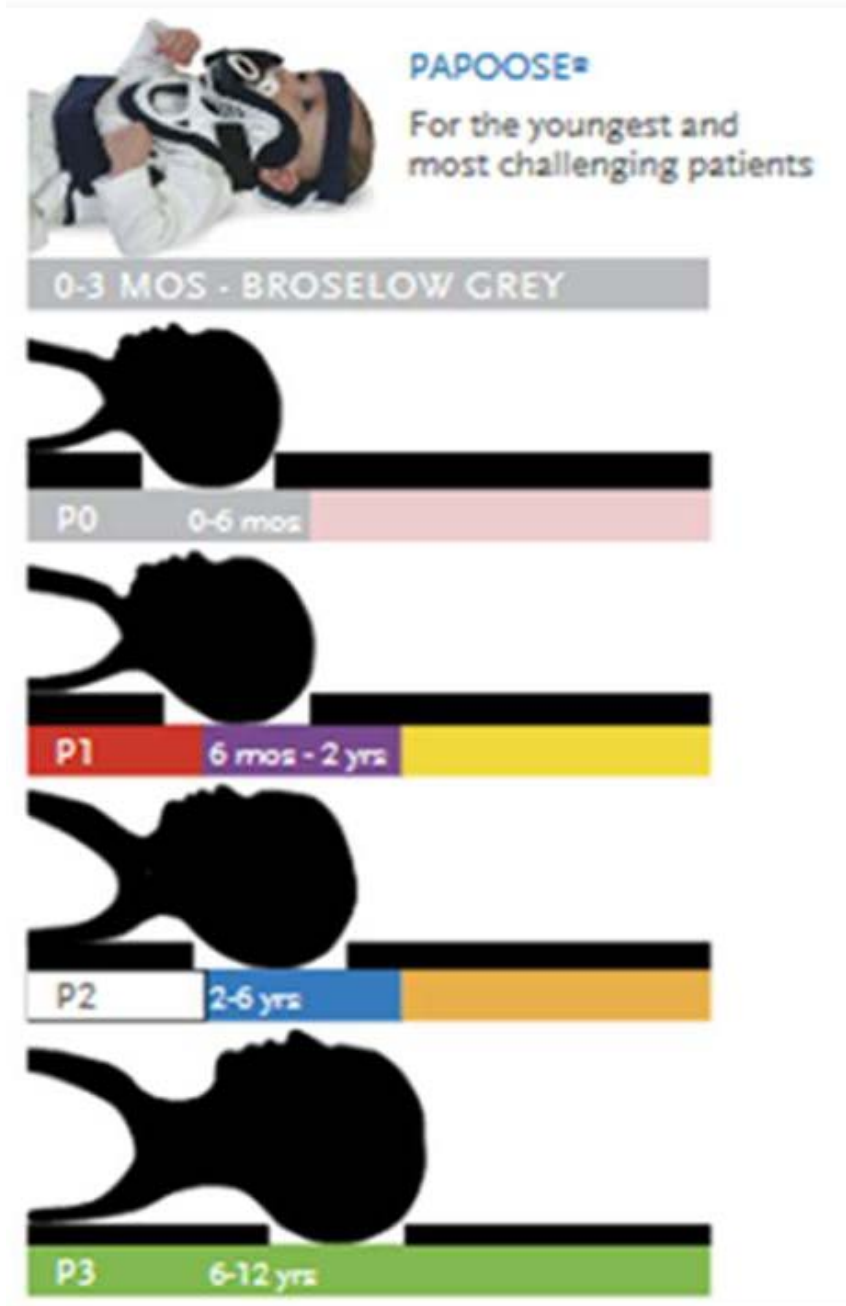


Hand wash the pads with soap and water. Rinse out all soap. Gently squeeze out excess water. Allow to air dry (6 to 8 hours). **Do not place pads in a washer or dryer.**

