

Guidelines for Management of Neurogenic Bowel Dysfunction after Spinal Cord Injury

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Preface

Dear Colleague

Changes in bowel function have a considerable impact on the quality of life of individuals with spinal cord injury, which is often more significant than loss of ambulation. Managing this change has implications for independence and autonomy, community reintegration and long term health for the injured person, and is therefore an important area of care and rehabilitation. The purpose of these guidelines is to bring together research evidence and best practice from all the UK and Ireland spinal cord injury centres to provide support for healthcare practitioners involved in the care of individuals with spinal cord injury or non traumatic spinal damage. The document provides guidance, standards, protocols and information to support appropriate, effective and individualised bowel management which respects the dignity of the individual, in all settings where people with spinal cord injury receive care.

The document has been endorsed by the Spinal Injuries Association Academy, Spinal Injuries Scotland, Spinal Injuries Ireland, and by the Multidisciplinary Association of Spinal Cord Injury Professionals (MASCIP) and the Royal College of Nursing Continence Forum.

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The guidelines will be reviewed in 2 years from publication (2011). Feedback and comment on the guidelines will be very welcome.

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Quick guide to neurogenic bowel management

What neurogenic bowel function does the patient have?

Motor function?

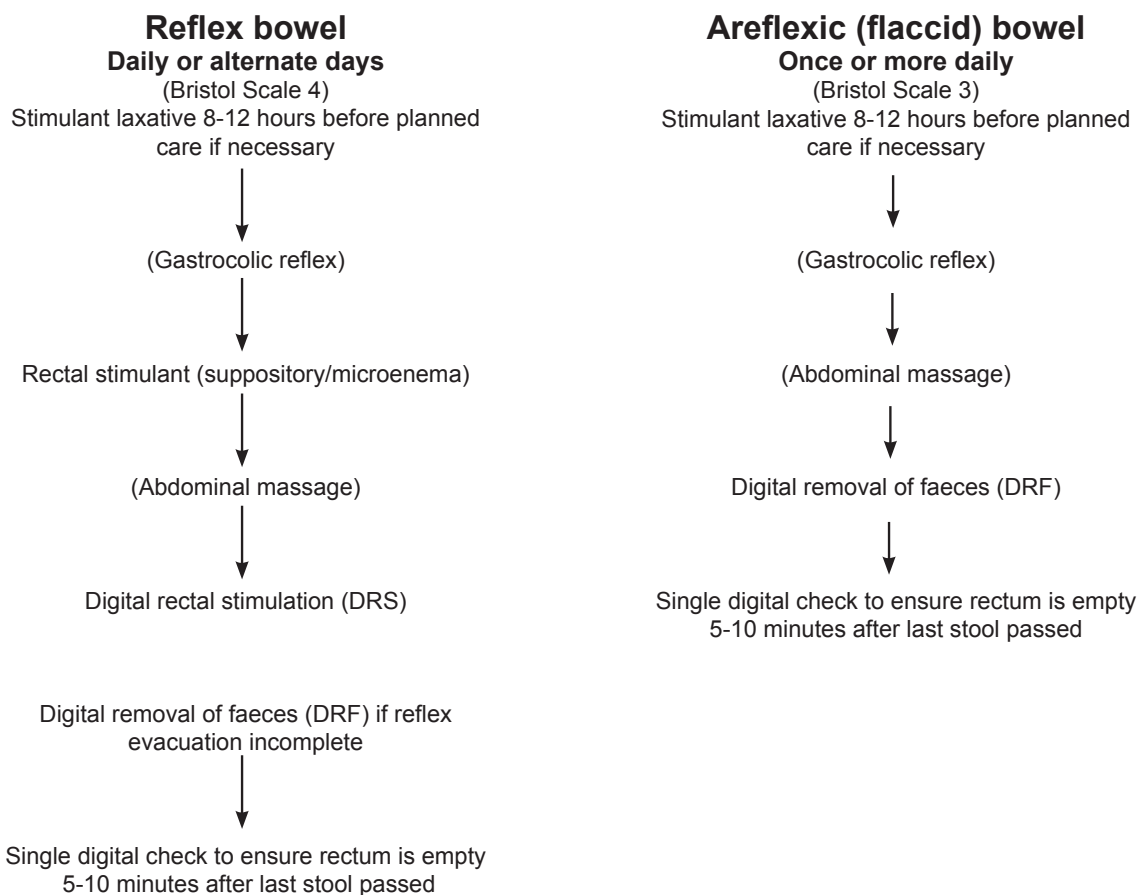
Reflex bowel function	Areflexic (flaccid) bowel function
Positive anal reflex (anal wink) – visible contraction of anus in response to pinprick of surrounding skin	No anal reflex (anal wink)
Positive bulbo-anal reflex – contraction of anus in response to pressure on glans penis/clitoris	Absent bulbo-anal reflex
Injury/damage usually at or above T12 Reflex paralysis	Injury/damage usually L1 and below (conus or cauda equina, flaccid or areflexic paralysis)

Check reflex function regularly until spinal shock has subsided (Please see Section 4.3)

Sensory function?

If sensation is present in the saddle area around the perineum the individual is likely to have anorectal sensation. If sensation is present digital interventions may be uncomfortable; rectal stimulants (suppositories, enemas) may cause less discomfort. Local anaesthetic gel can be introduced into the rectum prior to bowel care to increase tolerance if needed (Please see pg 25 & 26).

Outline bowel management programmes



Medications to adjust stool consistency (e.g. Movicol, Lactulose, Fybogel, Dioctyl) should be taken regularly if needed

1. Introduction/purpose of this guideline

Damage to the spinal cord has a profound impact on the function of the large bowel and on the maintenance of faecal continence. Stool transit through the bowel is slowed placing the individual at high risk of constipation. Sensory and motor control of the ano-rectum is lost leaving the injured individual unable to feel the need to evacuate the bowel, or to control the process of defaecation. Without intervention, the Spinal Cord Injured (SCI) individual will be incontinent of faeces and chronically constipated, with all the secondary complications that this implies. Clearly, the function of the large bowel must be actively managed to allow the individual some degree of continence and to minimise associated health problems.

SCI or damage may be traumatic or non-traumatic (due to infection, inflammation, compromised blood supply etc), and may be referred to as a spinal cord lesion. These guidelines apply equally to individuals with traumatic or non-traumatic spinal cord injury or damage. The term spinal cord injury (SCI) will be used throughout the document to represent spinal cord damage of any aetiology.

Effective bowel management is fundamental to the rehabilitation process, but more importantly it is fundamental to the successful reintegration of the SCI individual back into the community. Faecal incontinence has a major impact on quality of life and establishing an effective, preventative management routine is a major aim of the rehabilitation process.

As with all areas of rehabilitation, the development of a bowel management programme is a process that occurs in partnership with an injured individual, focuses on their needs and promotes their autonomy. The development of an individualised programme is supported by education of the injured individual, their family and any carers who may be involved in that person's care.

Bowel management will continue throughout the SCI individual's lifetime and as the needs of the individual change so their programme must develop to meet those needs, though the objectives will remain the same. Increased life expectancy for SCI people means that bowel management must be effective over many years. This increased life expectancy and the increased survival of those injured at an advanced age, present the additional challenge of the ageing bowel.

High quality research evidence to support bowel management after SCI is scanty and the studies that have been published are often limited by small sample size (Coggrave et al 2006). However, the 12 UK and Ireland Spinal Cord Injuries Centres (SCICs) have more than 50 years of clinical experience on which to draw; a recent national audit of bowel management practice illustrated that the same interventions were employed and thought to be effective throughout the SCI service in the UK. This homogeneity of approach is reassuring, though it does not diminish the need for much more research into this important area.

These guidelines bring together published evidence from the literature and consensus agreement on clinical practice in the spinal cord injury service of the UK and Ireland, to provide guidance for healthcare professionals working with spinal cord injured individuals in spinal cord injury centres, non-specialist inpatient areas and the community, and for spinal cord injured individuals, their families and carers.

2. Aims of bowel management

The aim of bowel management following SCI is to achieve regular and predictable emptying of the bowel at a socially acceptable time and place, avoiding constipation, unplanned evacuations and autonomic dysreflexia. Bowel management should be completed within a reasonable time, generally suggested to be up to one hour (Stone 1990). The bowel management routine should use the minimum necessary physical and/or pharmacological interventions and maintain short and long-term gastrointestinal health: it should be safe, acceptable to the individual and promote verbal, and where possible, physical independence.

2.1 Objectives of bowel management

- To optimise comfort, safety, privacy and dignity of SCI individuals during bowel management episodes
- To assess the needs of the SCI individual in regard to bowel care and to use the information in the development and maintenance of an appropriate individualised bowel management routine
- To avoid incontinence, constipation, diarrhoea and autonomic dysreflexia, and minimise the development of secondary ano-rectal complications associated with bowel management (rectal over-distension, haemorrhoids, anal fissure etc)
- To have identified the minimum necessary physical and pharmacological interventions required by the individual for satisfactory bowel management prior to discharge from initial rehabilitation
- Working with other members of the multidisciplinary team, identify appropriate transfer methods, equipment and adaptive devices to promote independence in bowel management for the individual
- To evaluate the outcomes of bowel management. The Bristol Scale (Heaton 1992) will be used to record stool form. Duration of bowel management episodes and any unplanned bowel evacuations should be recorded
- Through effective education, to provide the individual with a 'toolkit' of knowledge with which they can manage and adapt their bowel care in the long-term

3. Developing an individualised bowel care programme

3.1 Responsibility for planning, implementation and evaluation of bowel care

Care and rehabilitation of SCI individuals is a multidisciplinary team activity. Whilst overall responsibility for treatment remains with the medical consultant, responsibility for the assessment of the patient's bowel care needs and the development and evaluation of a bowel management programme on a day-to-day basis is devolved to the named nurse, or his/her deputy, for each individual patient. The named nurse will liaise with other team members as appropriate in managing bowel function. Actual bowel care may be delegated to other carers (i.e. HCAs) or to the patient themselves, where their competence can be assured (RCN 2004 and 2008). However, only the named nurse or her deputy or equivalent should undertake alterations to the programme.

The Royal College of Nursing's publication *Chaperoning: The Role of the Nurse and the Rights of the Patient: Guidance for Nurses* (RCN 2001), and the Nursing and Midwifery Council's document *Practitioner-Client Relationships and the Prevention of Abuse* (NMC 2002) are both relevant to this area of care.

