

SPINAL CARE BUNDLE

IN COLLABORATION WITH-

**THE MIDLANDS CENTRE
FOR
SPINAL INJURIES**



Forward

Approximately 50% of traumatic spinal cord injury (SCI) referrals can have their transfer to a specialist SCI centre delayed for a 'significant' period of time due to their predisposing injuries, fitness to travel, critical care needs or the non-availability of a specialist bed. The SCI Link-Worker scheme was developed in 1998 to provide local service managers with the opportunity to develop a more appropriate appreciation of the needs of SCI patients by informing local care provision and decision-making through the development, interpretation and dissemination of appropriate evidence-based guidelines. The SCI-Link Critical Care Forum was inaugurated at a meeting in Sheffield on 20th November 2003. It aims to review issues of principal concern to Health Care Practitioners managing patients with SCI within Critical Care environments outside of specialist SCICs. In July 2004 the SCI-LINK Critical Care Working Party representing a range of UK adult, paediatric and neurosurgical critical care units and their associated SCI centres began working with the NHS Modernisation Agency and regional representatives of the Intensive Care Society (ICS) began work on the first draft of a 'Care Bundle' for Spinal Cord Injury Patients admitted to Critical Care environments outside of specialist SCI Centres. This work followed the development by the ICS of other care bundles for ventilated patients and many lessons were learned along the way (eg the correct use of gastric protection agents, procedures for clearing the cervical spine and the angle to which a patient's head can be raised) which emphasised the need for critical care practitioners to anticipate conflicts in care requirements when care bundles are running in parallel so that avoidable omissions or errors do not occur.

Care bundles have the potential to ensure that the care of the SCI patient in a pre-transfer critical care environment will compliment that which will be delivered during the months of extensive rehabilitation that will follow. At this time, the SCI Care Bundle is being piloted by regional adult and paediatric critical care networks in Eastern and North-West England and London. The SCI care bundle has also been incorporated into the national Neurosciences Benchmarking Project. This care bundle for the North-West Midlands Critical care Network is another example of collaboration between critical care providers and SCI specialists. As soon as the ICS has approved a 'national' care bundle standard, all UK critical care environments will be able to move towards delivering the best care for SCI patients. In addition, the Spinal Injuries Association (SIA) will incorporate this national care bundle in the second edition of its *Managing Spinal Cord Injury: Critical Care* book to support the teaching and delivery of appropriate and collaborative care for SCI people in critical care.

'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 spinal cord injuries are subject to serious clinical and economic consequences that could otherwise have been prevented.'

Oakes D. Benefits of an early admission to a comprehensive trauma centre for patients with SCI. *Archives of Physical Medicine and Rehabilitation* 1990; 72: 637 – 643.

*Paul Harrison
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Spinal Care Bundle 2007

The aim of the bundle is to provide guidance and clarification towards the management of the person with suspected or confirmed spinal column and/or spinal cord injury. There are several elements to the bundle each covering specific aspects of spinal injury management of the patient who is cared for outside non-specialist spinal injury centres.

Acknowledgments:

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Agnes Jones and Robert Hunt Orthopaedic Hospital NHS Trust,
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University Hospital North Staffordshire NHS Trusts
and
The British Association of Spinal Cord Injuries Specialists
North West Midlands Critical Care Network (check with Alison this is OK)

Index of Contents

PLEASE READ!	6
ELEMENT 1: Spinal Clearance	7
Spinal Imaging in Major Blunt Trauma	8
ELEMENT 2: Referral process to a specialist centre	9
Referral checklist	10
Chart of Injuries	11
ASIA chart	12/13
ELEMENT 3: Moving and Handling	14
ELEMENT 4: Gastro - Intestinal Protection	15
ELEMENT 5: Bowel Care	16
ELEMENT 6: Bladder Care	17
ELEMENT 7: Thromboembolic Protection	18
ELEMENT 8: Cardiovascular Protection	19
ELEMENT 9: Respiratory Care	20
ELEMENT 10: Tissue Viability	21
ELEMENT 11: Management of Autonomic Dysreflexia	22
ELEMENT 12: Transferring the SCI Patient	23
References	24
Appendix 1 24 Hour Check List	25
Appendix 2 Log Rolling and Positioning Pictures	26

Please Read!

Spinal Care Bundle 24 Hour Check List

When introducing the bundle please ensure the “Spinal Care Bundle 24 Hour Check List” (appendix 1) is commenced in adherence to national recommendations and for future audit purposes

(Harrison, P. (2007) HDU/ICU Managing Spinal Injury: Critical Care, Spinal Injuries Association)

Once completed please file in the patient’s notes and ensure a copy accompanies the patient to their receiving hospital.

Further information

Further information or educational enquiries on any aspect of this bundle can be obtained from-

Nurse Consultant
Midlands Centre for Spinal Injuries
Robert Jones & Agnes Hunt Orthopaedic Hospital
Oswestry
Shropshire
01691 404109 or ext.4364

Element One: Spinal Clearance

Rationale:

Failure to clear the spine, in particular the c-spine, can potentially risk secondary spinal cord injury. It is therefore of maximum importance that the cervical spine is cleared appropriately according to this protocol.

