G9	Standard	Spinal cord injury moving and handling (M&H)

Systems are in place to cover all **reasonably foreseeable handling situations** in **managing spinal cord injury** (SCI) where patients are **not yet admitted to a SCI centre** (SCIC)

Justification

Rationale

Patients with an actual, or suspected, spinal cord injury, may or may not be in a SCIC, especially in the period directly after their injury (Leigh and Dermott, 2010). Whatever the setting, the prevention of complications arising from spinal instability or neurological compromise must start immediately (NSCISB, 2011). Incorrect handling of patients with potential or incomplete spinal cord injuries can cause further neurological deterioration (Harrison et al, 2007, ch 11) which may have catastrophic consequences. A high degree of skill and exceptional teamwork are therefore required. It is essential that the potential for harm to patient (and staff) as a result of undertaking MH operations is either prevented, or, where this is not reasonably practicable, is adequately controlled, in order to ensure improved health outcomes for people with SCI (NSCISB, 2012). SCI patients are also vulnerable to the avoidable complications of pressure ulcers, urinary tract infections, constipation and impaction, autonomic problems, gastric ulcers and joint stiffness and contractures (Harrison, 2011).

Authorising evidence

None specifically relating to SCI.
HSWA (1974); LOLER (1998); MHSWR (2000); MHOR 1992 as amended 2004; PUWER (1998).

Links to other published standards and guidance

BASCIS (2005); DH (2005); Harrison (2000); Harrison et al (2007); Leigh and Dermott (2010); MASCIP (2009); NICE (2005) CG29; NICE (2010) CG92; RCP (2008); NPSA (2008); Ruszala et al (2010)

Cross reference to other standards in this document

A12,13,15; B7-9; C1,4,8-14; D1-6,9,11; E5; G2-4,14,15,21,22,23,25,26,32,39, 40; K1,2; H2

Appendices

1, 4, 9, 10, 13-16, 20 + Attachment 9

Verification Evidence

- There is an agreed approach to the handling of SCI patients, informed by evidence-based best practice, documented in the M&H policy/ relevant local protocols
- All staff handling SCI patients are trained to the required level of competence, and assessed as competent, with suitable and sufficient local supervision for those not yet competent
- Audits and incident reports indicate that suitable equipment is available, and the environment is conducive to good care
- Local SCI protocol should prescribe the time frame for referral to the local SCIC for advice and guidance. If there is no local protocol, the **default time is 4 hours**.

The local SCIC is: ……
.
Tel: ……

Contact person/s: ……

G9 Protocol – Spinal cord injury (M&H)

Authors: Joan Gabbett

Other contributors: David Couzens-Howard; Liz Leigh; Sandra O'Conner; Donna Poole; Pauline Robertson; Glynis Watson

This protocol should be read, in the first instance, in conjunction with 'Moving and handling patients with actual or suspected spinal cord injury (SCI)', MASCIP, 2009. Please see Section 18 References for full details.

1. Introduction and background

This protocol deals with spinal cord injury as it applies to manual handling (MH, M&H) only. In an ideal world, all SCIs would be transported to a SCIC but this is not always possible, for a variety of reasons (NSCISB, 2012) - these are identified in section 2, p4. As a result, local acute hospitals/ district general hospitals (DGHs) admit such patients. It is therefore incumbent on relevant members of staff, such as specialist A&E staff and site managers/ appropriate other senior personnel/ critical care nurse specialists/ manual handling practitioners (MHPs) to have undergone a recognised training course on the handling of SCI patients, to inform other relevant staff in their DGH (Leigh & Dermott, 2010). They, and the other relevant staff, must maintain their competence in SCI patient handling.

For the purpose of this protocol, the patient is referred to as 'he'.

Definitions (Gall & Harrison, 2007, ch 4)

Tetraplegia (also quadriplegia) *"This term refers to the loss of motor and/or sensory function in the cervical segments of the spinal cord. Tetraplegia results in impaired function in hands and arms, as well as trunk, legs and pelvic organs".*

Paraplegia *"This refers to the loss of motor and/or sensory function in the thoracic, lumbar or sacral segments of the spinal cord. Hand and arm function is spared, but, depending on the level of injury, the trunk, legs and pelvic organs may be involved"*.

Level of lesion *"This is defined as the lowest level at which sensation and movement are normal. Below this level there is altered or absent sensation and/or weakness. This level may be different to that of the original spinal column injury".*

Most SCICs provide acute care outreach teams to advise, educate and support peer professionals to deliver pre-transfer/ a more prolonged programme of pre-transfer care management of SCI patients, enabling current knowledge and clinical skills (Harrison et al, 2007, ch 1).

It is vital that if a patient with a suspected (potential/ uncleared) or actual spinal cord injury (SCI) is admitted to a DGH, the receiving consultant contacts the local SCIC for advice **within four hours** of admission. All relevant staff (as mentioned above) and BCAs/ MHPs should know their nearest SCIC (see Attachment 9A). It should also be detailed in the Site Managers on call information.

Available data on SCI from SCICs is estimated at 12-16 per million of the population, the majority (70-75%) caused by trauma, with the most common cause being falls and road traffic accidents/ motor vehicle collisions (MVCs)/ motor traffic accidents (MTAs) (NSCISB, 2011). Approximately half of these are cervical injuries, with significant potential for neurological improvement (NSCISB, 2012).

Delayed admission to a specialised SCIC was shown to have a strong correlation with the incidence of complications, and the failure to prevent those complications. Those who developed complications spent significantly longer in hospital (BASCIS, 2005; NSCISB, 2011).

Initial management of a new SCI must focus on a swift, accurate diagnosis followed by appropriate management from the time of diagnosis, to give the individual the best possible outcome and reduce complications (DH, 2005; NSCISB, 2011). Medical management will be aimed at the reduction of spinal cord compression, reduction of vertebral displacement, and stabilisation – either conservative or surgical. This will also minimise litigation.

Optimal spinal care of a new SCI involves not only an understanding of spinal biomechanics but also the physiological and related problems dependent on the severity of the neurological compromise (NSCISB, 2011).

Martin et al (2004), calculate that 2.7% of paediatric trauma cases suffered significant spinal column injury of which 16.5% involved SCI. When dealing with children it is vital to involve parents from the start. Children may not be best served by being admitted to a predominantly adult environment (Harrison et al, 2007, ch 21).

2. Management, organisation, supervision and support

The UK is divided into areas, each with a linked SCIC.

A patient who has sustained an actual/ suspected SCI who is within 45 minutes of a major trauma centre (MTC) will be taken there from the scene. A patient

who has sustained a similar injury who is more than 45 minutes away from a MTC will be taken to a trauma unit or local emergency hospital A&E for assessment, provisional diagnosis and from there to a MTC (NSCISB, 2011).