Development of an individualised bowel management programme requires assessment of the individual, planning of interventions and evaluation of outcomes. These activities are cyclical, with regular evaluation and reassessment informing planned care. The cycle continues until an optimal programme has been developed. The need for bowel management after spinal cord injury is life-long, and re-evaluation and modification of the programme will be required over the years post injury.

3.2 Individual assessment for bowel care

In assessing the SCI individual for their bowel management and rehabilitation needs the following factors are addressed:

- Current bowel function
- Pre-injury bowel habit
- Previous medical history – including obstetric history, chronic bowel disease, cancer, abdominal surgery
- Medication
- Diet and fluid intake
- Ability to eat a full diet
- Activity, general mobility, exercise, standing, passive movements
- Communication
- Cognitive ability
- Level of independence
- Lifestyle – cultural, sexual, work or educational roles
- Psychological and emotional factors
- Manual handling risk assessment
- Home and care circumstances

3.3 Planning care

- Obtain and record consent – voluntary, informed consent should be documented as part of the initial assessment and verbal consent should also be obtained on every occasion that bowel care is given.
- Identify and record timing and location for bowel management
- Identify appropriate interventions for evaluation. Interventions recognised as beneficial include (see supporting information pg22 for more detail):
 - o Dietary management – balanced diet, role of fibre, stimulant foods, fluids
 - o Routine – regular food intake, regular management
 - o Physical interventions – i.e. activity and exercise, gastro-colic reflex, posture, massage, digital rectal stimulation (DRS), digital removal of faeces (DRF)
 - o Pharmacological interventions – stimulants, bulking agents, stool softeners, osmotic agents, suppositories, enemas, rectal solution
- Identify manual handling requirements
- Plan both formal and informal teaching

3.4 Evaluating bowel care

Outcome measures for evaluating bowel management are:

- Duration of management episodes
- Stool form recorded using the Bristol Scale
- Frequency of episodes of incontinence
- Have pharmacological interventions been minimised as far as possible?
- Is the patient as independent as possible?
- Feedback from the patient regarding satisfaction and perceived autonomy

3.5 Frequency of re-evaluation during initial rehabilitation

- On cessation of spinal shock (Please see section 4.3 for more information regarding spinal shock)
- On mobilisation
- When the patient is ready to begin bowel management on the toilet
- If a patient changes to oral intake from nasogastric/gastrostomy feeding
- At any time where it seems appropriate but at least fortnightly throughout admission

3.6 Standards for re-evaluation of bowel programme for community living SCI individuals

The bowel programme should be re-evaluated:

- During general routine follow up
- If duration of management regularly exceeds one hour
- Following sudden change in bowel function i.e. Incontinence, change in stool form, colour or odour or bleeding per rectum. Changes that have persisted for 4 weeks or have not responded to 3 separate adjustments to the usual programme may be indicative of bowel cancer and should be investigated (www.cancerscreening.nhs.uk). Rapid appropriate onward referral for investigation is essential
- In the light of changing levels of independence/dependence

3.7 Standards for bowel care during admission for rehabilitation

- All in-patients will have an assessment of bowel care needs and a plan of management developed within 24 hours of admission by their named nurse, her deputy or equivalent
- All bowel management care plans will be re-evaluated with the patient by their named nurse at least fortnightly throughout admission
- The evaluation of all appropriate physical interventions will be documented during the admission of each individual

3.8 Standards for documentation of bowel management

- All in-patients will have an assessment of bowel care needs and a plan of management documented within 48 hours of admission by their named nurse, her deputy or equivalent
- All bowel management care plans will be re-evaluated at least fortnightly throughout admission
- The Bristol Scale will be used to record the outcome of all bowel management episodes
- The duration of all bowel management episodes will be recorded

4. Pre-transfer management

Newly injured individuals are often managed in non-specialist areas; the purpose of this section is to provide support for staff caring for these individuals in this setting.

4.1 Aims of pre-transfer care

- To promote and support effective bowel care for patients cared for in a non-specialist setting prior to admission to a spinal cord injuries centre
- To highlight the importance of active bowel management in the acute post injury phase
- To provide verbal and/or written information to support bowel care
- To promote learning in the non-specialist unit through the provision of reading lists, web sites etc
- To provide ongoing support depending on the resources of the specialist centre: telephone contact, liaison/community outreach visits etc

4.2 Importance of early bowel care for an individual with SCI

To reintegrate successfully back into society following their rehabilitation, an individual with a SCI needs an effective bowel management programme.

To achieve optimal bowel function and management in the longer term, bowel management must start immediately following injury. Prompt and effective bowel management will avoid over distension of the bowel with constipated stool which is thought to result in damage to stretch receptors. Damage to stretch receptors may adversely affect the return of reflex ano-rectal activity, diminishing future capacity for effective reflex evacuation of stool.

4.3 Spinal shock

Immediately following the spinal cord injury all individuals will present with a loss of sensation, movement and reflex activity below the level of injury. This is called 'spinal shock'. The rectum and anus will be areflexic and peristalsis will be absent resulting in a paralytic ileus. Without exception, all patients should be kept nil enterally for the first 48 hours post injury (Harrison P et al 2008). Even in the absence of bowel activity, bowel management must start on the day of admission with a digital check per rectum as part of the initial neurological examination. If faeces are present gentle digital removal of faeces should be undertaken with ample lubrication. Caution should be used so as not to damage sensitive nerve and muscle fibres within the anal sphincter by too vigorous digital removal of faeces (DRF).

Spinal shock is characterised by the 'sudden and transient suppression of neural functions below the level of acute spinal cord lesions' (Nacimiento and Noth 1999). Spinal shock has a significant effect on autonomic nervous system activity; sympathetic activity below the level of a spinal cord lesion is suppressed (Zejdlik 1992, Sheerin 2005). The more profound the spinal shock, the slower it is to resolve, but resolution can also be delayed by post-injury complications (Atkinson and Atkinson 1996). Different types of reflexes recover at different rates. The severity of spinal shock appears to be related mainly to the severity of the spinal cord lesion. The higher and more complete the spinal

cord injury, the more severe the spinal shock, with neurologically complete tetraplegics suffering the most serious and wide ranging effects (Mathias and Frankel 1983).

The level and extent of the lesion is significant for two reasons. Firstly, complete lesions below the twelfth thoracic/ first lumbar vertebrae will have permanent disruption of reflex function of the lower limbs, bladder, bowel and genitalia and will remain areflexic (flaccid). Secondly, patients with complete lesions above T6 will have continuing significant dysfunction of their sympathetic nervous system (Bravo et al 2004). Patients with neurologically incomplete lesions are generally less severely affected by spinal shock.

4.4 Bowel management during the period of spinal shock

As the bowel is areflexic during spinal shock, management consists of daily digital rectal examination with digital removal of faeces if present. There will be no spontaneous reflex evacuation during spinal shock. Glycerin suppositories may be inserted to lubricate stool prior to evacuation if the stool is constipated and may also be used to facilitate passage of flatus.

4.5 Resolution of paralytic ileus associated with spinal shock

As paralytic ileus associated with spinal shock resolves, bowel sounds return. Listen for bowel sounds daily. The practitioner observes for changes in anal tone during the daily digital rectal examination. In individuals with injuries at or above T12, an increase in anal tone would be expected as spinal shock resolves.

4.6 Bowel function following the resolution of paralytic ileus associated with spinal shock

When spinal shock has resolved, individuals with a complete spinal cord injury will present with either reflex bowel function (also called upper motor neurone bowel), or areflexic bowel function (also known as lower motor neurone or flaccid bowel). If the spinal cord injury is incomplete or the injury is in the conus, remaining function is less predictable and will be determined by examination by a medical practitioner.

The bulboanal reflex (a palpable or visible contraction of the anal sphincter when the penile glans or clitoris is squeezed) and the anal wink (a visible contraction of the external anal sphincter in response to a local pinprick) will be present if the patient has a reflex bowel. They will be absent if the patient has an areflexic bowel.

4.7 Consent for bowel care

The need for bowel management and the specific interventions involved should be discussed sensitively and privately and informed consent obtained. If this is not possible i.e. individual is unconscious, bowel care may be performed in the best interests of the patient, after discussion with the multidisciplinary team.

The RCN publication "Digital Rectal Examination and Manual Removal of Faeces" (2000, 2004) explains why digital removal of faeces (DRF) and digital rectal examination (DRE) are necessary and appropriate for individuals with SCI.

Further advice can be obtained from the Spinal Injuries Association and your local SCI Centre and the National Patient Safety Agency (NPSA 2004).

Local continence services are also a useful resource regarding training to become competent to undertake digital removal of stool and digital rectal examination (Please see Section 8).

4.8 Standards for spinal cord injury centres supporting non-specialist units:

Each spinal centre will nominate one or more named individuals, who will be responsible for giving support to non-specialist areas.

The information provided will include:

- Overview of changes to bowel function relevant to the individual
- Information on general approach: regular pre-emptive intervention to avoid incontinence and other complications
- Techniques and skills required to perform bowel care
- Information on possible complications
- RCN guidelines on digital removal of faeces (RCN 2000, 2004, 2008) and the National Patient Safety Agency statement on digital evacuation of stool (NPSA 2004)
- A copy of these guidelines
- Information as required if admission in the non- specialist centre is prolonged
- Contact with the non-specialist area regarding bowel care, will be made by the spinal centre within 7 days of referral

5. Acute management

5.1 Aims

- To prevent deterioration of bowel function and promote development of an effective bowel management programme for the future
- To inform the patient of the need for bowel care and to obtain informed consent. The patient has many life changes to deal with and discussion of bowel management should be sensitive to this and undertaken privately. The nurse should observe the patients' reactions to the information being given and offer as much or as little detail as the patient can deal with but provide sufficient to obtain consent
- To raise awareness of spinal shock
- To raise awareness of importance of pre-existing disease or disorder in post injury bowel management

5.2 Immediate management

- Nil enterally for at least first 48 hours
- Regular measurement of abdominal girth, at least daily
- Regular checking for return of bowel sounds indicating cessation of spinal shock-associated paralytic ileus
- Daily digital rectal examination to assess for and identify any changes in anal tone, sacral sensation, cessation of spinal shock and presence of faeces in the rectum
- Daily digital removal of faeces (DRF) from the rectum if present
- Nil or limited oral intake and loss of mobility will reduce bowel activity
- Nasogastric feeding and many medications may affect stool consistency
- Note pre-existing bowel habit, disease or disorder, as this may affect post injury bowel function

5.3 Assessing bowel function

In complete spinal cord injury the individual will have no sensation of the need for evacuation of the bowel and no control of the bowel. Depending on the level of injury, when spinal shock has subsided, the patient will present with reflex (also called upper motor neurone) bowel function usually in injuries at or above twelfth thoracic vertebrae, or areflexic (also called lower motor neurone or flaccid) bowel function usually in injuries at or below the first lumbar vertebrae. If the spinal cord injury is incomplete or in the conus the residual bowel function is less predictable and will be established through examination by a medical practitioner.