- a) All trauma patients with the potential for spinal injuries must have a formal documented spinal clearance before any exclusions for positioning can be made. Therefore, this protocol must be adhered to.
- b) Determine spinal clearance before relaxing spinal precautions.
- c) Spinal clearance must be authorised by one of the following personnel:
 - Consultant Spinal Surgeon
 - Consultant Orthopaedic or Neurosurgeon
 - Consultant Trauma Team Leader
 - Consultant Emergency Physician

and documented clearly in the patient's notes.

- d) Accepted guidance should be used for Cervical spinal clearance must be measured against clinical guidelines (attached).

Exceptions: None (under ANY circumstances)

Reference: ATLS Guidelines

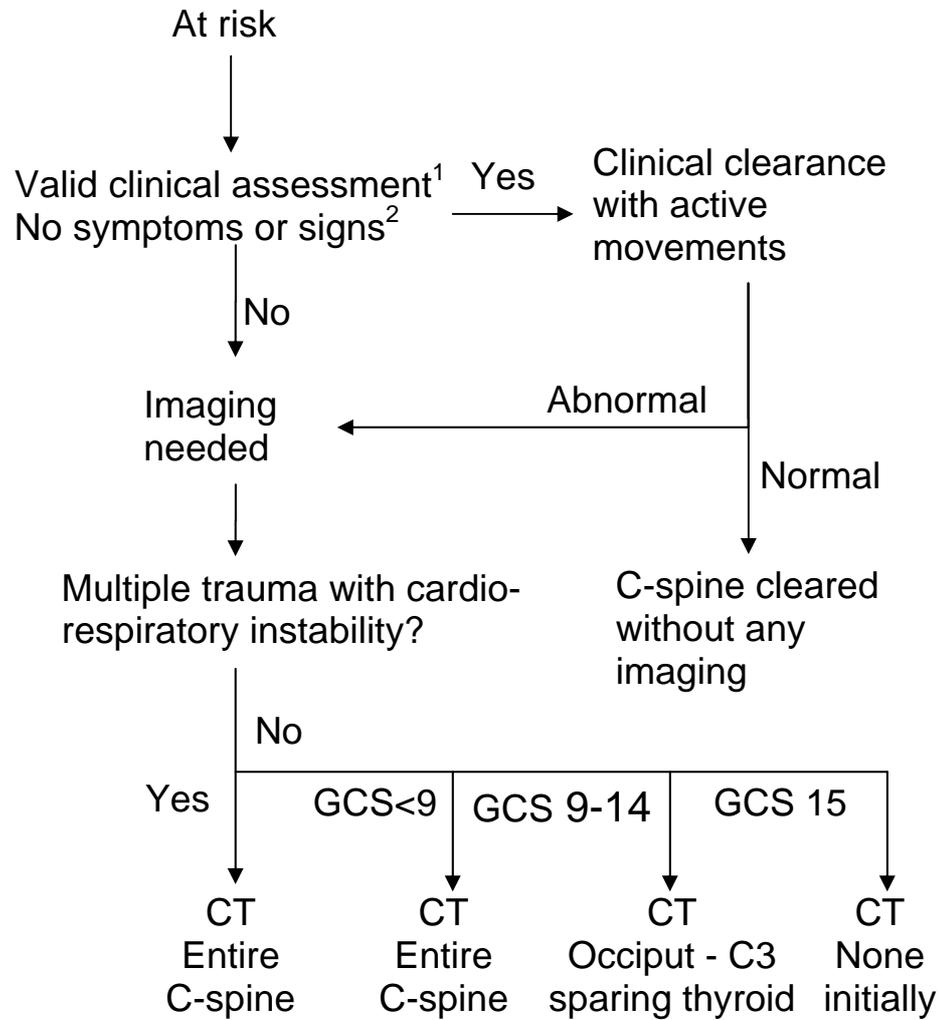
Spinal Imaging in Major Blunt Trauma

NWMCCN

Version 3 Spinal Care Bundle May 2008

¹ GCS 15
 No sedative drugs or significant alcohol
 No distracting pain

² No local swelling, tenderness or steps
 No local pain
 No neurological symptoms or signs



Plain lateral C-spine	N	N	Y	Y
Plain AP C-spine	N	N	Y	Y
Plain peg AP (open mouth)	N	N	N	Y
Plain 45° obliques if C7/T1 unseen	N	N	N	Y
Plain lateral T-spine	N	Y*	Y*	Y*
Plain AP T-spine	N	Y*	Y*	Y*
Plain lateral L-spine	N	Y*	Y*	Y*
Plain AP L-spine	N	Y*	Y*	Y*
CT occiput to C3 only**	N	N	Y	N
CT entire C-spine**	Y	Y	N	N
CT chest (incl. T-spine)**	Y	N	N	N
CT abdomen/pelvis (incl. L-spine)**	Y	N	N	N
CT abnormal/unclear areas**	Y	Y	Y	Y

* if T- or L-spine injury possible and CT chest/abdomen not otherwise indicated

** with sagittal ± coronal reconstructions of spine

Element Two: Referral Process to a Specialist Centre

Rationale:

Once a spinal injury has been identified clinically or on imaging, or if the spine cannot be cleared (by routine use of the protocol), then refer the patient to the local surgeon responsible for spinal injuries. If the patient has an unstable or complex spinal column injury, then refer to a Specialist Spinal Surgeon. If the patient has a spinal cord injury, refer to a specialist in the regional Specialist Spinal Cord Injury Centre.