The treating consultant must contact the SCIC within 4 hours to determine the optimum management plan for the SCI patient, taking into account other injuries and pre-existing medical conditions. The appropriate location for optimum medical management and the immediate management plan for the SCI will be agreed. At this time a SCIC referral will be logged, and the SCI must be registered within 24 hours on the National SCI database (NSCISB, 2012) to establish the number of patients awaiting transfer, and lengths of wait, in order to plan for adequate future capacity (NSCISB, 2011). There are three algorithms in NSCISB (2012) to identify the location of initial care and the protocols for transfer. The SCIC will provide on-going advice, guidance and appropriate support 24/7 until such time as the SCI patient is transferred to a SCIC (NSCISB, 2011). It is necessary that relevant members of staff (see p2) and BCAs/ MHPs know the system and their nearest SCIC (Attachment 9).

Ideally, patients are transferred to the SCIC as soon as possible, however;

- some patients may not be fit for transfer due to their physiological state, such as significant multi-trauma/ respiratory compromise

- the patient may not be fit enough to travel the distance involved

- the SCIC may not be able to accept a referral because it cannot provide the support facilities required for the patient at this time (Harrison & Lamb, 2007, ch 2).

In which case admission to the initial receiving hospital critical care unit (CCU)/HDU/ITU will be required. Close collaboration with the SCIC is essential.

A trauma and critical care network in the form of a Link-Worker scheme has been in place across the UK since 1998 to provide local service managers with an opportunity to develop appropriate evidence-based guidelines (Harrison, 2011) for determining the pathway which a suspected/ actual SCI patient takes from site of injury to ward, and the specialised assessment required for these patients (NSCISB, 2011). Its aims are to review the issues of principal concern within critical care environments outside the SCIC. There are National SCI Pathways (www.mascip.co.uk) for staff looking after patients outside a SCIC in order to ensure avoidable errors do not occur.

Not every patient with vertebral injury has SCI, however the potential for SCI is present (Caroline, 1995), and so initial management will make a presumption of a SCI until medical assessment indicates otherwise. It is important that a patient with an unstable spine and/or cord injury is identified accurately and

rapidly, so that the patient can be handled correctly, and the complications arising (from spinal instability or neurological compromise) are dealt with swiftly (NSCISB, 2011) and safely. *"Spinal cord injury without (immediately apparent) radiographic abnormality (SCIWORA) is a common presentation with paediatric trauma cases. Spinal cord injury without radiographic evidence of trauma (SCIWORET) is a common presentation among older people who have experienced minor trauma" (Harrison et al, 2007, ch 9).*

Spinal column/ SCI should be suspected in all high velocity MVCs/MTAs, unguarded falls particularly of the elderly, diving and rugby injuries. All have the potential to result in neurological deficit (BASCIS, 2005). Hyperextension injuries of the cervical spine, particularly in the elderly, can result in neurological deficit without clear evidence of any bony injury (BASCIS, 2005). All patients who are unconscious must be assumed to have a potentially unstable spine and/ or cord injury (NSCISB, 2011).

There must be a multidisciplinary team (MDT) approach, whether operative or conservative, to the protection of the spinal cord from further injury, management of joint protection, skin care, respiratory care, bladder and bowel care, and rehabilitation.

Training

It is suggested that those who manage units such as critical care and orthopaedics where a SCI patient may be cared for should contact their local SCIC with a view to developing and delivering relevant collaborative protocols, and educational sessions, in advance of any SCI admission in order to provide quality patient-focussed care (Harrison, 2000, ch 2). In addition, the Spinal Injury Association Academy (SIAA) runs regular SCI study days around the country for health professionals working outside SCICs. It also runs a SIA Health Portal through which important documents on SCI are available for downloading, including the National Pilot Pathways for the Care of People with Spinal Cord Injury (www.spinal.co.uk/page/pubs).

Every specialist A&E/ critical care/ orthopaedic nurse and appropriate other senior personnel/ BCA/MHP must develop and maintain the knowledge and clinical skills essential for the planning and delivery of safe and effective care for the next patient with an actual or suspected SCI (Harrison, 2007, Introduction). Ideally, every nurse and therapist working in A&E, ITU/ICU and orthopaedics should understand the principles behind, and be able to demonstrate, a 'generic' log roll (Leigh & Dermott, 2010), so in the event of need, such as staff shortage, they can be updated by the relevant personnel.

Senior staff in hospitals looking after SCI patients must be able to demonstrate that they have adequately trained staff and have facilities which, with advice

from outreach staff at the SCIC (who give advice 24/7), will allow a SCI patient to be managed safely until able to be transferred to the SCIC. All those involved in SCI patient transfers must work to guidelines and be specifically trained and equipped (NSCISB, 2011).

Harrison, (2000, ch 10) writes *"It would be both inappropriate and unprofessional to implement a new manual handling practice based solely on the information provided in this book* (or any publication). *A request to your local* SCIC *may enable you to organise a practical M&H workshop with an experienced facilitator. Most units are also able to provide opportunities for clinical placements as developmental opportunities"*.

A robust system for assuring competence is required to ensure quality and safety in service delivery, whilst encouraging career progression.

3. Staffing levels

It is important that staff are able to follow a safe system of work (HSWA, 1974).

Sufficient numbers of suitably qualified staff must be employed and rostered (CQC, 2010), and these levels should be pre-determined, with provision for peaks in demand.

Trauma networks, via link-workers, must ensure that there are sufficient staff trained in the current care of the SCI patient (NSCISB, 2011). Log rolling and patient positioning are staff intensive, requiring up to 6 staff (MASCIP, 2009, p6). Even if turning beds are used, the number of staff should remain the same to ensure correct spinal alignment of the patient.

Safe and efficient methods of transfer of paralysed patients from spinal board to bed/ x-ray table/ examining couch must use sufficient manpower (BASCIS, 2005).

4. Staffing competencies (after Benner, as cited in Ruszala et al, 2010)

Novice (N); Advanced Beginner (AB); Competent (C); Proficient/Practitioner (P); Expert (Ex)

M&H requires various levels of competence. In some areas high levels (P or Ex) will be required, because of the complexity and/or difficulty of the task, or the consequences of making a mistake, as for example in the case of patients with actual or suspected spinal injuries. It is important not to underestimate the role played by informed nurses in supporting the multi-system needs of a potential/ actual SCI individual (BASCIS, 2005). A great deal of damage can be done through incorrect handling and positioning, with long-lasting, sometimes

irreversible consequences (BASCIS, 2005; NSCISB 2011). It is important therefore that competence is assured by means of training, assessment and supervision. However a novice, under the guidance of a more experienced handler, can 'start the journey' through the levels of skill, and motivation for this will come naturally from small successes gained.

Doctors

N.B. Relevant medical staff may be involved in the M&H of potential/ actual SCI patients. They will also require appropriate M&H training in log rolling and lateral transfers.