The bulboanal reflex (Please see Section 10 – Glossary) and the anal wink (Please see Section 10 – Glossary) will be present if the patient has a reflex bowel. They will be absent if the patient has an areflexic bowel.

5.4 Guidelines

- Explain to the patient what bowel management is and its importance; obtain informed consent. Gain verbal consent for each intervention – if unable to do so (e.g. patient unconscious), perform procedure as long as it is in the best interest of the patient after discussion with the multidisciplinary team
- Ensure that there is privacy for performing bowel management and that the individual's dignity is maintained at all times – this can be difficult when on bed rest – make sure curtains are closed properly, only relevant staff are behind curtains and restrict access during bowel management. Consider the practicality of moving the patient (on his bed) to a more private area for bowel care
- Only a competent nurse or HCA may perform bowel care – one who has knowledge and understanding of bowel management and has been deemed competent by senior staff following training
- Remove faeces from rectum prior to inserting prescribed mild rectal stimulant to assist in removing faeces
- During spinal shock a prescribed mild rectal stimulant (e.g. glycerin suppository) may be used to lubricate the stool prior to digital evacuation if constipated, or to aid in release of flatus in individuals with any type of bowel function
- Allow at least 20 minutes for the prescribed mild rectal stimulant to work – time bowel management to coincide with log rolling the patient for hygiene and skin checking – suppositories can be given whilst patient is flat on bed and bowel emptying can be performed when rolled. This prevents too much disturbance and handling of the patient. Maintain spinal alignment at all times and ensure correct positioning when finished
- Check skin around peri-anal area – make sure skin is cleaned and dried adequately and use barrier creams if necessary, especially if bowel movements are loose
- Record bowel management interventions used, duration of care and use the Bristol Scale (Heaton et al 1992) to describe the stool

5.5 Points to consider

- Liaison with a rehabilitation team at this stage can help establish an appropriate bowel regime for the patient which can then be maintained through rehabilitation and beyond, minimising disruption
- Regular re-evaluation of the bowel programme should occur at least fortnightly and during illnesses, increased mobility, change in diet or change in medication

6. Guidelines for development of a bowel management programme during rehabilitation

6.1 Aim

Each newly injured SCI patient will be discharged with an effective individual plan for bowel management (henceforward referred to as 'bowel management programme'). An 'effective individual plan' is one which meets the stated aims and objectives for bowel management (Section 2). This plan will be the result of a multidisciplinary assessment, and will be negotiated with the patient and relevant third parties.

6.2 The bowel management programme

The bowel management programme will specify the following:

- Specific interventions to be used
- The frequency (twice daily, daily, alternate day) and timing (morning, evening) of the bowel programme
- The location for bowel management (bed, toilet etc)
- Who will perform bowel care (the patient, a specific relative, care staff, community nurse)
- Equipment and adaptations required (shower chair, padded toilet seat etc)
- A recognised generic or Trust-specific manual handling risk assessment (HSE 1992)

The development of the bowel management programme will be informed by consideration of the following factors:

- Level and density of spinal cord injury
- Type of neurogenic bowel dysfunction
- Evaluation of bowel care during the acute stage
- Mobility of the individual
- Limiting factors such as spasticity and poor balance
- Self-care abilities of the patient
- Patient preferences where feasible
- Age of the patient
- Weight of the patient
- Cultural requirements
- Domestic circumstances
- Availability of carers
- Availability of bowel care aids and equipment
- Accessibility and suitability of facilities at discharge destination
- Any pre- or post-injury bowel related complications
- Pre-injury bowel habit
- Relevant medical history
- Prevention of dysreflexia in susceptible patients
- Supervision requirements (is it safe to leave the patient during bowel management episodes?)
- Planned future family commitments, employment or education
- Other lifestyle considerations

(Ash 2005, Weeks 2000, Coggrave 2004, 2005 & Slater 2003)

6.3 Components of the bowel management programme

The specific interventions in an individual's bowel management programme may include physical, pharmacological and dietary interventions; these will have been used, evaluated and the programme developed during rehabilitation at a specialist centre. Please see Section 8.

6.4 Frequency of bowel management

Routine is a key element of successful bowel management: the frequency (twice daily, daily, alternate day) should be established prior to discharge and continued post discharge unless it needs to be adjusted in response to problems (Ash 2005). The routine should be performed at approximately the same time of day on each occasion. The routine will be established prior to discharge taking into consideration effectiveness, pre injury bowel habit, future lifestyle factors and the availability of carers (Weeks 2003). However, overly strict adherence to a rigid bowel routine is associated with increased impact on quality of life (Coggrave et al 2008) and the capacity for flexibility should be maintained where possible.

6.5 The location for bowel management

While the use of a toilet is the preferred option for most patients, there are many factors involved in deciding upon the safest and most suitable location for bowel care at home. See the following section. In addition, many patients are discharged to homes that have not yet been adapted to give safe access to a toilet, so interim planning may be required. It is essential that individuals are discharged with a programme which is manageable in their discharge destination.

6.51 Toilet or bed for bowel care? A brief aid to decision making

There are many factors involved: the final decision should optimise safety, efficacy and acceptability for all parties involved. Most spinal cord injured individuals have an understandable preference for toilet use and the evidence suggests that for most patients, bowel management in the upright position is significantly quicker (Coggrave 2007a), but the benefits need to be balanced against the hazards.

Factors to consider for independent toilet-based bowel care:

- Hand function: has the patient sufficient hand function to perform digital removal of faeces? While some individuals may achieve reliable emptying after rectal stimulant insertion without the need for digital checking or further digital stimulation, the majority do require these additional interventions. There are devices available to insert suppositories/microenemas, and to assist with cleaning, but there is no aid available to help with digital checking/stimulating. It requires both a degree of motor power and some sensation in the fingers, which normally (but not always) precludes complete lesions above C8
- Transfer ability: shower chairs can be difficult to balance on for self care. Furthermore, while self management can be learnt using a shower chair in many cases, this will limit future lifestyle options if toilet use is not also learnt: it is difficult to take a shower chair with you everywhere you go. Wherever possible the individual should be taught to transfer on and off the toilet itself. This is an advanced skill, which should only be attempted after assessment by a therapist. Falls from the toilet are fairly common and can cause significant injury (Nelson et al 2003, Vestergaard et al 1998)

- Availability of suitably adapted toilet facilities: wheelchair accessibility, handrails and a padded/contoured toilet seat. This should be established by the discharge planning process
- Preservation of skin integrity. All spinal cord injured individuals should use a padded seat whether using the toilet or a shower chair (Slater 2003). Even with a padded seat, sitting on a toilet for long periods should be avoided as it can cause pressure damage to the skin. Those who have had significant pressure ulcers may be additionally restricted in the time they can safely sit on a toilet

Factors to consider for carer assisted/dependent bowel care:

- There are considerable moving and handling considerations here that extend beyond transfers (Ash et al 2006)
- A shower chair is usually best to minimise transfers and optimise care access to the anal area. This can greatly reduce the moving and handling risks for carers. Shower chairs are available with the opening to the side, front or back and can be selected to facilitate access to the anal area, depending on the individual's posture
- Does the patient's size and shape, together with the physical environment, allow ease of access for insertion of stimulants, digital removal of faeces, digital rectal stimulation, checking and cleaning (all of which may have to be performed 'over the toilet')? The postures required for this can be hazardous, even with optimal equipment and environment
- Does the individual require digital removal of faeces, digital stimulation and checking to ensure emptying? If so, this can be difficult and hazardous over a toilet (Ash et al 2006)
- Is a carer constantly available during the procedure? Can the individual safely be left alone for periods during bowel management?

General factors to consider for:

- Patient/carer motivation
- Skin condition
- General health/frailty (i.e. postural hypotension, extreme old age)
- Other restrictions such as severe spasticity and poor balance
- Home circumstances: privacy and dignity, availability of suitable equipment and location for bowel care at home

6.6 Who will perform bowel management in the community?

This should be established before discharge. Wherever possible, the patient will be trained to perform self-care. However, impairment, lack of mobility and other factors may preclude this option. In such cases, district nurses or other suitable carers need to be identified and trained (if necessary) in consultation with the patient, family, and community care providers. In all cases, the arrangements should be acceptable to, and promote the autonomy of, the patient; be sustainable and provide optimum freedom and flexibility in order to minimise the constraints upon the quality of life of the patient and family.

6.6.1 Knowledge and skills required for the management and performance of bowel care in spinal cord injury

Knowledge:

- Sensitivity to the intimate nature of bowel management and the difficulties this poses for patients
- Basic anatomy and physiology of digestion and elimination
- The effect of spinal cord injury on digestion and elimination (Ash 2005)
- The prevention, recognition and management of autonomic symptoms and acute autonomic dysreflexia in susceptible individuals (Harrison and Lamb 2006)
- The recognition of other complications (e.g. haemorrhoids etc)
- The role of diet in the bowel management programme – please see Section 9 of these guidelines
- The role of physical interventions; digital rectal stimulation, digital evacuation, abdominal massage, gastrocolic reflex, transanal irrigation
- The action, dosage and common side effects of oral and rectal medications used in neurogenic bowel management
- Safe disposal of waste

Skills requirements:

- Monitoring and evaluation of the bowel management programme, including use of bowel diaries (Slater 2003) and the Bristol Stool Chart (Heaton et al 1992)
- Safe and effective performance or direction of all suitable interventions
- The management of autonomic symptoms and acute autonomic dysreflexia
- Preserving skin integrity during bowel management
- Moving and handling skills
- The use of any appropriate equipment

Bowel related competences from the Skills for Health website (CC01, CC09) can be used to assist in developing locally appropriate bowel management training (Skills for Health 2008).