If transfer to either of those centres is not feasible, eg, due to critical condition of the patient, then maintain contact with these centres for continuing advice until transfer is possible.

Patient care, prevention of complications and speed of transfer can all be enhanced through early contact with specialist spinal cord injury centres.

- a) Telephone a medical referral to the nominated Spinal Cord Injury Centre within 24 hours of a written diagnosis of a spinal cord injury being made. If a complex unstable spinal column injury has been made, refer to a specialist spinal surgeon.
- b) Alert appropriate healthcare personnel to inform them of the patient's admission/diagnosis.
- c) Complete the referral checklist prior to calling Spinal Cord Injury Centre (attached).
- d) Follow the Referral Process for Spinal Injuries (attached).

Exceptions: UHNS Also contact Spinal Cord Injury Link Worker (Page 108) leave a message for Sr Ann Marie Heath

List of Consultants

RJAH - (01691 40400)

Mr Elmasri
Mr Short
Mr Osman

UHNS - (01782 71544)

Mr Brown
Mr Jasani
Mr Ahmed
Mr Hulme

Other Units

Sheffield - (0114 2434343)

Mr McIlleland
Mr Thumbikat

Southport - (01704 547471)

Mr Soni
Mr Sett
Mr Selmi

REFERRAL CHECKLIST

1	Referring Doctor		Patient Details (or affix label)			
	Referring Consultant		Name:			
	Referring Hospital		Date of Birth:			
	Time of Call		Sex	M	F	Age
2	Mechanism of Injury e.g. RTA/Assault etc					
	Relevant details of injury, including level of fracture :					
3	Time of Injury		Frankel Grade Score Definition			
4	Frankel Grade of Spinal Cord Injury		A Complete loss of motor and sensory function B Incomplete - preserved sensation only C Incomplete - preserved motor (non-functional) D Incomplete - preserved motor (functional) E Complete return of all motor and sensory function, but may have abnormal reflexes			
5	GCS, pupils and time of arrival at A&E:	Time			Glasgow Coma Score <u>Motor</u> 6 Obeys Commands 5 Localises Pain 4 Flexes To Pain 3 Abnormal Flexion 2 Extension To Pain 1 No Movements <u>Verbal</u> 5 Orientated 4 Confused 3 Words Not Sentences 2 Noises Not Words 1 No Sounds <u>Eyes</u> 4 Open Spontaneously 3 Open To Voice 2 Open To Pain 1 Closed	
		Pupils				
		Eye Opening				
		Motor Response				
6	Neurological Assessment on arrival	Time				
		Not able to perform /state why				
		Last normal segment				
		Myotome				
7	Digital Rectal Examination	Bulbocavernosus reflex				
		Positive				
		Negative				
		Sacral sensation	Yes			
		No				
8	Give details of any treatment given e.g. intubated/ ventilated, collar					
9	Current vital signs: P, BP, SaO ₂ :					
10	Other significant injuries and past medical or psychiatric history, including drug and alcohol use:					
11	Is patient on Warfarin, Asprin or Clopidogrel?	Yes	No	Don't Know		
12	Referral Clinician Tel No & Ext No:					
13	Name of SpR spoken to at Specialist Centre:					
14	Time of first contact with SpR:					
15	Details of information given to patient and family :					
16	Outcome of call - comments:	Patient Accepted		Patient Declined		
PLEASE TICK AS APPROPRIATE						
USEFUL TELEPHONE NUMBERS:						
Robert Jones Agnes Hunt Switchboard: 01691404000 (Ask to page Spinal Registrar)			UHNS : 01782715444 (Ask for Spinal Consultant on call)			

Chart of Injuries

Indicate injuries on the diagrams below:

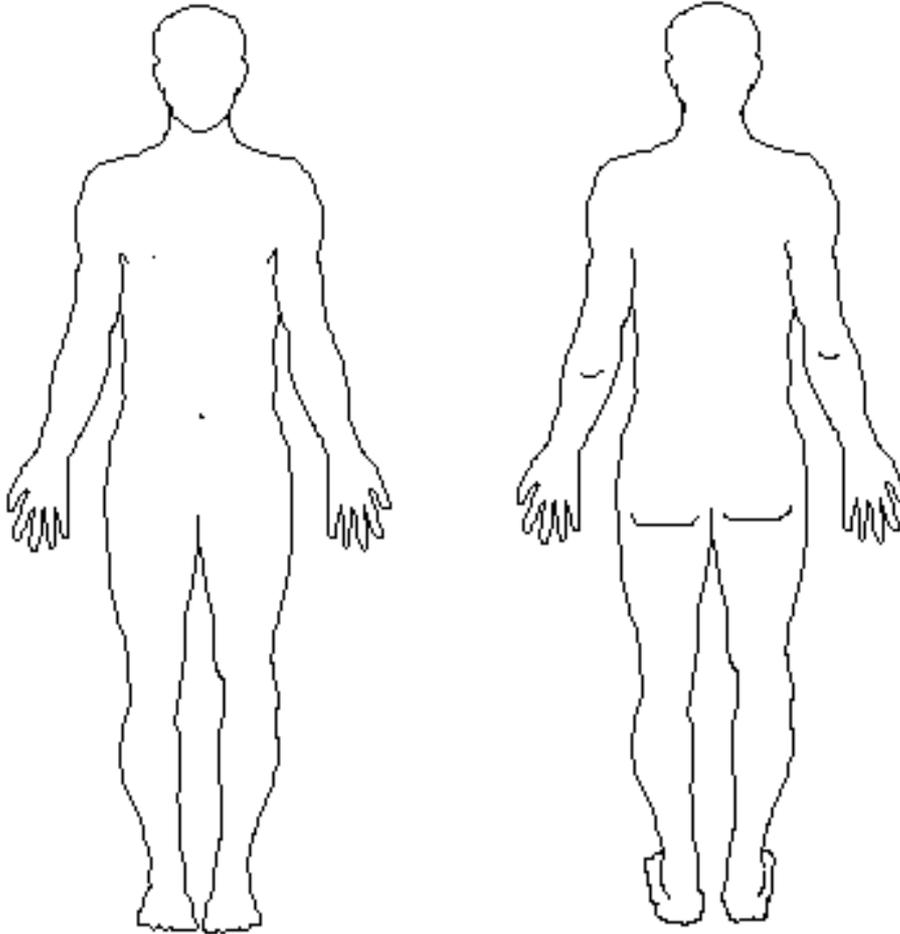


Chart Scheme

Please use the following symbols to represent the injuries sustained. Please write details below if necessary.

- Fracture - #
- Haematoma - /////
- Incision - _____
- Puncture - ●
- Abrasion - >>>>>
- Other - write details



STANDARD NEUROLOGICAL CLASSIFICATION OF SPINAL CORD INJURY ISCIOS

Patient Name _____

Examiner Name _____ Date/Time of Exam _____

MOTOR

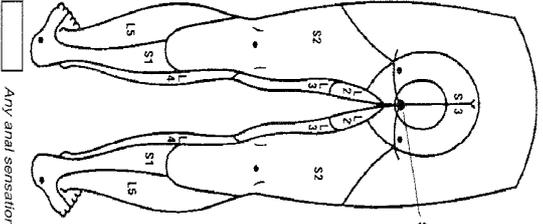
KEY MUSCLES
(scoring on reverse side)

UPPER LIMB	LOWER LIMB
C5 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Elbow flexors C6 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Wrist extensors C7 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Elbow extensors C8 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Finger flexors (distal phalanx of middle finger) T1 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Finger abductors (little finger)	L2 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Hip flexors L3 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Knee extensors L4 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Ankle dorsiflexors L5 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Long toe extensors S1 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Ankle plantar flexors
TOTAL (25) <input type="checkbox"/> + <input type="checkbox"/> = <input type="checkbox"/> (50)	TOTAL (25) <input type="checkbox"/> + <input type="checkbox"/> = <input type="checkbox"/> (50)

SENSORY

KEY SENSORY POINTS

	LIGHT TOUCH		PIN PRICK	
	R	L	R	L
C2				
C3				
C4				
C5				
C6				
C7				
C8				
T1				
T2				
T3				
T4				
T5				
T6				
T7				
T8				
T9				
T10				
T11				
T12				
L1				
L2				
L3				
L4				
L5				
S1				
S2				
S3				
S4-5				



LOWER LIMB TOTAL (MAXIMUM) (25) + = (50)

UPPER LIMB TOTAL (MAXIMUM) (25) + = (50)

Comments: _____

NEUROLOGICAL LEVEL _____

COMPLETE OR INCOMPLETE? **ASIA IMPAIRMENT SCALE** _____

ZONE OF PARTIAL PRESERVATION _____

PIN PRICK SCORE (max: 112) _____

LIGHT TOUCH SCORE (max: 112) _____

SENSORY MOTOR R L

This form may be copied freely but should not be altered without permission from the American Spinal Injury Association.

MUSCLE GRADING

- 0 total paralysis
 - 1 palpable or visible contraction
 - 2 active movement, full range of motion, gravity eliminated
 - 3 active movement, full range of motion, against gravity
 - 4 active movement, full range of motion, against gravity and provides some resistance
 - 5 active movement, full range of motion, against gravity and provides normal resistance
 - 5* muscle able to exert, in examiner's judgement, sufficient resistance to be considered normal if identifiable inhibiting factors were not present
- NT not testable. Patient unable to reliably exert effort or muscle unavailable for testing due to factors such as immobilization, pain on effort or contracture.