Novice

New staff (registered and unregistered), including newly qualified nurses, therapists, support workers (HCAs, therapy assistants or family carers), students with little or no knowledge of handling and positioning of SCI patients. They will require instruction and training, followed by a period of observation and close supervision, support and guidance.

Advanced Beginner

Someone who has been working with SCI patients for several months, has undergone induction and foundation training and started to build their experience, and can transfer this into new situations. Close supervision may no longer be required and they can carry out handling and positioning under 'some' supervision as part of a team. Typically they will be fairly junior substantive staff or more senior students.

Competent

Staff in this category are more experienced and have been assessed as competent in handling SCI patients. They have gained insight and see the picture as a whole, so that they can look at the person holistically. Typically they will be a senior nurse or therapist, but could be an experienced support worker or family carer.

Proficient

Staff at this level (e.g. SCI link-worker) will have an in-depth knowledge of human development and movement, a sensitivity of touch and a degree of empathy that helps them elicit optimal responses from the patient. They naturally integrate an intuitive approach with developed clinical reasoning. Typically they will be an experienced senior nurse/ therapist, may be a clinical specialist and will also have been assessed as competent in M&H SCI patients and are able to assess competence in others.

Expert

A member of staff at this level is likely to be a leader in their field, conducting research, innovating and developing the evidence-base. S/he will be a source of knowledge and inspiration, locally at least, for less experienced staff and will exercise a nurturing role and be involved in strategic decisions. Typically they will be established clinical specialists competent in M&H SCI patients and/or MHPs/ BCAs in a strategic role.

NB: When handling cervical SCI patients the most competent practitioner should take the head and lead the team (MASCIP, 2009). Not all MHPs/ BCAs will have this level of knowledge and skills in SCI handling and positioning - they should liaise closely with the SCI link-workers and SCIC experts.

5. Environment

High quality, safe, efficient and effective practice is rendered difficult or impossible in settings that are inappropriate. This is often overlooked; therefore attention must be paid to: - space and layout (including storage), flooring, lighting, other ambient conditions, equipment and furniture, in order to ensure good ergonomics. If the working and clinical environment is sub-optimal other control measures will be required to compensate.

Space and layout are particularly important when looking after patients with SCI as the patient will require a team of up to six to turn him (MASCIP, 2009, p6), and at times in the turning regime, if the patient has a cervical cord injury, he will have his arms in a cruciform position i.e. abducted and projecting beyond the edges of the bed.

The clinical areas must be orderly and tidy and free from slip/trip hazards. Flooring needs to be fit for the purpose.

It is important to maintain privacy for the patient, with the appropriate use of curtains and screens.

Patients may be sensitive to certain environmental conditions and may respond well or adversely to a busy, stimulating scene.

6. Communication and information systems regarding initial referral and entry into the system

Where immediate transfer of a SCI patient to a SCIC is not possible, the SCIC will provide:-

- Direct outreach to the patient and family
- Direct outreach to the MDT caring for the patient
- Telephone advice and support to both the patient and team.

The prevention of complications must begin immediately (NSCISB, 2011) and involve all members of the MDT, who must be trained and competent in the safe and appropriate management of a patient with suspected or actual SCI (NSCISB, 2011).

7. Treatment planning

Safety considerations, for both patient and handler, need to be integrated with sound clinical reasoning when planning the most suitable approach and methods.

At the trauma scene any helmet is removed by the paramedics, the patient will be fitted with a collar and will be placed on a full body protective device (scoop stretcher/ long spinal board/ combi-board/ vacuum stretcher).

"This should not be loosened or removed until a proper evaluation of the potential risk for airway compromise has been carried out" (Harrison et al, 2007, ch 11).

"Once the straps have been removed from the patient, as they have to be, so a proper assessment can be carried out, the patient is no longer immobilised and is at serious risk of further injury" (Sexton, 1999).

"The gold standard in spinal immobilisation is a head managed on a spinal board, with a correctly fitting neck collar, head immobiliser and full body restraining straps" (Thurgood, 1997).

At all stages of a patient's journey through the system, treatment must be planned by the MDT in conjunction with the local SCIC and goals agreed with all concerned. It is important that steps in the process are not missed in these situations.

A protocol must be in place for clearing the whole spine in all patients with major injuries (NSCISB, 2011). The prevention of complications from spinal instability or neurological compromise must begin immediately and involve all members of the MDT (NSCISB, 2011). The ASIA (American Spinal Injury Association) standard neurological classification of spinal injury chart is the one recommended (MASCIP, 2009; ASIA chart (Harrison et al, 2007, ch 8; www.sci-info-pages.com/levels.htm) and will identify the current level of neurological deficit (NSCISB, 2012).

There are operative and conservative approaches to the stabilisation of SCIs. Both have a place, and both must be carried out competently. Any operative stabilisation will take place either in a neurosurgical or an orthopaedic setting, in partnership with the local SCIC.

When stabilisation of the spine is achieved by means of a surgical procedure, patient handling is less hazardous, and the patient can be mobilised sooner,

within physiological restrictions (NSCISB, 2012). There is emerging evidence that patients with some types of injury, such as bifacetal (often rugby injuries) may make a full recovery if treated operatively within a 4 hour window (NSCISB, 2011 & 2012). Only an experienced team, appropriately trained in SCI interventions must undertake stabilisation surgery on SCI patients.

Where stabilisation of the spinal bony segments is conservative, this can take from 6-12 weeks. A review after 6 weeks is required to identify the amount of calcification laid down. Refer to local policy.

Skull traction can be used for a period of 6-8 weeks to stabilise or reduce a fracture or dislocation, until radiological examination shows callus formation (Harrison, 2000, ch 10), in which case regular neurological assessment is vital as the injured cord is very vulnerable to distraction (NSCISB, 2012). There should be liaison with the SCIC as this is potentially dangerous (BASCIS, 2005).

Treatment planning in relation to the M&H of patients will initially focus on turning and positioning, the maintenance of joint and muscle range, respiration, skin integrity, addressing hygiene needs, bladder and bowel function.

Appropriately measured and fitted thigh length graduated compression stockings must be worn by SCI patients to replace lost muscle resistance and reduce the risk of venous thromboembolism (VTE) or pulmonary embolism, unless contra-indicated by lower limb trauma, pressure ulcers or skin conditions. These must be removed daily to wash the underlying skin and check for pressure damage (Harrison, 2000, ch 13 and 2011). See also section 10, p21.

Rehabilitation needs are best met in the SCIC, however, if the patient is unable to be transferred, rehabilitation must commence in the acute setting (CCU/HDU/ ITU), with input and advice from the SCIC outreach team (NSCISB, 2011). "*Rehabilitation is a continuous process, beginning at the moment of injury, and is an integral part of critical care. If critical care and rehabilitative care are not combined, people with SCIs are subject to serious clinical and economic consequences that could otherwise have been prevented"* (Oakes, 1990). See also, section 10, p22.