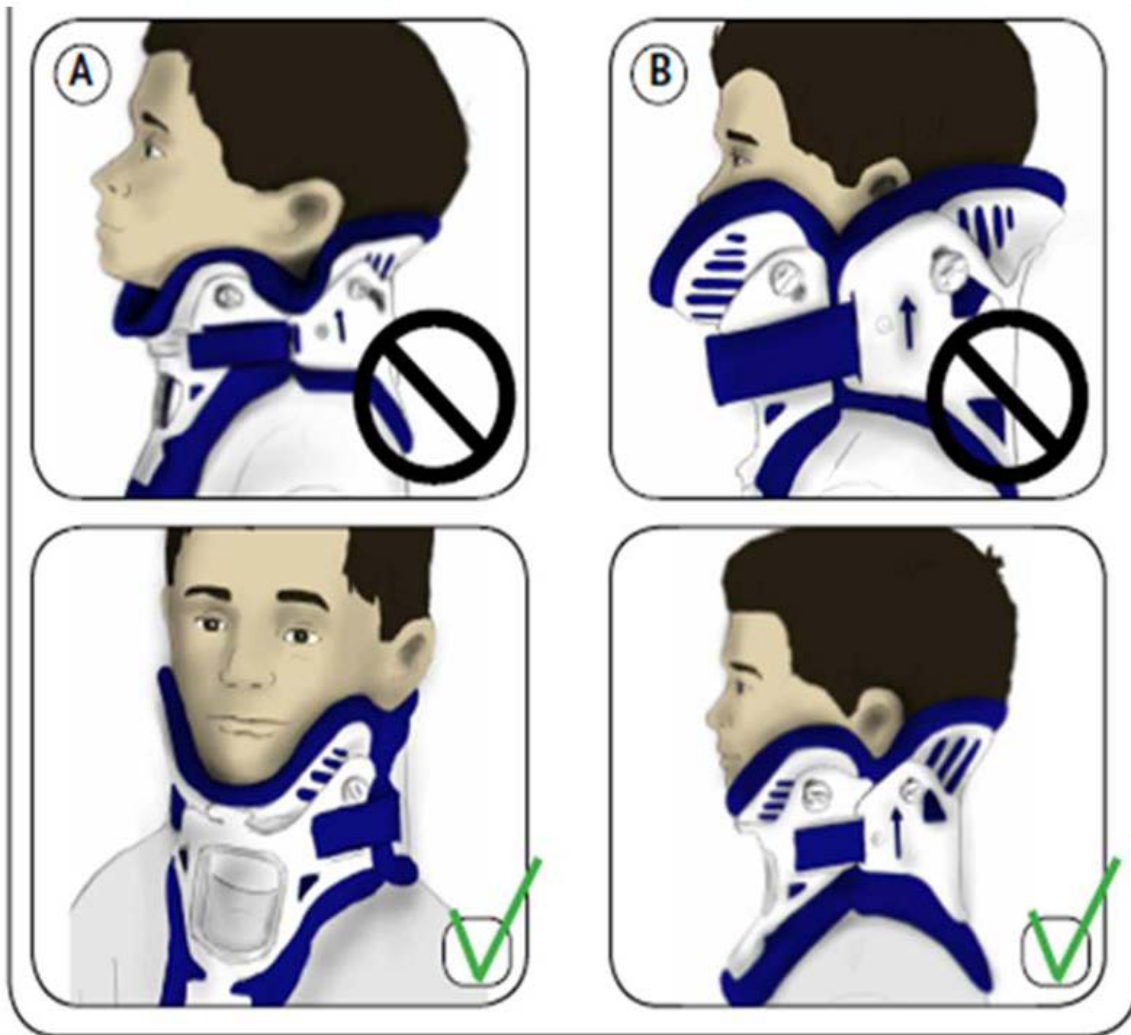
Miami J (SCH preferred)

Note: At SCH the Miami J collar is sized & fitted by orthotics, which needs to be ordered through EMR. Orthotics are on call if this is required out of hours. Orthotics are also available to troubleshoot concerns, such as patient discomfort and/or pressure area associated with the collar, and inadequate alignment.

Sizes Available



Confirming a properly fitted Miami J Collar



Miami J Collar Care

In patients who are on bedrest, collar care needs to occur 4/24, and pressure area surveillance should occur at the same time. In mobile patients collar care & pressure surveillance should occur at least once a day. Collars are to be cleaned & foam inserts changed at the time of collar care if moist or soiled. **You will need a second nurse to assist you to ensure/maintain spinal alignment.** You should also inform the patient of the procedure and seek cooperation to assist with remaining still if able.

Removing the Collar

- Position patient with arms to the side, shoulders down and head aligned centrally (Fig. 1).
- Have one staff member perform a head hold.
- Undo the Velcro straps.
- Remove the Back of the Collar – To do this push the collar down into the mattress and slide out from beneath the neck (Fig. 2).
- Remove the front of the collar (Fig. 3)



Figure 1: Correct Patient Position

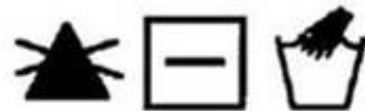
Figure 2:
Sliding out
back section
of collarFigure 3:
Removing
front of collar

Skin Care

- Wash front and back of neck with mild facial soap and water and completely dry the skin.
- Observe for any redness or irritation under the collar, especially over bony areas like the chin, clavicles, or back of the head.
- Redness beneath the chin may indicate improper use of a pillow. If permitted, pillows must always be placed behind the head and shoulders.
- If redness does not resolve or there are any areas of concern please contact the Orthotics Department.
- After cleaning the patient's neck, clean the front and back of the collar and replace the soiled pads with clean ones as directed below.

Pad Care and Replacement

- Peel the soiled blue pads off.
- Look carefully at the shape as you remove them so that you can reposition the clean pads properly.
- Wash the pads with mild facial soap and water. DO NOT use bleach or harsh detergents.
- Thoroughly rinse the pads with clean water. Wring out the excess water and squeeze in a towel.
- Lay the pads out flat to air dry. It should take less than 60 minutes for them to dry.
- Wipe the white plastic collar shell clean with mild soap and water.
- Attach the replacement pads. Fold the pads in half with the dull side facing the Velcro (the shiny side goes against the skin); then centre the pad in the white shell.
- Adjust pads as needed to make sure no plastic touches the skin.



Reapplying the Collar

- Pressing down into the mattress, slide the back carefully behind the patient's neck.
- Make sure it is centred evenly.
- Flare the sides of the front out, slide it up the chest wall and 'scoop' it up under the chin.
- While holding the front securely, curl sides of the back section snugly against the patient's neck.
- Fasten the Velcro straps.
- Once fastened alternately tighten the straps, one at a time, until they are fastened firmly and symmetrically and oriented 'blue on blue' with the front Velcro.