6.7 Equipment and adaptations

Equipment and adaptation needs will be assessed before discharge, in consultation with primary care assessors. Both interim and long-term arrangements may be required. Minimum acceptable arrangements must be identified and provided before discharge. The assessment of these needs is a skilled task and should only be undertaken by suitably qualified and experienced staff.

6.8 Risk assessment for moving and handling

There is some degree of risk in terms of moving and handling wherever the bowel management programme is performed. The risk assessment must balance the safety of carers and the best interests of the patient. It should identify all aids and adaptations required to optimise safe and effective care and stipulate the skills required for safe performance of interventions.

6.9 Patient education

Most individuals with spinal cord injury will be either physically independent in their bowel care, carrying out their own care, or verbally independent, able to instruct a carer in how to undertake bowel management. It is therefore essential that all individuals with bowel dysfunction secondary to spinal cord injury are well-informed regarding the issues around bowel management.

The following areas should be included in the teaching programme:

- Knowledge of the individual's bowel dysfunction – the impact of the spinal cord injury
- Theoretical knowledge of bowel management and influencing factors – importance of regular routine, role of physical and pharmacological interventions, the particular importance of diet and fluids
- Practical knowledge of management on bed and/or toilet, as appropriate
- How and when to adjust the routine
- How to identify complications and what action to take
- How to obtain supplies of disposables for bowel care in the community
- Verbal independence to enable the individual to inform carers of their needs and how to meet them
- Resources available to them (i.e. help/advice)

6.10 Rehabilitation standard for bowel management

Each SCI patient discharged from initial rehabilitation will have an effective individualised bowel management programme. This programme will be the result of a multidisciplinary assessment, and will be negotiated with the patient and relevant third parties.

7. Long-term support

The lifespan of the individual with a spinal cord injury has improved dramatically since the 1940's, as a result of improved medical and nursing care (Whiteneck et al 1992). Chronic problems, such as the neurogenic bowel, now replace acute problems that were once life threatening (Craven and Etchells 1998).

Bowel problems experienced by spinal cord injured patients include prolonged evacuation time, poorly localised abdominal pain, haemorrhoids, abdominal distension, faecal incontinence, and chronic constipation (Coggrave et al 2008, Amir et al 1998, Puet et al 1997). All of these factors have severe implications for patients' reintegration into society (Coggrave 2007, De Looze et al 1998). More than one third of surveyed subjects with spinal cord injury rated bladder and bowel dysfunction as having the most significant effect on their lives after injury, and many rank bowel dysfunction as one of their major life limiting problems (Coggrave et al 2008, Glickman and Kamm 1996, Stiens et al 1997).

Excessive time spent on carrying out bowel care can lead to frustration arising from the limitations placed on social and work-related activities (Harari et al 1997). Excessive time spent on bowel care affects the patient's quality of life (Longo et al 1995), often creating major physical and psychological problems in these patients (Kelly et al 1999).

As individuals age with a spinal cord injury the colon may become progressively more compliant and flaccid, predisposing patients to worsening constipation symptoms (Harari et al 1997). Greater age is associated with increased use of all laxatives, particularly stimulant laxatives. Increasing duration of injury is associated with longer duration of bowel care and an increase in the use of digital removal of faeces, stronger rectal stimulants and oral laxatives generally; all of which suggests a gradual decline in bowel function (Coggrave et al 2008). Both age and duration of injury are associated with increased reporting of haemorrhoids, rectal prolapse and abdominal pain. This evidence underlines the need for continued assessment and follow-up of patients' bowel function on a long-term basis.

7.1 Resources provided by spinal injury centres post discharge

Most Spinal Cord Injury Centres have at least one member of nursing staff who is able to liaise with patients, carers and other health professionals within the community and provide advice and support.

Through rehabilitation and education, all patients should be knowledgeable regarding how to "fine tune" their bowel routine, procedures and medications to suit their needs once home. In some cases, patients and perhaps their carer, District Nurse, Nursing Home etc, require support from an outreach nurse. Prior to discharge, all patients should be aware that they can access outreach/community liaison/outpatient services should they have any problems and need advice, for example, if their usual routine changes for no obvious reason or if they are having difficulty obtaining the care or equipment they require etc. These services can be accessed directly by the patient or anyone connected to the patient, including District General Hospitals and Continence Advisors. Telephone advice can be given as well as the provision of written information. When necessary, an outreach visit can be organised to assess the situation and discuss matters in further detail. Educational resources can be provided for alternative management of bowel dysfunction for particular individuals, and many spinal centres provide formal educational events related to bowel management and other aspects of care.

7.2 Aims of routine follow-up

The aim of routine follow-up of spinal cord injury, the patients bowel care and bowel related concerns is to achieve early identification of potential problems, and to promote timely intervention in order to reduce the incidence of chronic bowel complications.

7.21 Objectives of routine follow-up

- To routinely re-assess the patients ongoing individual bowel care needs and to facilitate adaptation or maintenance of an individualised bowel management routine
- To promote early identification of potential secondary complications associated with bowel management and timely referral to other services as appropriate
- To avoid/remedy incontinence, constipation, diarrhoea and autonomic dysreflexia associated with the patient's bowel care
- To ensure that the minimum physical and pharmacological interventions required are utilised in the patient's bowel management routine
- To evaluate the outcomes of changes to the bowel management routine
- To provide ongoing education to patients, relatives, carers about neurogenic bowel dysfunction
- To work in collaboration with patients, District Nurses, and other carers to address the patient's individual bowel care needs

7.3 Re-evaluation of bowel management programme in chronic spinal cord injury

- Re-evaluation of the bowel programme will occur during each routine follow-up appointment or when the patient and/or carer experiences problems with the bowel management programme. Marked changes in bowel habit i.e. incontinence, change in stool form, colour or odour or bleeding per rectum, that have persisted for 4 weeks or have not responded to 3 separate adjustments to the usual programme may be indicative of bowel cancer or other bowel disease (Ash et al 2006, Poduri and Schnitzer 2001, www.cancerscreening.nhs.uk). Rapid appropriate onward referral for investigation is essential.

7.4 Bowel assessment

In re-assessing the patient's bowel management programme the following factors are addressed in a comprehensive review:

- Patients perception of bowel care problem
- Onset of problem and relevant factors
- Patients account of usual bowel management programme prior to onset of problem(s) (frequency, timing, interventions, medications, position etc)
- Previous medical history including type of neurogenic bowel dysfunction
- Clinical examination if indicated
- Diet and fluids, including regularity of intake
- Duration of bowel care, excluding clean up time (and whether this poses a problem to the patient or the carers)

- Non-bowel medication that may indirectly affect bowel results
- Episodes of faecal incontinence
- Episodes of constipation
- Frequency of no result from bowel management
- Usual stool type (utilising the Bristol Scale – Heaton 1992, Norgine 1999)
- Awareness of the need to defaecate and episodes of urgency
- Incidence of discomfort/pain (episodes/frequency if present) related to bowel management episodes
- Incidence of rectal bleeding

7.41 Bowel diary

A bowel diary, kept by the patient prior to attending a bowel assessment can provide a useful contribution to the assessment. The following aspects should be included in the diary:

- Time of day (am or pm)
- Physical interventions
- Use of laxatives
- Use of suppositories (type, amount and timing in relation to bowel care episode)
- Use of enemas (type, amount and timing in relation to bowel care episode)
- Position (in bed or over a toilet/commode)
- Time taken for bowel care episode (from start to finish)
- Bowel result: stool type (Bristol Scale) and amount, or lack of result
- Episodes of faecal incontinence: frequency, time of day and relation to bowel care, food intake etc
- Comments per bowel care episode (changes to any part of the bowel management programme, rectal bleeding etc.)

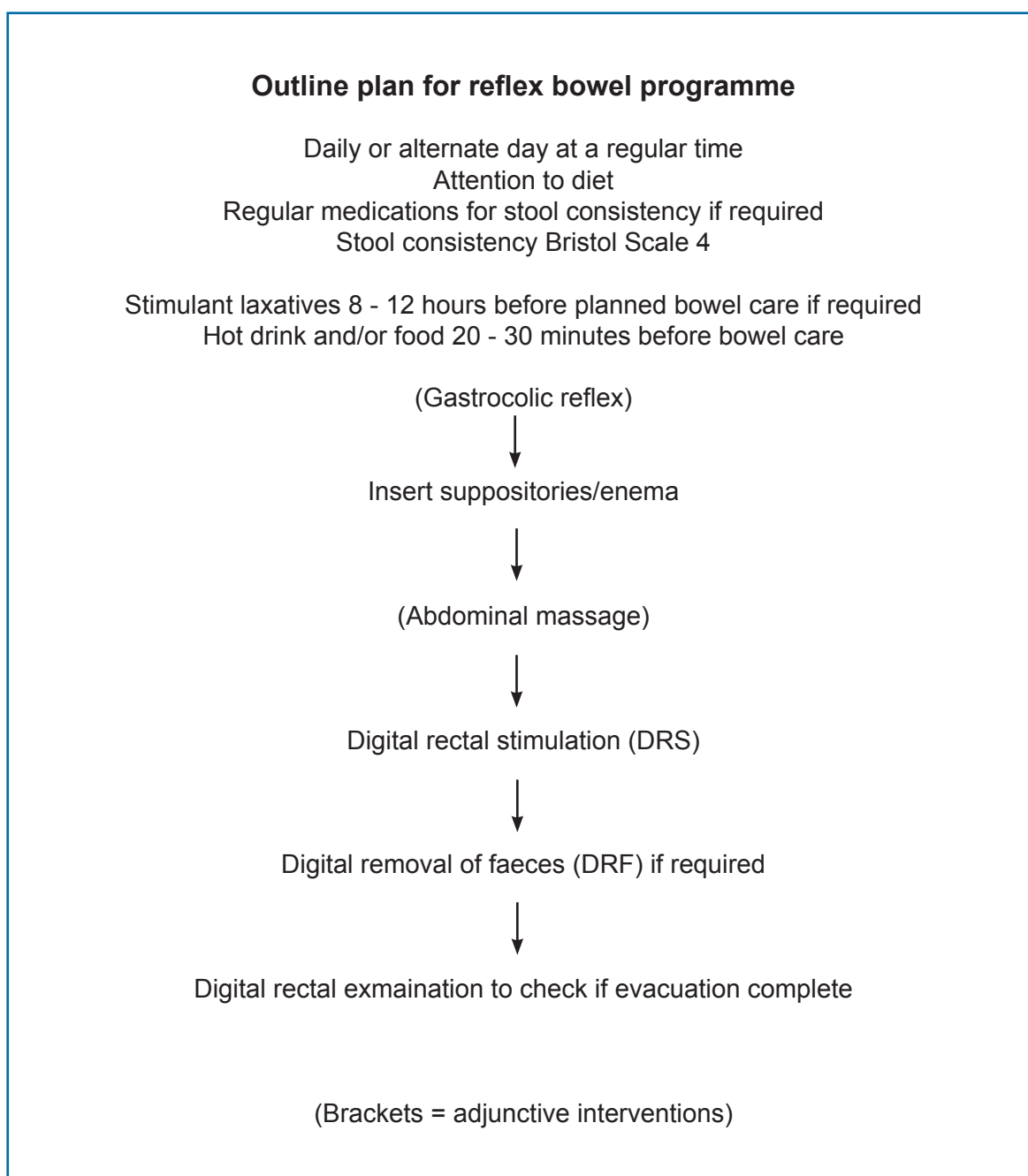
7.42 On completion of assessment

- Changes to the bowel management routine agreed by patient and outpatient team are documented, and a copy is given to the patient
- Duration of trial agreed (e.g. 2 weeks) and documented
- Patient's bowel management programme re-evaluated after the agreed trial period and subsequent trial periods
- Information booklets, telephone contact numbers, and a follow-up appointment date etc. are given to the patient
- Appropriate onward referral if required