Patients are nursed naked with the body supported by pillows between turns to reduce pressure ulcer risk, reduce handling and enable easier positioning checks. It is essential to maintain patient dignity for which a theatre gown or sheet should be used. Patients must not be positioned on marked skin (Harrison, 2011).

It is necessary to have a positive attitude as this will help the patient and family as they face up to the long term implications of SCI (NSCISB, 2011).

8. Moving & handling tasks

An in depth M&H risk assessment must be carried out by a competent person prior to any patient handling (Harrison, 2011).

Whenever a patient is to be moved, an explanation must first be given to the patient (Harrison et al, 2007, ch 11).

These M&H tasks will consist of;

- Action at the scene (including removal of helmet if applicable)
- Application and removal of cervical collars
- Lateral transfers
- Turning
- Positioning of limbs
- Chest physiotherapy
- Passive movements (NSCISB, 2012)
- Management of spasm and spasticity
- Prevention of pressure ulcers
- Personal care (hygiene, bladder and bowel care)

Once the spine is stable the following will be added;

- More active mobilisation/ 'verticalisation' (NSCISB, 2012)
- Further mobilisation and rehabilitation

Once the spine is stable, mobilisation and rehabilitation can become more active.

9. Moving & handling assessment

"*It is not unknown for patients with potential or incomplete SCIs to experience further neurological deterioration. Incorrect handling has caused secondary trauma"* (Harrison et al, 2007, ch 11). Patients may present with full movement and sensation in all 4 limbs; however, there may be a vertebral fracture which, if handled incorrectly may damage the spinal cord (NSCISB, 2012). The assessment must therefore be very detailed and carried out by a competent practitioner (Harrison, 2011).

All the moving & handling tasks identified above must be assessed (MHOR, 2004). This can be done generically in connection with the drawing-up of SOPs, and/or individually. In emergency situations assessments will need to be made rapidly, but not so fast that safety is compromised. Forward planning for every reasonably foreseeable eventuality, such as emergency evacuation, will minimise the risks from emergency handling.

In general, spinal injuries should be suspected in all casualties involved in a MVC/ MTA; a fall or jump from a height; an accident resulting in impact or crush

injuries; multiple trauma; if the patient loses consciousness. Also, if following injury, the patient complains of back or neck pain; sensory changes; an inability to pass urine or there is pre-existing pathology such as ankylosing spondylitis. Any unstable fracture must be protected. Guidance from the link-worker/ local SCIC must be followed.

The initial assessment must take all relevant risk factors into account using the TILE (or similar) format: -

Task

- The tasks involved (see Section 8)

Individual capabilities (of the handler)

- Skills and competencies
- Physical capabilities
- Health status

Load (inanimate)

e.g. equipment, furniture, etc. The usual risk factors will need to be taken into account.

Load (the patient)

- The patient's medical condition and the effects of medication
- Handling history – history of the accident
- Physiological risk factors
- Communication, comprehension and cognition difficulties
- Psychological/behavioural risk factors
- Sensory and perceptual deficits, including sight and hearing
- Challenging behaviour – aggressive, confused, unpredictable
- Frailty, emaciation or dehydration
- Pain or fear
- Circulatory and respiratory problems
- Attachments (e.g. drips, drains, catheters, external fixation)
- Tissue viability
- Size and weight
- Musculoskeletal status –weakness, paralysis, stiff or unstable joints
- Neurological factors – spasms/spasticity, rigidity

Once spinal segments stable:

- Trunk stability and upper body strength, when/ if able
- Balance in sitting (and standing), when/ if able
- Weight-bearing ability, when/ if able

Environment

The environment in which handling is taking place (see Section 5).

10. Methods, techniques and approaches

A full explanation of what may happen, and why, must be given. The teaching of the following procedures and the management of SCI should only be undertaken by a suitably qualified and authorised health care professional (MASCIP, 2009).

In any position the airway may become compromised. In the case of a suspected SCI, the patient cannot be placed in the usual first aid recovery position as this does not maintain spinal alignment (Swain & Grundy, 2002). A modified log roll should be carried out, using as many people as possible to maintain spinal alignment (Harrison et al, 2007, ch 6). However, if on a full body protective device, with a correctly fitted collar, head immobiliser and full body restraining straps, the patient can be turned into a lateral (side lying) position whilst maintaining in-line immobilisation of the spine (Thurgood, 1997).

Action at the scene

Aim: to immobilise the full spine during any M&H activity (Harrison, 2000, ch 5). "*The future of someone with a SCI may depend upon the extent to which those handling him understand and apply the basic rule that, until proven otherwise by expert medical opinion supported by x-ray and other examination, a spinal injury shall be regarded as potentially highly dangerous and likely to result in injury to the spinal cord and paralysis, if inexpertly handled"* (SIA, 1978, as cited in Harrison et al, 2007, ch 6).

There are guidelines and standards for at-scene paramedic management of trauma and clinical emergencies, including spinal injury, created by the Joint Royal Colleges Ambulance Liaison Committee to inform paramedic training (JRCALC, undated).

The absence of any spinal protective device with a patient in A&E should not be used as an indicator that there is no SCI as a fast extrication from a hazardous situation may have occurred (Harrison et al, 2007, ch 21).

Application and removal of cervical collars

The use of a spinal collar does not negate the need for a staff member to support the patient's head and neck during log rolling. The method of holding the neck of an actual or suspected SCI patient is shown in MASCIP, 2009, p 11. Sensory, motor and positional awareness of all four limbs should be checked after each application of a collar to compare with the pre-assessment findings.

A correctly sized collar must be used to reduce the risk of pressure ulcer development due to the collar (SCI Link, 2004).

Application and removal of the collar should only be carried out by suitably qualified and experienced staff, following the manufacturer's and local policy

guidelines (MASCIP, 2009, p 12 & 13). Instructions for this are in Harrison et al, 2007, ch 12.

The collar must be removed twice daily for skin inspection to check for pressure ulcers as a result of wearing a collar. A suitably qualified and experienced practitioner should support the patient's head (Harrison et al, 2007, ch 12). Permanent removal must be authorised by a senior medical or nursing practitioner in line with departmental policy and individual patient risk assessment (Harrison et al, 2007, ch 12; SCI Link, 2004).

Lateral transfers

Whenever a patient is to be moved, an explanation must first be given to the patient (Harrison et al, 2007 ch 11).

As every transfer is high risk for a SCI patient, whenever a new SCI patient is transferred between surfaces or transported from one area to another, a full body protective device (spinal board, scoop stretcher, combi-board, vacuum mattress) should be used, together with a properly sized and fitted cervical collar if appropriate (Harrison et al, 2007, ch 11). Spinal boards, complete with padding and straps, enable the quick rolling of a nauseous or vomiting patient in an emergency situation in order to maintain a clear airway (Harrison et al, 2007, ch 11; MASCIP, 2009, p16). The head and neck should be manually supported whenever a patient is transferred between surfaces (MASCIP, 2009, pp11, 20) and care must be taken of paralysed limbs (Harrison et al, 2007, ch 11).