ASIA IMPAIRMENT SCALE

- A = Complete:** No motor or sensory function is preserved in the sacral segments S4-S5.
- B = Incomplete:** Sensory but not motor function is preserved below the neurological level and includes the sacral segments S4-S5.
- C = Incomplete:** Motor function is preserved below the neurological level, and more than half of key muscles below the neurological level have a muscle grade less than 3.
- D = Incomplete:** Motor function is preserved below the neurological level, and at least half of key muscles below the neurological level have a muscle grade of 3 or more.
- E = Normal:** Motor and sensory function are normal.

CLINICAL SYNDROMES (OPTIONAL)

- Central Cord
- Brown-Sequard
- Anterior Cord
- Conus Medullaris
- Cauda Equina

STEPS IN CLASSIFICATION

The following order is recommended in determining the classification of individuals with SCI.

1. Determine sensory levels for right and left sides.
 2. Determine motor levels for right and left sides.
Note: in regions where there is no myotome to test, the motor level is presumed to be the same as the sensory level.
 3. Determine the single neurological level.
This is the lowest segment where motor and sensory function is normal on both sides, and is the most cephalad of the sensory and motor levels determined in steps 1 and 2.
 4. Determine whether the injury is Complete or Incomplete (sacral sparing).
If voluntary anal contraction = No AND all S4-5 sensory scores = 0 AND any anal sensation = No, then injury is COMPLETE. Otherwise injury is incomplete.
 5. Determine ASIA Impairment Scale (AIS) Grade:
Is injury Complete?
 - NO** → (For ZPP record lowest dermatome or myotome on each side with some (non-zero score) preservation)
 - YES** → **IF NO, AIS=B**
(Yes=voluntary anal contraction OR motor function more than three levels below the motor level on a given side.)
- Are at least half of the key muscles below the (single) neurological level graded 3 or better?**
- NO** → **AIS=C**
 - YES** → **AIS=D**

If sensation and motor function is normal in all segments, AIS=E
Note: AIS E is used in follow up testing when an individual with a documented SCI has recovered normal function. If at initial testing no deficits are found, the individual is neurologically intact; the ASIA Impairment Scale does not apply.

Element Three: Moving and Handling

Rationale:

Patients should be moved and handled in such a way as to prevent secondary spinal cord lesions due to inappropriate mechanical forces and to prevent pressure area damage.

- a) All patients are removed from the long spinal board within twenty minutes of arrival at the Emergency Department.
- b) All patients with a spinal injury are transferred from surface to surface by means of spinal board and accompanying secure head device or Mo-Lift Scoop stretcher.
- c)
- d) Spinal column alignment to be maintained throughout all turns, procedures and transfer manoeuvres.
- e) All patients must be assessed for pressure area protection.
- f) All patients with a spinal cord injury and/or complex and multiple spinal column injuries are managed on a spinal bed within 24hrs. Dynamic / Airflow mattresses are not to be used.
- g) All spinal cord injured patients are nursed naked in bed.
- h) All patients will have a regime of 2-3 hourly spinal log roll turns established as soon as is practical following admission, and within 3 hours of admission to the unit. Patients should be left in the turned position on their side for a maximum of 3 hours, or as long as the patient tolerates it, whichever is shorter. Liaise with the physiotherapist and refer to the manual handling guidelines. If the regime is problematic, refer immediately to the Spinal Cord Injury Centre or call them for advice. *This applies to column as well as cord injuries.*
- i) For ventilated patients, maintain maximum of 15° bed tilt, patient is to remain horizontal/flat. *Exception: patients with a head injury or respiratory compromise. Refer to Neuro Care Bundle and Ventilation Care Bundle.*
- j) Unless contraindicated by other injuries, nursing staff should provide a twice daily range of passive exercises of hands and feet, supported by regular repositioning. This will work to prevent foot drop and upper limb and finger contractures. *This should commence within the first 24hrs post injury.*
- k) Block the feet to a 90° resting position, using pillows. Do not force the feet into position. Position the hands on small pillows. For tetraplegic patients shoulders should be abducted and arms alternate arms raised at each turn (see pictures in appendix 1).

Element Four: Gastro-Intestinal Protection

Rationale:

Patients are at increased risk of mucosal ulceration due to vagal over activity (in the high lesion patient) also there is an increased risk of abdominal distension resulting in splinting of the diaphragm. Acute spinal cord injured patients present with a transient paralytic ileus. Therefore, gut peristalsis must be nurtured, or patients will have potential to aspirate.

- a) All spinal cord injured patients are commenced onto a H2-receptor blocker on admission until discharge to a Spinal Cord Injury Centre.
- b) All spinal cord injured patients are kept nil by mouth for at least 48hrs. Light diet, enteral or parenteral feeding introduced gradually thereafter, providing bowel sounds are present.
- c) All spinal cord injured patients must be referred to a dietician for assessment and nutritional support within 72hrs.

Exceptions : If a spinal cord injured patient has accompanying abdominal or head injury or surgery, introduction of feeding should be managed at the discretion and on the advice of the relevant consultant surgeon.