8. Supporting information

8.1 Reflex bowel management

Bowel evacuation in reflex neurogenic bowel dysfunction can be produced by the use of chemical rectal stimulants and digital rectal stimulation (Shafik et al 2000), or a combination of both (Coggrave et al 2008), but often must be followed by digital removal of faeces (DRF) to ensure complete evacuation (Coggrave et al 2008, Haas et al 2006). The optimal combination should be developed on an individual basis. The aim is to produce effective evacuation (i.e. avoiding faecal incontinence or constipation) within a reasonable duration, suggested to be one hour (Consortium for Spinal Cord Medicine 1998). Manipulating stool consistency through diet, fluids and if necessary, medication to achieve Bristol Scale 4 produces the optimal stool for effective reflex bowel function. Establishing a regular pattern for bowel care helps to ensure that stool is present in the rectum and sigmoid colon ready for evacuation at the chosen time. This can be assisted if required by the use of stimulant laxatives as part of a discrete bowel management episode.



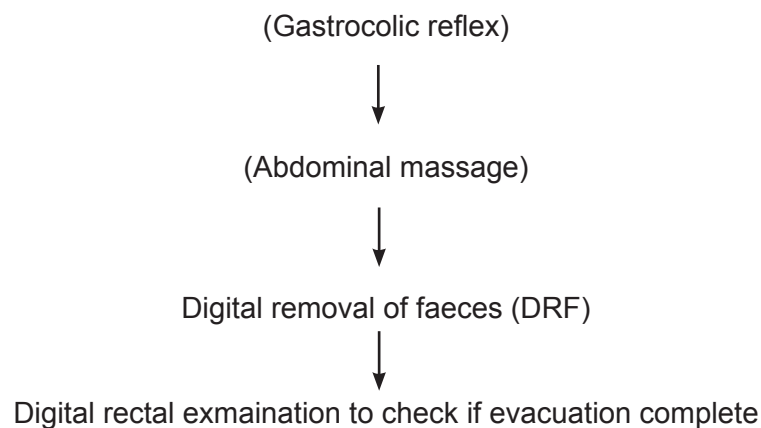
8.2 Areflexic bowel management

As there are no preserved anorectal reflexes, pharmacological or digital stimulation of the anorectum are not effective. Digital removal of faeces is the basic physical intervention in areflexic neurogenic bowel dysfunction. Use of straining/Valsalva manoeuvre without digital removal of faeces is the cultural norm in some countries, but is associated with a high degree of incontinence, constipation and other difficulties with evacuation and development of haemorrhoids and prolapse (Yim, 2001) and should be discouraged. To facilitate digital removal of faeces, and to reduce the risk of 'stress' incontinence due to the areflexic, relaxed anal sphincters, individuals are recommended to aim for a firm stool (Bristol Stool type 2-3) (Ash et al 2006, Consortium for Spinal Cord Medicine 1998).

Outline plan for areflexic bowel programme

Daily or twice daily at a regular times
Attention to diet
Regular medications for stool consistency if required
Stool consistency Bristol Scale 2-3

Stimulant laxatives 8 - 12 hours before planned bowel care if required
Hot drink and/or food 20 - 30 minutes before bowel care



(Brackets = adjunctive interventions)

8.3 Core interventions for conservative neurogenic bowel management

8.31 Establishing a routine

Establishing a regular routine is fundamental to gaining control over continence and avoiding the build up of stool in the colon. The frequency with which the programme is conducted will vary depending on the needs of the individual; those with flaccid bowel function may manage their bowel daily or twice daily (sometimes more) while individuals with reflex bowel function may evacuate their bowel on a daily or alternate day routine (Coggrave et al 2008). Less frequent or irregular bowel management may contribute to constipation (Coggrave et al 2008). However, overly strict adherence to a rigid bowel routine is associated with increased impact on quality of life (Coggrave et al 2008) and the capacity for flexibility should be maintained where possible.

8.32 Diet and fluids

More than 50% of SCI individuals report they manipulate their diet (Coggrave et al 2008) to assist their bowel management even though there is no robust evidence to support any dietary intervention. Hence in this population it is generally advised that a diet containing five portions of fruit and vegetables and significant levels of whole grain foods, such as wholemeal bread or unrefined cereals, each day should be encouraged, in accordance with the government '5 a day' strategy (Department of Health 2003). Stool consistency can then be assessed and the diet adjusted accordingly to achieve an appropriate stool consistency. Individuals with reflex bowel function are encouraged to aim for a soft-formed stool consistency (Bristol Scale 4 – see Glossary (Heaton et al 1992)), while those with flaccid bowel function are more likely to avoid faecal incontinence if they aim for firmer stools (Bristol Scale 2-3 – see Glossary (Heaton et al 1992)). Digital removal of faeces is also facilitated by a firmer consistency.

With regard to fluid intake, it has been suggested that 500mls per day for the SCI individual should be added to the recommended fluid intake for healthy able-bodied individuals (Consortium for Spinal Cord Medicine 1998). However, there is no research evidence to support this with regard to bowel management, and fluid intake may be determined by specific bladder management approaches. The British Dietetic Association recommends between 1.5L and 2.5L of fluid daily for the general adult population, depending on level of activity and prevailing weather conditions (BDA 2006). Urine colour is correlated with the concentration of urine; urine of a 'pale straw colour' indicates adequate hydration (BDA 2006), and is a simple 'rule of thumb' which is useful to patients. Further information regarding diet can be found in Section 9.

8.33 Digital rectal stimulation

Use of digital rectal stimulation is reported in 35–50% of individuals with neurogenic bowel dysfunction (Coggrave et al 2008, Correa & Rotter 2000, Han et al 1998, Kirk et al 1997). Digital rectal stimulation is a technique used to increase reflex muscular activity in the rectum thereby raising rectal pressure to aid in expelling stool, and to relax the external anal sphincter, thus reducing outlet resistance (Coggrave 2005, 2007a, 2008, Consortium for Spinal Cord Medicine 1998). It is used to stimulate the movement of stool into the rectum and to initiate defaecation at a chosen time and relies upon the presence of reflex bowel activity; it is only available in individuals with reflex bowel dysfunction. While some authors suggest it can replace the use of pharmacological rectal stimulants (Bedbrook 1991) others have reported that it may not be as effective in all individuals with reflex bowel function and is associated with longer duration of bowel management (Coggrave et al 2008). Digital rectal stimulation is performed by inserting a gloved, lubricated finger gently through the anal canal into the rectum and slowly rotating the finger in a circular movement, maintaining contact with rectal mucosa (Consortium for Spinal Cord Medicine 1998; Wiesel & Bell 2004) and gently stretching the anal canal. The stimulus is continued until relaxation of the external sphincter is felt, flatus or stool pass, or the internal sphincter contracts (a sign of colonic activity) and is seldom required for more than 15-20 seconds; longer than one minute is rarely necessary (Stiens et al 1997). The stimulation may be repeated every 5–10 minutes approximately until evacuation is complete.

The number of times this intervention can be used within one bowel management episode is contentious; however there is no evidence on which to base a recommendation and experience suggests that there is considerable variation between individuals as to what is required. Therefore the needs of the individual should be the prime consideration; digital rectal stimulation should be repeated until either reflex evacuation is complete and there is no more stool in the rectum or until it is evident that the reflex has 'tired' and is not effective in prompting reflex evacuation of stool present in the rectum. In this event digital removal of faeces should be employed to ensure that the rectum is empty to avoid faecal incontinence or discomfort. For this technique to function optimally the stool should be Bristol Scale 4 (bulky, soft-formed); looser stool and constipated stool both result in less effective responses.

Digital rectal stimulation may be performed in sitting (over toilet, shower chair or commode) or lying by a carer or by the patient. There is no evidence to suggest that stimulation in either position is more successful or harmful than another, and practice should be individualised depending on response to interventions and an appropriate risk assessment.