However, patients should be transferred off the full body protective device as early as possible, to reduce the risk of pressure ulcers and to enable full spinal support, but only when the primary survey, initial resuscitation and first line x-rays have been taken (Harrison et al, 2007, ch 11). There is a screening tool to help with the decision to remove a spinal protective device (Harrison et al, 2007, ch 11) which should be included in the local protocol for SCI. Whoever authorises the removal of any spinal protective device should do so in accordance with the role expectations of their registering body and local protocol (Harrison et al, 2007, ch 11).

A scoop stretcher is recommended for transferring the patient off a vacuum mattress (MASCIP, 2009, p17).

It is advisable to insert a scoop stretcher under the bottom sheet. Where scoop stretchers are used, patients should be log rolled to enable the two halves to clip together, otherwise the skin could be damaged (Harrison, 2000, ch 8; MASCIP, 2009, p19). It is usually possible to remove it without log rolling. The method of removing the spinal board from under a SCI patient is clearly outlined in Harrison et al (2007, ch 11).

If it is found necessary to transfer a SCI patient off a spinal board/ scoop stretcher for a CT scan, a minimum of 7 staff will be required to maintain alignment (Harrison, 2000, ch 7). For positioning for MRIs consult Harrison, 2000, ch 7.

Turning

As mentioned in section 2 p5, Harrison (2000) in chapter 10 writes *"It would be both inappropriate and unprofessional to implement a new manual handling practice based solely on the information provided in this book* (or any publication). *A request to your local* SCIC *may enable you to organise a practical M&H workshop with an experienced facilitator. Most units are also able to provide opportunities for clinical placements as developmental opportunities"*.

There are two recommended methods for turning:

- Log rolling for thoraco-lumbar injuries
- Pelvic/ hip twist for cervical injuries – ***most often used in a SCIC only***. The pelvic twist method (Harrison, 2000, ch 10) does not allow for a full inspection of the upper back and occipital area so cervical spinal injury patients must be log rolled once a day for a full skin check. It is logical to incorporate this with a back wash and sheet change.

The careful turning of a patient as one unit into a side lying position is called log rolling. This requires sufficient members of staff (up to 6) to control the head and neck, shoulders, pelvis and legs (NSCISB, 2012). All staff should have been taught the method and been assessed as competent. The most competent member of staff should control the head and neck and give the commands. Details for head holding and log rolling of tetraplegic and paraplegic patients are given in MASCIP, 2009, p11, 14, 15 & 20. It may be necessary initially to log roll a tetraplegic patient onto the right hand side only; if rolled to the left those patients with a cervical SCI wearing a collar can experience increased vagal stimulation which could result in cardiac syncope (Harrison et al, 2007, ch 11). Ideally, to reduce the risk of repetitive strain to staff, they should work in different positions around the patient (MASCIP, 2009).

Log rolling is necessary for the following reasons;

- To remove a patient from a spinal board/scoop stretcher/combi-board/vacuum mattress (see Harrison et al, 2007, ch 11)
- To alter skin pressure for the prevention of pressure ulcers, as the patient will have no/ altered sensation from the level of the injury down, and will be unable to move
- To move otherwise static body fluids, thus reducing the risk of gastric ulceration
- To reduce the risk of chest infection by mobilising secretions
- To reduce the risk of urinary tract infection by agitating bladder contents

- To minimise VTE and pulmonary embolism risk
- To enable passive movements to be carried out
- To help in the management of spasm/ spasticity (Harrison, 2012).

Temporary rolling into 90^0 side lying will be necessary for medical examination of the spine, skin inspection, bathing, bowel evacuations and linen changes.

30^0 side to side log rolling with pillow support to maintain spinal alignment, support arms, legs and feet in a good position, and for patient comfort is required to reduce risk, as mentioned above. This ensures that the point of the shoulder and greater trochanter are both free from direct pressure. A turning bed can help reduce musculoskeletal risk to staff during turning, positioning and patient care (MASCIP, 2009, p20 & 21) but in itself is insufficient for the turning regime.

The spine must be kept in alignment at all times – chin, sternum, umbilicus/ symphysis pubis. It must be remembered that spinal alignment in patients with pre-existing conditions such as ankylosing spondylitis/ kyphosis will mean maintaining alignment in the pre-SCI neck contour that was normal for that patient e.g. the neck may have been flexed (Harrison et al, 2007, ch 13; MASCIP, 2009, p22).

During turning it is important to ensure that all lines, tubes and drains are free and not kinked (BASCIS, 2005).

The routine for turning and positioning will be supine, first side, second side. A turning chart must be kept of the time of the turn, the new position, and any relevant comments (Harrison et al, 2007, ch 13). Turning should be carried out 2 hourly and wherever possible, the patient should not be turned onto discoloured skin (Harrison, 2000, ch 10).

Adjusting skin loading to enable as large a weight-bearing area as possible should be part of the turning routine. It is vital to separate the natal cleft manually to prevent sweating, fluid and heat build-up resulting in skin breakdown (MASCIP, 2009, p23; Harrison et al, 2007, ch 13). Once skin loading has been adjusted, pillows can be inserted.

It is absolutely vital that the patient's heels are supported off the bed, and feet supported in 90^0 dorsiflexion. With every turn all pressure areas must be checked for skin breakdown and signs of redness (Harrison, 2000, ch 10).

Patients with acute cervical SCI must be nursed flat, in supine. In this position the action of gravity is eliminated allowing better diaphragmatic breathing, and there is no weight bearing through the traumatised spine or distraction/ compression of the spinal cord. In some instances patients (such as SCI patients on ventilation requiring respiratory support/ those with a brain injury) can be nursed in a 15^0 maximum head-up whole bed tilt (reverse

Trendelenburg) to help maintain spinal alignment. Tilting the bed any higher will increases intra-abdominal pressure. Patients with thoraco-lumbar injury should be nursed in this position to maintain spinal alignment (Harrison, 2011). No attempt should be made to profile or sit the patient up without prior discussion with the SCIC (Harrison, 2011).

Positioning of limbs

Appropriate positioning of lower (and upper limbs in cervical SCI patients) will help reduce excess muscle tone, spasticity and contractures (BASCIS, 2005). SCI positions in bed are either lying supine, or 30^0 tilt on first one side, then the other (MASCIP, 2009).

Careful positioning must ensure that there is no possibility of a flaccid limb falling over the edge of the trolley/ bed (Harrison, 2000, ch 8).

Tetraplegic patients

Tetraplegic patients will require a small flat pillow/ thin gel pad placed under the head to reduce pressure under the occiput (Harrison et al, 2007, ch 13; MASCIP, 2009, p20, 21), unless that patient has pre-existing ankylosing spondylitis/ kyphosis when a larger pillow will be needed.