Element Five: Bowel Care

Rationale :

Acute spinal cord injured patients will present on admission with definitive neurological bowel dysfunction. Failure to appropriately care for the bowel function could seriously affect the patient's bowel rehabilitation and quality of life.

- a) A digital rectal examination must be performed on all spinal cord injured patients in the emergency department by the attending clinician with the following recorded in the patient documentation:
 - The anal sphincter status and presence of bulbocavernosus reflex.
- b) All spinal cord injured patients should have a bowel regime instigated on admission which can be modified according to individual response. (Obtain advice from Spinal Injuries Centre (01691 404000) Nurse in Charge on Wrekin Ward)
See MASCIP guidelines for Bowel Management (www.mascip.co.uk)

Exceptions: Contraindicative injury or disorder.
 Abdominal trauma}
 Perianal trauma} modified to the patient

Element Six: Bladder care

Rationale:

Acute spinal cord injured patients present with definitive neurological bladder dysfunction. The paralysed bladder is at significant risk of nosocomial infection. It is therefore of paramount importance to prevent bladder distension and catheter blockage.

- a) All spinal cord injured patients should be catheterised on admission with a size 14 -16 gauge catheter.
- b) In-dwelling catheters should be maintained on free drainage and changed weekly. For prevention of hospital acquired infection regular intermittent catheterisation is advised. (see SCI consortium guidelines www.bascis.pwp.blueyonder.co.uk)

All spinal cord injured patients have an individualised bladder care programme in relation to their injury. (Obtain advice from Spinal Injuries Centre (01691 404000) Nurse in Charge on Wrekin Ward)

Exceptions: There are no exceptions unless on the advice of the Spinal Cord Injury Centre.

Element Seven: Thromboembolic Protection

Rationale:

Enforced bed rest and systemic paralysis increases the risk of thromboembolism. To prevent deep vein thrombosis or pulmonary embolus, anticoagulation therapy must be appropriately established.

- a) All spinal cord injured patients must be fitted with properly sized thigh length TED stockings unless leg damage precludes
- b) Foot pumps or compression boots can be used, but it is important to monitor the pressure effect.
- c) Pharmacological management should commence when advised by managing clinician to do so, preferably within 48hrs
- d) Physiotherapist input should be sought with a view to providing an assessment of limb movements.
- e) Cannulae should be removed as soon as they are no longer clinically indicated. This will minimise the risk of thrombophlebitis and thrombus.

Exceptions:

- Do not apply TED stockings if the patient has lower limb external fixators, pressure ulcers, arterial disease or dermatological conditions.
- Anti-coagulations must be prescribed at the spinal surgeon's directive. They should not be used if contra-indicated.

If pharmacological agents can not be administered foot pumps can be used.

Element Eight: Cardiovascular Protection

Rationale:

Spinal cord injured patients can present with spinal shock which can compromise their cardiovascular status and stability. The underlying issue is the loss of functioning baroreceptor reflex and basal sympathetic tone in high spinal cord lesions – for this purpose all cervical and upper thoracic (above T6/7) will have a problem with bradycardia and unopposed vago-vagal reflex in response to tracheal stimulus. This applies to those without cardiac sympathetic innervation i.e. T2 – T4/5.

Spinal cord injured patients are not able to internally regulate their body temperature, dependent on the level and extent of injury.

- a) Ensure that a prescription for Atropine (usually 0.3 – 0.6mg) has been completed for use in the event of cardiac syncope or if the heart rate drops to below 35 bpm.
- b) Intravenous fluids should be administered judiciously, under the advice of the attending clinician in order to prevent fluid overload. (If unsure obtain advice from Spinal Consultant / Registrar).
- c) Monitor the patient's core temperature closely. The patients' actual body temperature can be as much as 1° below normal. Utilise body warming or cooling devices cautiously. Insulate the patient or distance paralysed areas of the body as appropriate from sources of heat or cooling.
- d) Ensure that guidance and advice regarding the management of the patient is passed on during interdepartmental transfers, eg, MRI, theatre.

Exceptions:

- None

Element Nine: Respiratory care

Rationale:

Pulmonary complications can have a morbid impact for spinal cord injured patients. It is therefore important to work to promote respiratory monitoring, positioning, and improving ventilation and perfusion.

- a) All cord and column injuries should be nursed flat/supine, if ventilation is necessary the bed should be tilted to no more than 15 degrees. (This may be adapted only after multidisciplinary case discussion.)
- b) Patients are to be regularly turned every 2-3 hours (refer to the Moving and Handling element). Liaise with the physiotherapist regarding a specialised respiratory turning regime.
- c) It is most important to closely monitor the patient for signs of respiratory fatigue or distress with regular respiratory rates. Monitor for hypoxia and hypercapnia.
- d) All Patients should be referred to physiotherapist to initiate a preventative/prophylaxis regime, i.e. assisted cough, incentive spirometry & non-invasive ventilation.
- e) If patients require oxygen, assessment of humidification is required.
- f) Monitor the patient's core temperature closely. The patients' actual body temperature can be as much as 1° below normal. Utilise body warming or cooling devices cautiously. Insulate the patient or distance paralysed areas of the body as appropriate from sources of heat or cooling.