8.33.1 Procedure for digital rectal stimulation

- Explain the procedure to the patient (if necessary) and obtain consent. Even if the patient consents to the procedure, if they request you to stop at any time, you must do so. The patient should be invited to have an escort present if they wish
- Ensure a private environment
- Observe the patient throughout the procedure for signs of autonomic dysreflexia (please see Section 10 – Glossary) or other adverse events (Addison and Smith 2000)
- If the patient's spinal injury is stable, position the patient in a lateral position (usually left side) with knees flexed. Flexing the knees promotes the stability of the patient and helps to expose the anus (Campbell 1993). If the spinal injury is unstable bowel management will be conducted during a team log roll, maintaining spinal alignment at all times. This procedure may also be conducted over the toilet/commode by the patient or the carer
- Place protective pad under the patient if appropriate
- Wash hands, put on two pairs of disposable gloves and an apron
- If the patient suffers local discomfort or symptoms of autonomic dysreflexia during this procedure local anaesthetic gel may be instilled into the rectum prior to the procedure (Furasawa 2008, Cosman 2005). This requires 5-10 minutes to take effect and lasts up to 90 minutes. Note that long term use should be avoided due to systemic effects (BNF 2008)
- Lubricate gloved finger with water soluble gel
- Inform patient you are about to begin
- Insert single gloved, lubricated finger (Addison and Smith 2000) slowly and gently into rectum
- Turn the finger so that the padded inferior surface is in contact with the bowel wall
- Rotate the finger in a clockwise direction for at least 10 seconds, maintaining contact with the bowel wall throughout
- Withdraw the finger and await reflex evacuation
- Repeat every 5-10 minutes until rectum is empty or reflex activity ceases
- Remove soiled glove and replace, re-lubricating as necessary between insertions
- If no reflex activity occurs during the procedure, do not repeat it more than 3 times. Use digital removal of faeces (DRF) if stool is present in the rectum
- During the procedure the person delivering care may carry out abdominal massage
- Once the rectum is empty on examination, conduct a final digital check of the rectum after 5 minutes to ensure that evacuation is complete

- Place faecal matter in an appropriate receptacle as it is removed, and dispose of it and any other waste in a suitable clinical waste bag
- When the procedure is completed, wash and dry the patient's buttocks and anal area and position comfortably before leaving
- Remove gloves and apron and wash hands
- Record outcomes using the Bristol Scale (Norgine 1999, Heaton 1993)
- Record and report abnormalities

8.34 Digital removal of faeces

This intervention involves the insertion of a single, gloved, lubricated finger into the rectum to break up or remove stool (Kyle et al 2005). It was the most commonly used single intervention in a recent survey, reported by 56% of respondents (Coggrave et al 2008), and is associated with shorter duration of bowel care and fewer episodes of faecal incontinence (Coggrave et al 2008, Haas 2005). Digital removal of faeces is recommended in the early acute phase after SCI to remove stool from the areflexic rectum to prevent over-distension with consequent damage to later reflex rectal function (Consortium for spinal cord medicine 1998, Grundy & Swain 2002, Harrison 2000). It is also a necessary intervention for a majority of chronic spinal cord injured individuals, as part of a well structured bowel management programme (Coggrave et al 2007b). It has been identified as the method of choice for long-term bowel evacuation in individuals with flaccid bowel (Stiens et al 1997), and may be used for removal of stool prior to placing suppositories in individuals with reflex bowel or to complete evacuation where reflex activity alone is insufficient to empty the bowel.

8.34.1 Procedure for digital removal of faeces (on the bed)

- Explain the procedure to the patient (if necessary) and obtain consent. Even if the patient consents to the procedure, if they request you to stop at any time, you must do so. The patient should be invited to have an escort present if they wish
- Observe the patient throughout the procedure for signs of Autonomic Dysreflexia or other adverse events (RCN 2000)
- Ensure a private environment
- If the patient's spinal injury is stable, position the patient in a lateral position (usually left side) with knees flexed. Flexing the knees promotes the stability of the patient and helps to expose the anus (Campbell 1993). If the spinal injury is unstable bowel management will be conducted during a team roll, maintaining spinal alignment at all times
- Place protective pad under the patient
- Wash hands, put on disposable gloves and apron
- If the patient suffers local discomfort or Autonomic Dysreflexia during this procedure local anaesthetic gel may be applied prior to the procedure (Furusawa 2008, Cosman 2005). This requires 5-10 minutes to take effect and lasts up to 90 minutes. Note that long term use should be avoided due to systemic effects (BNF 2008)
- Lubricate gloved finger with water soluble gel
- Inform patient you are about to begin
- Insert single gloved, lubricated finger (Addison and Smith 2000) slowly and gently into rectum

- If stool is a solid mass, push finger into centre, split it and remove small sections until none remain. If stool is in small separate hard lumps remove a lump at a time. Great care should be taken to remove stool in such a way as to avoid damage to the rectal mucosa and anal sphincters i.e. do not over-stretch the sphincters by using a hooked finger to remove large pieces of hard stool which may also graze the mucosa. Using a hooked finger can lead to scratching or scoring of the mucosa and should be avoided. Where stool is hard, impacted and difficult to remove other approaches should be employed in combination with digital removal of faeces. If the rectum is full of soft stool continuous gentle circling of the finger may be used to remove stool: this is still digital removal of faeces
- During the procedure the person delivering care may carry out abdominal massage
- Once the rectum is empty on examination, conduct a final digital check of the rectum after 5 minutes to ensure that evacuation is complete
- Place faecal matter in an appropriate receptacle as it is removed, and dispose of it in a suitable clinical waste bag
- When the procedure is completed, wash and dry the patient's buttocks and anal area and position comfortably before leaving
- Remove gloves and apron and wash hands
- Record outcome using the Bristol Scale (Norgine 1999, Heaton 1993)
- Record and report abnormalities

8.35 Autonomic dysreflexia and digital interventions for bowel management

Both digital stimulation of the rectum and digital removal of faeces may be associated with autonomic dysreflexic symptoms in individuals with spinal cord injury at or above the sixth thoracic vertebra. Autonomic dysreflexia is an abnormal sympathetic nervous system response to a noxious stimulus below the level of injury; acute episodes may result in rapidly rising blood pressure with accompanying risk of brain haemorrhage and death (Kavchak-Keyes 2000). Among susceptible individuals, 36% report dysreflexic symptoms occasionally and 9% always when they conduct bowel management (Coggrave et al 2008). Raised blood pressure during bowel management without symptoms has been recorded (Furusawa 2007, Kirshblum 2003). However, it is not clear that any treatment is required in the absence of symptoms (Kirshblum 2003), hence recording blood pressure when undertaking this intervention has little benefit. The patient should be observed for symptoms of autonomic dysreflexia which include flushing, sweating and blotchiness above the lesion, chills, nasal congestion and headache. Some individuals experience these symptoms mildly whenever they evacuate their bowel. Less often, where the bowel is loaded with constipated stool or severe haemorrhoids or anal fissure are present, acute autonomic dysreflexia may occur in response to bowel care, including digital interventions. The cardinal sign of acute autonomic dysreflexia is a rapidly developing severe headache. In this instance bowel management should be stopped and a medical assessment undertaken. If acute autonomic dysreflexia persists after stopping the procedure this should be treated promptly, according to local policy, but usually using sublingual nifedipine or a glycerine trinitrate patch. Ano-rectal problems should be treated appropriately and steps should be taken to ensure that the bowel care programme is effective and any faecal loading or constipation is eradicated. Bowel management must still be continued on a regular basis; local anaesthetic gel, applied prior to digital interventions may reduce or eradicate the autonomic dysreflexic response during bowel care (Cosman 2005), though this is not suitable for prolonged use (BNF 2008). Autonomic dysreflexia is most likely to occur in response to ineffective bowel care due to withholding of essential interventions.

8.36 Pharmacological rectal stimulation: suppositories, micro-enemas

Rectal stimulants are used to trigger evacuation of the bowel at the time chosen by the patient. Suppositories of some kind are reported to be used by 60%-71% of SCI individuals (Coggrave et al 2008, Kirk 1997) and glycerin suppositories by 32-47% (Coggrave et al 2008, Correa and Rotter 2000). Preserved anorectal reflexes can respond to chemical stimulation. Chemical stimulants vary in the speed and effectiveness of the evacuation they produce (Amir et al 1998, House and Steins 1997, Frisbie 1997, Dunn and Galka 1994). It is a general principle to use the gentlest form of stimulation possible in order to achieve timely evacuation, holding more powerful stimulants in reserve for problem-solving (Ash 2005). However inadequate pharmacological stimulation can lead to the requirement for more digital stimulation, so both forms of stimulation should be considered together when deciding on the appropriate pharmacological stimulant for an individual.

Glycerin suppositories act as a mild local stimulus and lubricant (British National Formulary 2008) and usually produce a response in around 20 minutes, while bisacodyl suppositories deliver a stimulant laxative resulting in increased gut motility (British National Formulary 2005). Bisacodyl suppositories with a polyethylene glycol base are reported to act more rapidly than those with a hydrogenated vegetable oil base (Frisbie 1997;House & Stiens 1997;Stiens 1995) (Frisbie 1997;House & Stiens 1997;Stiens 1995) but are currently not available on prescription in the United Kingdom; bisacodyl in a vegetable oil base produces a response in approximately 30 minutes. Lecicarbon E is a carbon dioxide emitting suppository which stimulates contraction of the rectum within approximately 15 minutes. Rectal stimulants alone are seldom sufficient to prompt complete evacuation; most individuals also require digital stimulation or digital evacuation of stool (Coggrave et al 2008).

An enema is a method of delivering a volume of fluid, with or without a drug, to the rectum. Large volume enemas are not suitable for routine use in spinal cord injured individuals, as the fluid cannot be retained (Ash 2006, Stiens et al 1997), over-distension of the colon or rectum or trauma to the rectal mucosa may occur (Paran et al 1999), and there is a possible risk of autonomic dysreflexia in susceptible patients (Coggrave 2004). Large volume enemas may also cause electrolyte imbalance, onset of action may be unpredictable and they may cause watery stools and abdominal cramping (Wiesel & Bell 2004). However, when rectal faecal impaction occurs, large volume enemas may be used to help resolve the impaction, but should not be continued in the long term.

Small volume enemas (microenemas), such as docusate enemas (Norgalax) have been reported to be safe and effective (Dunn & Galka 1994), and more effective than either glycerin or bisacodyl suppositories (Amir et al 1998). Sodium citrate and sorbitol microenemas (Micralax) are commonly used but studies of efficacy of suppositories and enemas in this population are lacking. The principle of using the gentlest stimulant that is effective should be followed.

8.37 Oral laxatives

The use of oral laxatives is reported in 60% of SCI individuals (Coggrave et al 2008); however, little research has been conducted to evaluate the efficacy of laxatives in neurogenic bowel management. Commonly used oral laxatives include stimulants (e.g. senna, bisacodyl), softeners (e.g. dioctyl), bulkers (e.g. ispaghula husk) and osmotics (e.g. polyethylene glycol, lactulose). Laxatives aimed at modulating stool form (softeners, bulkers and osmotics) should be taken regularly to maintain a predictable consistency while stimulants (senna, bisacodyl) which prompt increased bowel activity resulting in the movement of stool into the sigmoid colon and rectum should be taken only prior to planned evacuation of stool. Use of oral laxatives is associated with faecal incontinence; they are not essential for all individuals with neurogenic bowel dysfunction and should be used only when individualised assessment indicates that they may be beneficial.