Previously, the arms of tetraplegic patients, when lying supine, could be placed in five different positions, two of which required the patient's hands to be positioned above his head – see Harrison, 2000, ch 10 for suggested safe positions - taking into consideration the fact that it is now thought that bilateral hand positioning above the head places too much stretch on the damaged cord, so only one hand at a time should be placed above the head. These patients can also be turned by means of a pelvic/ hip twist. (This is not shown in the MASCIP book, but is shown in Harrison, 2000, ch 10). Guidance from the local SCIC is recommended.

The topmost arm may be supported on a pillow from the axilla towards the wrist, whilst the lowermost arm may be supported under the forearm and hand only. The wrists and hands should be slightly elevated to reduce oedema (Harrison, 2011), possibly on special small pillows.

Tetraplegic and paraplegic patients

Legs will be positioned in alignment lying parallel with each other, whether the patient is supine or in side lying. In side lying, the uppermost leg will be supported on two pillows. In supine, the patient will have a pillow under both legs.

To prevent foot drop, the patient's feet must be held in 90^0 dorsiflexion by pillows, with the heels free (Harrison, 2000, ch 10; MASCIP, 2009). The use of

foot drop splints is contraindicated because of the risk of pressure ulcers (Harrison, 2011).

A pillow will be placed behind the patient's trunk when in side lying to maintain spinal alignment.

Chest physiotherapy

In cervical lesions the nerves supplying the intercostal and abdominal muscles are paralysed, reducing the ability to breathe effectively. Injury at or above C3 results in paralysis of the diaphragm; in which case the patient will require mechanical ventilation (Harrison et al, 2007, ch 15). For patients on ventilators, it will be necessary to obtain advice from the SCIC and follow a strict regime (see NSCISB, 2012 for further information). Liaison with the SCIC is necessary when weaning the patient off mechanical ventilation (Harrison, 2011). Further advice on weaning off a ventilator can be found on the Duke of Cornwall spinal treatment centre website.

With an injury at C4 level and below, the patient should be able to breathe unassisted unless there is any pre-existing disease or accompanying trauma, where the outcome will be that the patient will not have an effective cough and will be at risk of respiratory complications. To avoid these and improve respiratory function, the patient will therefore require regular turning to loosen secretions, and early, regular, repeated physiotherapy (deep breathing, vibrations, percussion and assisted coughing, with adapted postural drainage as necessary) (MASCIP, 2009, p24). Whole bed head up and head down (tilting) positioning for postural drainage should be avoided due to increased loading on the spine causing increased damage to the cord (Harrison, 2000, ch 10), also head up tilting increases intra-abdominal pressure (Harrison, 2011).

It is necessary to get medical advice prior to using assisted coughing in new SCI patients, particularly if they have a chest injury, cardiovascular disease, abdominal trauma or disease, or are pregnant (MASCIP, 2009, p24). The diaphragm responds well to deep breathing and assisted coughing exercises started on admission. The patient must be encouraged to develop and maintain a routine incorporating this whilst on bed rest. Where necessary, physiotherapists can teach the nursing staff to deliver assisted coughing (Harrison, 2000, ch 12).

Regular two hourly turning to a 30^0 side lying position will help to clear chest secretions and reduce the incidence of chest infections. The routine will be as mentioned under Turning, p 15 - 17 and a turning chart must be kept (as page 16).

Passive movements

Full range passive movements for all limbs are started on the day of admission. The timetable for carrying out passive movements should be added to the turning chart. These should be carried out, once the injury site is stabilised, a minimum of twice a day (Harrison, 2011). The aim is to maintain a functional range of movement (Harrison, 2000, ch 11), prevent contractures (Harrison, 2011) and VTEs (Harrison, 2012).

It will be necessary to seek the consultant's opinion regarding the amount of arm and shoulder elevation in patients with cervical SCI, and the amount of hip flexion in patients with a lumbar SCI to ensure that the injury site is not further exposed to injury risk (Harrison, 2000, ch 10).

After the initial period of flaccidity following spinal shock, spasticity can develop. Passive movements, combined with careful positioning, are necessary to prevent joint contractures and maintain muscle length. Joint contractures can be very disabling and prevent useful return of movement and muscle power in the event of any neurological recovery in incomplete lesions, and make sitting correctly difficult (NSCISB, 2012). The potential for a tetraplegic patient to undertake any personal care/ meaningful tasks such as feeding, teeth cleaning could be prevented by upper limb contractures developing during the initial period of bed rest (Harrison, 2000, ch 10). Whilst passive movement and stretching will be initiated by physiotherapists, all staff turning the patient can and should undertake this, following consultation with the physiotherapists, particularly for the hands and feet, and it should become an integral part of the turning regime. Spasticity may increase as a result of infection, constipation, anxiety etc. The timetable or carrying out passive movements should be noted on the turning chart.

Tetraplegics

Shoulders – shoulder pain and frozen shoulders are a very common side effect in cervical SCIs. Patients should only be log rolled through 90^0 for the shortest length of time, and for a specific purpose, such as skin inspection or bowel evacuation. Patients in side lying should only be rolled to a 30^0 angle from horizontal and care must be taken that the patient is not lying on the point of the shoulder. Flexion, abduction and external rotation are the important moves during passive movements as these are the ones most likely to develop limitation of movement. Passive movements must be undertaken with care (the handler should 'feel' into inner and outer ranges in case of resistance) so as not to cause trauma to the shoulder, e.g. the older patient rarely has a full range of movement for external rotation.

Elbows – will tend to flex due to unopposed biceps action, so must be fully extended during passive movements.

Hands and wrists – tend to flex, so require movements into extension with care taken to move not only the fingers but also the small bones of the hand. This can easily be combined with moisturising as the skin on hands and fingers can otherwise become very hard (Harrison, 2011).

Tetraplegic and paraplegic patients

Hips – tend to flex and adduct, so require extension and abduction passive movements. In older patients whose range of movement may be limited handlers should 'feel' into inner and outer ranges.

Knees – tend to flex, so passive movements must take the knees into full extension, whilst taking care not to hyperextend.

Ankles and feet – tend towards foot drop, so every effort must be made to dorsiflex the feet. As with the hands, during passive movements the small bones of the feet should be moved, and this can be combined with using a moisturising cream to prevent skin hardening (Harrison, 2011).

The management of spasm and spasticity

The local SCIC should be contacted for advice if there is an onset of spasticity (Harrison, 2000, ch 11).

If severe, spasm can interfere with spinal alignment. It is necessary to identify what triggers this - positions, specific movements or skin contact. Spasm/ spasticity can be reduced by regular turning, changes in limb position and passive movements (Harrison, 2000, ch 11). However, some spasticity can be useful as it will help to aid bladder and bowel emptying, facilitate sitting transfers and standing.