Exceptions:

Element Ten: Tissue Viability

Rationale:

All spinal cord injured are at increased risk of developing pressure area sores. They will therefore require vigilant monitoring of pressure areas.

- a) An initial assessment and Waterlow score must be carried out and the findings documented in the case notes.
- b) Initiate an appropriate turning regime (refer to the Moving and Handling element). Refer to the spinal consultant and physiotherapist for an appropriate turning regime. The regime should be individually adjusted to address combination of problems. **Red marks are significant**; these should be palpated for hardness and kept pressure free until they are no longer visible or palpable. The key is to ensure all pressure areas are looked at least daily, if not on each shift. Refer to the spinal cord injured specialist centre and the spinal consultant for clarification and advice with regard to positioning the patient appropriately in relation to their level and extent of injury, in order to minimise the risk pressure area damage.
- c) Monitor the patient's core temperature closely. The patients' actual body temperature can be as much as 1° below normal. Utilise body warming or cooling devices cautiously. Insulate the patient or distance paralysed areas of the body as appropriate from sources of heat or cooling.
- d) If any splints, plaster cases or orthoses are to be used, observe the relevant pressure areas for signs of tissue damage on at least 3 times a day. Obtain advice from the orthotist or the physiotherapist regarding appropriate care and application. Liaise with the orthopaedic services with regard to plaster casts.
- e) If pressure area damage is noted, contact the Tissue Viability Nurse immediately. Document the damage in the case notes, all tissue damage should be measured and be photographed, initially and then weekly thereafter. Act immediately to relieve the pressure on the damaged area.
- f) All staff must be made aware of the specific tissue viability care requirements of the spinal cord injured patient.

Exceptions: None

Element Eleven: Management of Autonomic Dysreflexia

Rationale:

Patients with spinal cord lesions are at risk of autonomic Dysreflexia. This is a life-threatening hypertensive response to noxious stimuli.

- a) Assess the patient for risks or history of Dysreflexia to include level of completeness, time since injury and previous symptoms..
- b) Monitor the patient for signs of a Dysreflexia episode. These may include, but are not restricted to, hypertension, flushed face and upper extremities, stuffy nose, pounding headache and sweating.
- c) Identify the noxious stimuli. Some examples of these stimuli could be a blocked or kinked catheter, UTI, impacted bowel, ingrown toenail or pressure sore. Work to resolve these immediately.
- d) Elevate the bed or sit the patient up if appropriate to do so, on the advice and direction of the clinician.
- e) Inform the attending clinician to initiate treatment. The treatment regime would normally include
 - a. Administration of GTN spray or tablets
(see consortium guidelines www.bascis.pwp.blueyonder.co.uk)
- f) Monitor cardiovascular signs continuously for resolution of the signs of Dysreflexia. Maintain heightened awareness for repeat attacks.
- g) Document episode in the patient's case notes.

Exceptions: None

Element Twelve: Transferring the SCI Patient

Rationale:

Safe patient transfer to the Spinal Cord Injury Centre prevents secondary complications and promotes rehabilitation prospects.

- a) Ensure that the referral checklist and network transfer form have been completed (refer to the Referrals Element).
- b) Ensure the provision of appropriate transfer equipment. Refer to the transfer form.
- c) Ensure the provision of safe packaging for the patient. The patient must be aligned, secured and protected. If the spinal board is to be used, ensure that pressure area protection is provided. This protection could be in the form of a specialised pressure blanket, or a vacuum mattress. There is a high risk of damage to pressure areas for any patient who is on a spinal board for 2 hours. (*Patient is to be placed onto the spinal board on arrival of the ambulance crew and not before*).
- d) Liaise with the Spinal Cord Injury Centre prior to dispatch.

Exceptions: None

References

Harrison, P. (2007) HDU/ICU Managing Spinal Injury : Critical Care, Spinal Injuries Association

Swain,A., Grundy, D., Haines, A., Donald, A. & Beckinham (2002) ABC of Spinal Cord Injuries BMJ Publishing Group 4th Edition.

Zejdlik, C.P. (1991) Management of Spinal Cord Injury (Nursing) Jones & Bartlett Publishers Inc 2nd Edition.

Spinal Care Bundle 24 Hour Check List

Please Tick

Sign & Print Name

<input type="checkbox"/>	Appropriate Spinal Imaging Completed (Refer to element 1)	..... .....
<input type="checkbox"/>	Refer to a Spinal Cord Injury Centre (Refer to element 2)	..... .....
<input type="checkbox"/>	Turning Regime initiated within 3 hours (Refer to element 3)	..... .....
<input type="checkbox"/>	Commence on H2 - receptor blockers Refer to a dietician (Refer to element 4)	..... .....
<input type="checkbox"/>	Perform a Digital Rectal Examination	.....
	Faeces Present No <input type="checkbox"/>
	Yes <input type="checkbox"/>
	Removed <input type="checkbox"/>
<input type="checkbox"/>	Bowel program initiated (Use information in element 5)	
<input type="checkbox"/>	Catheterise Patient (Use information in element 6)	..... .....
<input type="checkbox"/>	Put on thigh leg TED stocking (Use information in element 7)	..... .....
<input type="checkbox"/>	Prescribe patient atropine if applicable to level of injury (Use information in element 8)	..... .....
<input type="checkbox"/>	Refer to physiotherapist (Use information in element 9)	..... .....
<input type="checkbox"/>	Complete a Waterlow Assessment (Use information in element 10)	..... .....