8.4 Adjunctive interventions for neurogenic bowel management

8.41 Gastrocolic reflex

The gastrocolic reflex is a reflexic response to the introduction of food or drink into the stomach, resulting in an increase in muscular activity throughout the gut (Harari 2004) which can result in movement of stool into the rectum ready for evacuation. While the response may be reduced in SCI individuals (Aaronson et al 1985; Glick et al 1984; Menardo et al 1987) it is still regarded as worthy of trial in assisting with management (Walter et al 2003, Harari et al 1997). The individual is advised to take some food or drink 15-30 minutes prior to commencing other bowel management activities; this reflex response is strongest after the first meal of the day.

8.42 Abdominal massage

The use of abdominal massage has been reported by 22-30% of individuals with neurogenic bowel dysfunction (Coggrave et al 2008, Han 1998). Several small studies have suggested that it is beneficial in some patient groups (Albers et al 2006, Richards 1998, Emley 1993) while a study of massage in constipated elderly individuals found no effect (Klauser et al 1992). Recent physiological studies have demonstrated that massage produces a measurable response in the rectum and anus (Coggrave et al 2007a). Massage is applied to the abdomen following the supposed lie of the colon in a clockwise direction; using the back or heel of the hand or a tennis ball or similar, pressure is applied and released firmly but gently in a continuous progression around the abdomen. Lighter stroking movements may also be used, which may trigger somato-visceral reflexes. Massage may be used before and after digital rectal stimulation, insertion of stimulants or digital removal of faeces to aid evacuation (Coggrave 2005).

8.43 Valsalva manoeuvre/straining

This technique results in a rise in intra abdominal pressures and therefore intra rectal pressure. A very short episode of straining at the beginning of bowel evacuation can be considered as part of the normal physiology of defaecation (Pocock and Richards 2006). Patients with cervical and thoracic spinal cord injuries lack control of the abdominal muscles and so are unable to perform this intervention. Patients with lower lesions can strain to assist with evacuation; however straining as the main method of evacuation is associated with a high degree of incontinence, constipation and other difficulties with evacuation (Yim 2001) and should be discouraged. In addition excessive straining can cause severe renal and cardiovascular complications, and may interfere with proper functioning of implanted medical devices such as baclofen pumps. Therefore patients with lower lesions need to be taught to use straining with caution, if at all (Coggrave 2005).

8.5 Non-conservative options

8.51 Trans-anal irrigation (Rectal Irrigation/Anal Irrigation)

Transanal irrigation of the bowel can be defined as a process of facilitating evacuation of faeces from the bowel by passing water (or other liquids) in to the bowel via the anus in a quantity sufficient to reach beyond the rectum. The subsequent evacuation of the fluid also includes the lower bowel faecal contents. A study conducted with 89 spinal cord injured individuals experiencing difficulties with bowel management (Christensen et al 2006) demonstrated a number of positive outcomes from transanal irrigation. The study found that transanal irrigation reduced the incidence of faecal incontinence and constipation, and improved symptom-related quality of life. Transanal Irrigation also reduced the time spent on bowel management, and did not provoke autonomic dysreflexia in any study participant, though this remains a risk. Individuals with neurogenic bowel dysfunction wishing to use the system should be assessed, taught and monitored by health care professionals with appropriate expertise, as, although the risk is very slight, rectal perforation can occur if correct assessment and training of the patient is not undertaken (Norton 2007, Coggrave 2007b).

Individuals who use transanal irrigation need to be able to sit upright over a toilet, shower chair or commode for bowel care and the process can be self administered or administered in part or completely by an appropriately trained carer. It does not rely upon retention of the fluid for effectiveness and the frequency of irrigation and volume of fluid used should be determined for each individual.

Since the launch of Peristeen Anal Irrigation (Coloplast Ltd) on drug tariff in 2007, transanal irrigation has been used successfully by many individuals with spinal cord injury. It may be considered for individuals who experience faecal incontinence, constipation, abdominal pain associated with evacuation, bloating or prolonged duration of bowel evacuation or simply as a choice for the individual regarding their bowel care.

8.52 Antegrade Continence Enema (ACE)

The ACE is a continent catheterisable stoma formed surgically from the appendix or caecum, giving access to the colon for administration of enema or irrigation for bowel management. The ACE procedure may reduce the duration of bowel care and incidence of faecal incontinence (Teichman et al 1998 & 2003, Gerharz et al 1997, Christensen et al 2000, Bruce et al 1999); autonomic dysreflexia was eradicated in one case study (Teichman 1998). While common in children with spina bifida, few ACEs have been reported in adults with neurogenic bowel dysfunction and the failure rate in some studies is high (Gerharz et al 1997). They are seldom seen in clinical practice.

8.53 Percutaneous Endoscopic Colostomy (PEC)

This minimally invasive procedure uses a colonoscope to place a tube into the left colon which is pulled through the walls of the colon and abdomen and attached to the external wall of the abdomen. In adults it is most commonly undertaken to treat recurrent sigmoid volvulus and acute colonic pseudo obstruction but it may also be used to treat faecal incontinence and constipation where other strategies have failed (NICE 2007). However the NICE guidance suggests that PEC may be less effective for constipation and continence issues than for sigmoid volvulus and the procedure may have a high infection rate and should only be used in carefully selected cases (Cowlam et al 2007). The numbers of these procedures undertaken for neurogenic bowel dysfunction is unknown.

8.54 Colostomy

The formation of a colostomy has been seen until recently as a last resort when dealing with neurogenic bowel dysfunction, and even as a failure of rehabilitation services (Randell et al 2001). However, a number of studies have found that the formation of a stoma can greatly improve quality of life for some individuals (e.g. Coggrave et al 2008, Rosito et al 2002). Colostomy can result in a reduction in time spent on bowel management (Coggrave 2008, Stone et al 1990) and an increase in independence in bowel care (Coggrave 2008, Kelly 1999). Despite largely positive outcomes, stomas are not without complications. These include paralytic ileus and bowel obstruction post operatively, peri-stomal hernia, diversion colitis (inflammatory changes in the redundant section of bowel) and skin rashes around the stoma causing problems with collection devices. The discharge of mucous from the remaining defunctioned rectum can also be problematic, necessitating the use of pads or regular digital removal of the mucous (Coggrave 2008, Kelly et al 1999, Branagan 2003). Around 2.4% of SCI individuals have a colostomy formed for bowel management problems (Coggrave et al 2008).

8.55 Sacral Anterior Root Stimulator (SARS)

The SARS has been available for several decades and though usually implanted primarily for bladder management problems after spinal cord injury it has been reported to have a very beneficial effect on bowel management for many individuals (Binnie et al 1991; Creasey et al 2001; Kachourbos & Creasey 2004; Liu et al 2005). The implanted electrodes are placed on the second, third and fourth sacral anterior nerve roots and high voltage, short-lived stimulation is applied several times daily to empty the bladder; the colon is also stimulated simultaneously, resulting in increased colonic activity, reduced constipation and sometimes defaecation during stimulation (Chia 1996). Implantation remains rare; just 7 of more than 1330 respondents to a recent SCI bowel management postal questionnaire reported using a SARS for bowel management (Coggrave et al 2008).

8.56 Sacral Nerve Stimulation (SNS)

SNS, while similar to the SARS, uses lower amplitude, chronic stimulation applied to the sacral plexus (Kenefick and Christiansen 2004) which is interrupted to allow defaecation. Intact sacral nerves are required, and SNS is not effective in individuals with complete spinal cord injury (Jarrett 2004); the benefits of this technique for individuals with neurogenic bowel dysfunction, who have often been excluded from SNS studies, remain to be clarified (Jarrett 2004).

9. Diet and bowel management in spinal cord injury

9.1 Introduction

When considering factors that affect bowel management it is important to consider food and fluid intake. Along with other factors such as medication and exercise, it can strongly affect bowel actions. Faecal weight and consistency is affected by the amount and water-holding capacity of the remaining undigested material that passes into the colon, the amount of bacteria present and colonic transit times. There is a complex interaction in the way different food components affect all these factors. There is a lack of quality research in this area on which to base authoritative advice. Clinical experience and best practice have also been used.

9.2 Aim of dietary assessment and alteration

The aim of assessing and, when necessary, altering dietary food intake is to promote a diet that helps maintain appropriate stool consistency for bowel management whilst maintaining a balanced diet for life.

9.3 Objectives

- Identify dietary factors that may affect transit times and stool consistency
- Advise on appropriate changes to diet to make stools softer or harder as required
- Maintain a nutritionally complete dietary intake

9.4 Dietary factors that may affect stool consistency

Dietary fibre is the main food component that is likely to need altering when adjustment to stool consistency is required. Current guidelines are for an average daily dietary fibre intake of 18g. This should be aimed for but when there are problems with stool consistency there may need to be adjustments to the amount consumed. Information explaining the reasons for the adjustments can be found on Section 9.5. The flow diagrams below explain how these alterations should be made on a practical basis.

Dietary fat may also affect stool consistency – please see Section 9.3.

The use of probiotics is a developing area and as yet there is no published evidence of benefits seen in spinal injuries. Please see Section 9.8 for the evidence currently available.

9.41 Enteral tube feeding

As with patients who are on normal diets, those on enteral tube feeds will be able to tolerate differing levels of fibre contained in enteral feeds. Please see section 9.10 for more detail.