Prevention of pressure ulcers

Patients with SCI are at high risk of developing pressure ulcers. If patients are being treated at a hospital other than a SCIC they are at an even greater risk (Ash, 2002), partly due to the low priority given to skin care as a result of the critical state of the patient on arrival (Gunnewicht, 1997).

This client group should have the spinal board removed as soon as appropriate in order to reduce the risk of pressure ulcer development - children and the elderly being at higher risk (Harrison et al, 2007, ch 21 & 22).

The sooner the patient is off a spinal board and on an appropriate pressure relieving mattress the better. The use of dynamic alternating pressure mattresses with traumatic SCIs is contra-indicated due to the need to maintain spinal alignment (Harrison, 2011). Additionally, pressure ulcers have developed whilst patients have been on these mattresses (Harrison, 2012). A pressure

reducing cushion should be used once the patient is mobilising out of bed to a seated position (Vogel, 2008). Skin condition should be checked on admission (NICE, 2005) and then at every roll/ transfer as skin care is essential. Patients should be turned two hourly and the time spent in each position should be noted on the turning chart, likewise the condition of the skin. If possible the patient should not lie on discoloured skin (Harrison, 2000, ch 10).

Anti-embolism stockings should be the correct size, and staff who fit these stockings should be trained in their use. They should be removed once a day for skin hygiene purposes and to enable staff to check for signs of pressure damage. However, if there is a significant reduction in mobility or sensory loss, the patient's skin should be inspected two – three times a day (NICE, 2010). These stockings should be re-sized as necessary. See also section 7, p10.

As mentioned under Turning, p17, care must be taken of the natal cleft when the patient is in supine. Each buttock should be manually separated (MASCIP, 2009, p23).

Mobilisation – 'verticalisation'

After a patient has been lying supine for up to 12 weeks the process of attaining a graduated sitting or vertical position must be carried out slowly, in stages, with care. This can either be done by using the rising back rest of a four-section profiling bed or by transferring the patient onto a tilt table. Anti-embolism stockings and an abdominal binder (for tetraplegics and high level paraplegics) ***must*** be worn (NSCISB, 2012) when verticalising. During the process the patient must be monitored closely by an appropriately qualified practitioner for signs of orthostatic hypotension, and for neural function. It may be necessary to return the patient to supine. A tilt table is the better option, as weight will be taken through the long bones of the legs, the feet will be plantigrade (at a 90^0 angle to the lower leg), bladder and bowels will be better stimulated and it will be psychologically good for the patient to be 'standing' again. It could take 1-2 weeks for a patient to tolerate the vertical position (NSCISB, 2012).

Rehabilitation

"*Rehabilitation is a continuous process,* ***beginning at the moment of injury****, and is an integral part of critical care. If critical care and rehabilitative care are not combined, people with SCIs are subject to serious clinical and economic consequences that could otherwise have been prevented"* (Oakes, 1990). See also section 7, p10. Rehabilitation can increase once the spinal column is stable.

Once the patient is able to sit, with his trunk vertical, he will be taught how to transfer from bed to wheelchair and back, and how to manage his wheelchair.

Information on how long a patient should be sitting out in a wheelchair for initial mobilisation once the spine is stable can be found on the Duke of Cornwall spinal treatment centre website.

11. Handling equipment

Staff should be aware of the availability, both generally and within their own hospital, of an appropriate range of patient transfer equipment for those with a suspected or actual SCI, and staff must be confident and competent in its use (Harrison, 2000, ch 8). All equipment should be fit for purpose (CQC, 2010), be in good working order, maintained and used for its intended purpose (LOLER, 1998; PUWER 1998).

Full body protective devices will be necessary for the extrication and transportation of patients with suspected or actual SCIs from the scene to the receiving centre, and sometimes initially for transfers in A&E and radiology to maintain spinal protection and enable airway management (Harrison et al, 2007, ch 11).

Four-section profiling beds with 'lock out' function will be needed, as a minimum specification to prevent accidental spinal movement. Ideally, these will also be turning beds, to assist handlers, especially with heavier and bariatric patients.

The use of a turning bed does not negate the need for the handlers physically to turn the patient (Harrison, 2000, ch 10). A turning bed can help to reduce musculoskeletal risk to staff during turning and patient care, but in itself is insufficient for the turning regime.

Hoists should have the facility to attach a scoop stretcher.

Special turning beds have been very much a 'niche' market and many manufacturers have stopped producing them (Harrison, 2012). A new bed, the Nexus Legacy orthopaedic, critical care, tilting bed with pressure redistribution mattress system has been produced, and appears ideal for SCI patients. Amongst other things, it is able to accommodate skull traction, and has soft-padded multi-adjustable removable arm boards, and a soft padded removable footboard.

Tilt table/s should be available if required.

12. Other equipment and furniture

Mattresses must provide pressure relief plus support (Harrison, 2000, ch 10). *Dynamic* pressure relieving mattresses are contra-indicated with SCI patients due to the need to maintain spinal alignment (Harrison, 2011). Additionally,

pressure ulcers (see p 20 & 21) have been known to develop whilst patients have been on these mattresses (Harrison, 2012) due to the lack of sensation, particularly if the heels are not supported off the mattress (NSCISB, 2012). The pressure relieving effects of thermal contouring mattresses are reduced with SCI patients (Harrison, 2000, ch 13).

A pressure reducing cushion should be used once the patient is mobilising out of bed to a seated position (Vogel, 2008).

If no specialist bed such as the Nexus Legacy – which has arm rests for supporting a tetraplegic patient's arms in a cruciform position – is available, a stool beside the bed or a board placed under the mattress, with pillow/s on top will be required.

13. Risk rating

To carry out a 'suitable and sufficient' assessment, each task should be evaluated as part of the assessment process, so that the level of risk is quantified. Such assessments should be used, wherever possible, in the design of a safe system of work, and in highlighting any residual risks.

Various systems exist, but it is suggested that the NHS risk management 5x5 matrix, with 0-25 scale, is used for an overall evaluation of risk (NPSA, 2008) (see CD1, appendix 9 in folder 5). It is in common use, simple to use with 5 levels of risk, determined by a calculation of the likelihood or probability of an adverse event occurring multiplied by the severity of consequences or impact should it occur.

Likelihood/Probability (0-5) x Severity of Consequences or Impact (0-5) = 0-25

The values below are based on this system. Calculations lead to the following possible scores or ratings: -

1 – 6 = Low; 8 – 12 = Medium; 15 – 16 = High; 20 = Very High; 25 = Extreme

These ratings can then be used to alert staff, to prioritise action and justify any necessary expenditure to make the situation safer, on the basis of reasonable practicability. Options can be evaluated by considering risks, costs, and actions planned or taken, to reduce the level of risk to the lowest level that is reasonably practicable, which can thus be demonstrated.

For assessing postural risks and those associated with tasks other tools are available, such as RULA (Hignett S & McAtamney L, 2006), REBA (Hignett S & McAtamney L, 2000) and OWAS (Karhu et al, 1977). These not only look at postures but forces.