If you need to transfer the patient refer to element 12

If the patient is in UHNS then contact spinal cord link worker (page 108 and leave a message with Outreach for Sr Heath)

PLEASE FILE IN THE PATIENTS NOTES and ENSURE A COPY ACCOMPANIES THE PATIENT TO THEIR RECIVING HOSPITAL

Appendix 2

Pictures

For cervical injuries turn with no thoracic or lumbar involvement



For cervical injuries with no lumbar or thoracic involvement



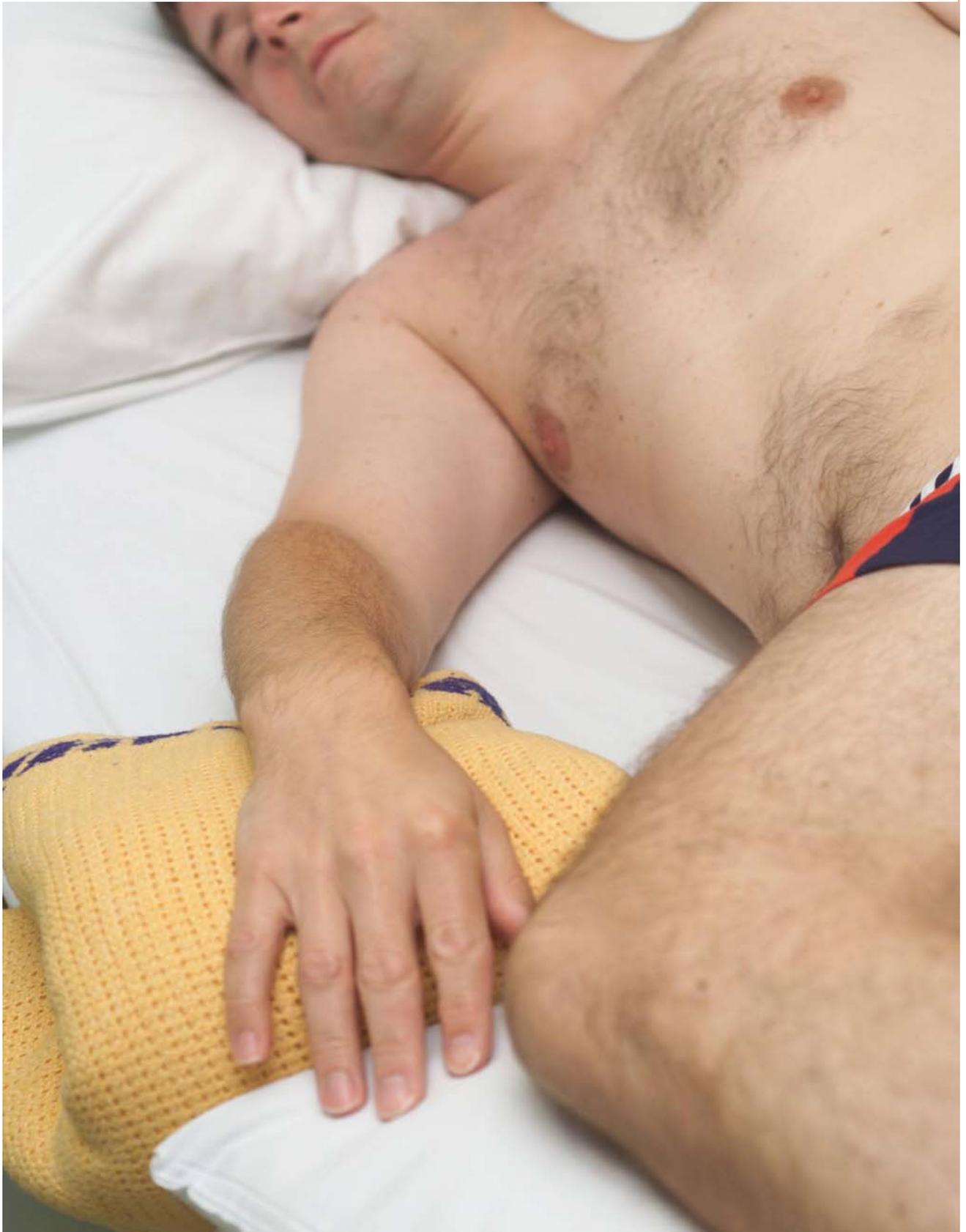




Complete manual turn to relieve pressure areas









Neutral Support of Foot with No Pressure on the Heel