14. Alerting the moving and handling team

This should occur automatically on admission, although it is recognised that not all MHPs/ BCAs will have either the experience or competence to handle SCIs. They should, however, know that a SCI patient has been admitted, the routine for contacting the local SCIC and may well liaise with the link-worker and outreach practitioner. The M&H team should check the training needs of relevant staff, in liaison with any designated SCI handling specialists in the hospital, to ensure staff competence.

15. Referral to and involvement of other specialists

The most important referral is to the local SCIC within 4 hours of admission of a SCI patient by the trauma/ A&E consultant. The local SCI link-worker must be involved from the start.

The MDT will also be involved from the start regarding care needs, rehabilitation and re-integration plans. There will be on-going reviews and treatment planning which will involve the patient and family.

The physiotherapist will need to start chest physiotherapy if required, and passive movements immediately, certainly within 24 hours. At a later date, referral to the OTs will be needed.

Nutritional intervention may be required.

Psychological support will be required for both the patient and family (Royle & Glass, 2007, ch 20).

16. Transport (internal and external)

Patients with injuries suggestive of an unstable spine and/ or SCI and within 45 minutes travelling time should be taken directly to a MTC. Patients will otherwise be taken to a trauma unit or A&E department (NSCISB, 2011).

Patients accepted for subsequent admission to their local SCIC usually transfer after a period of receiving physiological stabilisation at their receiving hospital. The timing can be anything from a few hours to several weeks, due to the patient's fitness to travel, the availability of suitable transport and the ability of the SCIC to admit (Sarhan & Harrison, 2007, ch 23).

Vehicles for transfer between units, and equipment such as trolleys for transport within units, must be fit for purpose.

17. Discharge and transfer planning

Discharge planning should involve the patient and their family, relevant members of the MDT and community care team (RCP, 2008). The latter would include local community commissioning groups , GPs, social services and housing departments which must be alerted early on so that the patient can be discharged in a timely manner, with the necessary resources and adaptations already in place (DH, 2005); NSCISB, 2011).

All those involved in SCI patient transfers must work to guidelines (Harrison, 2011) and be specifically trained and equipped (NSCISB, 2012). Sarhan & Harrison (2007) have written guidelines for transferring SCI patients.

Decisions to transfer, and planning for it, should take place between senior staff in both the transferring and the receiving units (BASCIS, 2005; Harrison, 2011; NSCISB, 2012). A properly immobilised SCI patient can be transferred in appropriate transport at near normal road speeds, but sudden acceleration and deceleration should be avoided. Travel time must be estimated to allow for skin care during the journey, and enough battery power for any equipment needed en route (NSCISB, 2012). An experienced escort (Harrison 2011; NSCISB, 2012), should accompany the patient together with the paramedic crew. A transfer checklist should be used (NSCISB, 2012). Full reports from all the professionals involved in the patient's care should accompany the patient (RCP, 2008). See Sarhan & Harrison (2007) for recommendations on equipment and management in the vehicle environment.

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www.ncbi.nlm.nih.gov/pmc/articles/PMC2582434/ Point 52 on reducing cushions Retrieved 23.03.13

Other potentially useful sources of information

www.boa.ac.uk/Publications/Documents/CareandTransferofSpinalPatients.pdf British Orthopaedic Association for initial care and transfer of patients with SCI

www.bsrm.co.uk British Society of Rehabilitation Medicine

www.spinal.co.uk Spinal Injuries Association and SIA Academy for courses on SCI, including MH, for health professionals, a health professionals portal, also gives peer support for patients and families www.spinal.co.uk/page/pubs for a list of useful publications

www.mascip.co.uk/best-practice.aspx Multidisciplinary Association of Spinal Cord Injury Professionals (MASCIP) for 1. SCI link-workers; 2. Best Practice Publications; 3. National SCI Pathways

www.nexusdms.co.uk Nexus DMS Ltd for information on the Nexus Legacy bed

www.scireproject.com for information on a variety of SCI related topics

www.spinal-research.org for information on SCI, types of injury, facts and figures

August 2013 Unfortunately, whilst there are references and links to National Pilot Pathways for SCI mentioned on several web sites, only one is currently accessible (via MASCIP).

Attachment 9 – NHS Spinal Cord Injury Centres

(RCP National Guidelines Number 9, 2008; Harrison P & Lamb A (2007) Patient Referral to an SCI Centre in Harrison P (Ed) Managing Spinal Cord Injury: The First 48 Hours)

England

Duke of Cornwall Spinal Treatment Centre Salisbury District Hospital Odstock Salisbury SP2 8BJ	01722 336262
Golden Jubilee Regional Spinal Cord Injury Centre James Cook University Hospital Middlesbrough TS4 3BW	01642 850850
The London Spinal Cord Injuries Centre Royal National Orthopaedic Hospital Stanmore HA7 4LP	0208 954 2300
The Midlands Centre for Spinal Injuries Robert Jones and Agnes Hunt Orthopaedic Hospital Oswestry SY10 7AG	01691 404000
National Spinal Injuries Centre Stoke Mandeville Hospital Aylesbury HP21 8AL	01296 315000
Princess Royal Spinal Injuries and Neuro-rehabilitation Centre Northern General Hospital Sheffield S5 7AU	0114 271 5609
The North-Western Regional Spinal Injuries Centre Southport and Ormskirk Hospital Southport PR8 6NJ	01704 547471
Yorkshire Regional Spinal Injuries Centre Pinderfields General Hospital Wakefield WF1 4DG	0844 811 8110

Northern Ireland

Spinal Cord Injury Centre Musgrave Park Hospital Belfast BT9 7JB	02890 902000

Scotland

The Queen Elizabeth National Spinal Injury Unit Southern General Hospital Glasgow G51 4TF	01412 012530

Wales

Welsh Spinal Injury and Neurological Rehabilitation Centre Rookwood Hospital Cardiff CF5 2YN	02920 415415

Eire

The National Spinal Injury Centre Mater Misericordiae University Hospital Dublin 7	0180 32000

Summary / Key Messages

- **The intention of the entire strategy and standards document is to contribute to the improvement of: -**
  - The quality of care - 'patient experience' (dignity, privacy and choice)
    - clinical outcomes
  - Patient/ person safety
  - Staff health, safety and wellbeing
  - Organisational performance – cost effectiveness and reputation, etc.

- **The standard for G9 is:**

Systems are in place to cover all reasonably foreseeable handling situations in managing SCI where patients are not yet admitted to a SCIC

- **Skilful M&H is key**

- **Organisations should: -**
  - **Liaise with the local SCIC for advice and guidance at the earliest opportunity**
  - **Ensure the prevention of further complications arising from spinal instability or neurological compromise (do no further injury)**
  - **Ensure safe handling of the SCI patient by competent staff**