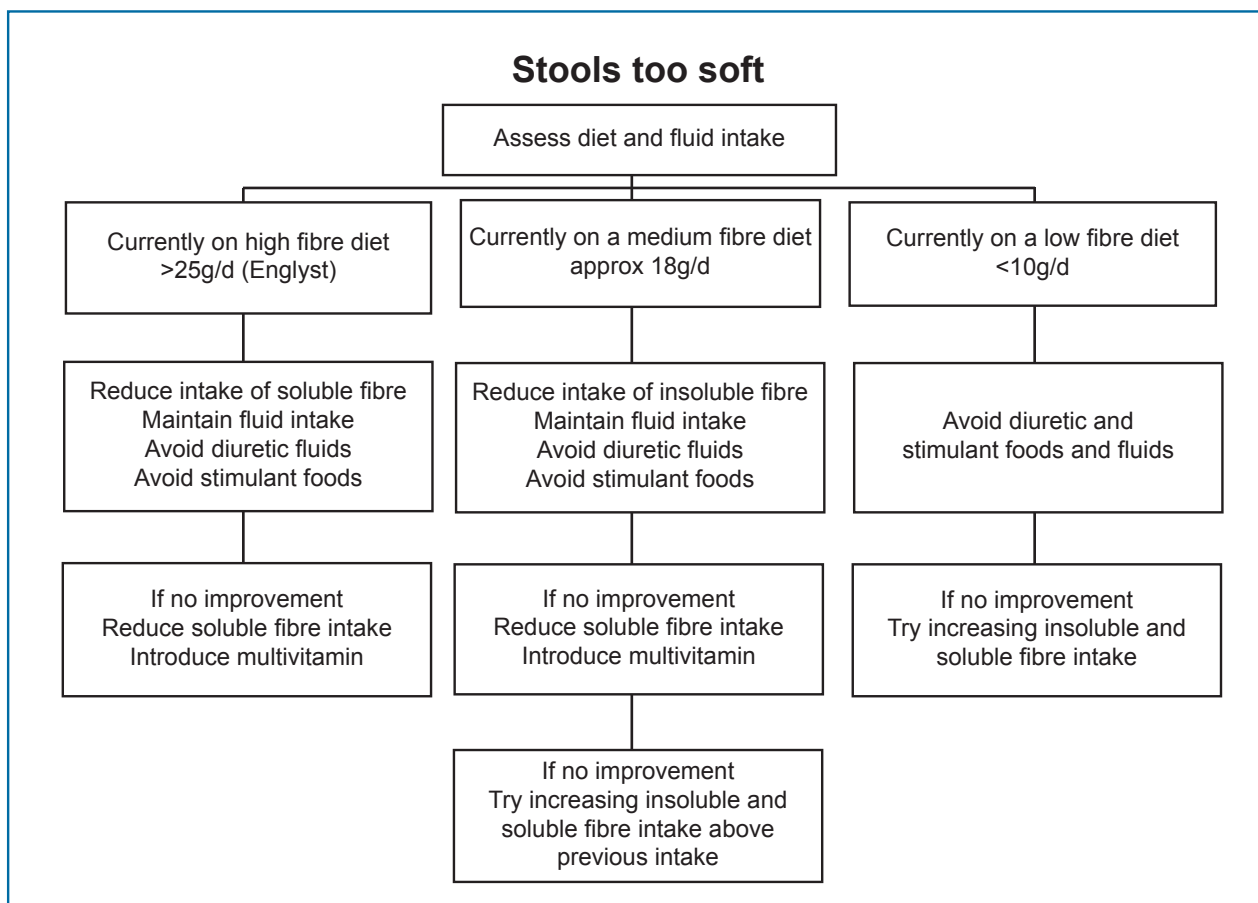
Anecdotal experience among dieticians working in the spinal injuries centres has suggested that it is preferable to start with a feed that does not contain fibre, especially in a newly injured patient,. The quantity of fibre can then be increased as tolerated along similar lines to those who are taking oral diet.

9.42 Fluids

At least 2 litres a day is normally recommended to help form a soft stool. Increasing fibre intake without drinking enough will result in harder stools. This may mean a compromise between an ideal level of fluid intake for the bowel with the ideal intake for the bladder.

9.5 Manipulating diet to alter stool consistency

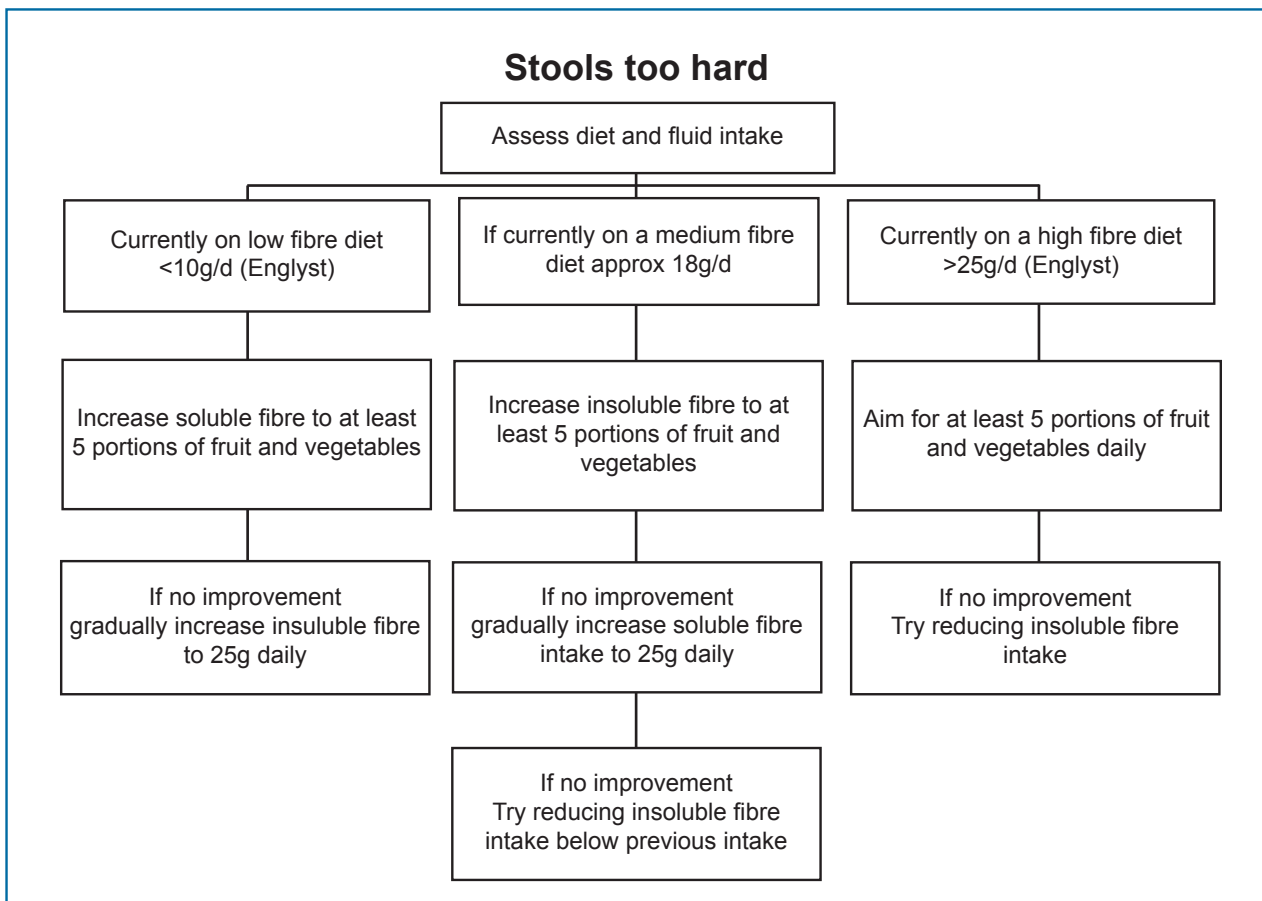
The attached flow diagrams illustrate how adjustments to dietary intake should be made according to the stool consistency required. They are written in the suggested order that changes should be made. Before making any dietary changes it is important to assess current fibre and fluid intake. The assessment tool later in this section can help with calculating this. It is also important to make one change at a time and to continue with that change for at least 1 week, unless major problems arise, before making further changes. Also be aware of any pre-injury diet and bowel related problems for example irritable bowel syndrome and food intolerances.



Englyst is the method of calculating fibre content used in the UK. This gives a figure of about 30% lower than the AOAC method, which is used by the USA and the rest of Europe.

Stools too soft:

- Assess dietary fibre and fluid intake - using the tool provided in this section – 9.11 Fibre intake calculation
- If current fibre intake is high (>25g/d) or medium (approx 18g/d) this should be reduced by initially reducing the insoluble fibre
- Soluble fibre intake should initially be maintained to ensure the recommendations of 5 portions of fruit and vegetables per day are met
- Adequate fluid intake remains important for hydration. High levels of diuretic and stimulant food and fluids should be avoided – please see Section 9.9
- If reducing the insoluble fibre has shown no benefit, then reduce the soluble fibre intake. In this case a multivitamin and mineral supplement would also be used to replace those normally obtained through the fruit and vegetable intake
- If the initial insoluble fibre intake was minimal or reduction of fibre has not been of benefit then steps should be made to increase the levels. This should be done gradually with an adequate fluid intake
- If all these changes make no difference return to normal diet, encourage as balanced a diet as possible
- Consider soluble fibre supplements, which have been shown to reduce incontinence in community-dwelling adults with faecal incontinence (Bliss et al 2001)



Englyst is the method of calculating fibre content used in the UK. This gives a figure of about 30% lower than the AOAC method, which is used by the USA and the rest of Europe.

Stools too hard:

- Assess diet for current food and fluid intake – using assessment provided later in this. Please see Section – 9.11 Fibre intake calculation
- Increase fluid intake with water-based fluids such as water, dilute squash, tea, coffee if intake inadequate
- Encourage at least 5 portions of fruit and vegetables daily
- If insoluble fibre intake is poor (<10g/d) or medium (approx 18g/d) then a gradual increase should be encouraged along with an adequate fluid intake. Usually not beyond 25g of total fibre
- If fibre intake is high (>25g/d) or increasing the insoluble intake has not been beneficial, try reducing the insoluble fibre content gradually
- If all these changes make no difference return to normal diet, encourage as balanced a diet as possible
- Consider using a stool softener

9.6 Dietary fibre

Dietary fibre is the main food component that needs to be considered when assessing diet and bowel management. Dietary fibre is resistant to digestion in the small intestine and is therefore carried through to the large intestine. Fibre can be grouped into two types, soluble and insoluble.

Insoluble fibre normally affects faecal bulking and softening, increasing faecal weight, and decreasing intestinal transit time. Foods that contain this type of fibre are whole-grains such as wheat, maize and rice.

Soluble fibre is associated more with lowering blood cholesterol and blood glucose levels. Foods that contain this type of fibre are oats, fruit and vegetables. In view of the associated health benefits, current guidelines are for 5 portions of fruit and vegetables daily. Each food, however, will contain varying proportions of both soluble and insoluble dietary fibre.

The longer residual, undigested food remains in the colon (slower transit times) the more water will be reabsorbed back into the body resulting in a harder stool. Food products that speed up colonic transit times result in less water being reabsorbed, leading to a softer stool.

There are conflicting studies on what this means for the spinal cord injured individual making it difficult to give definitive advice on what quantity and type of dietary fibre people with spinal cord injury should have to help their bowel management.

In the non-spinal cord injured population insoluble fibre has been shown to speed up colonic transit times. A frequently quoted study (Cameron, 1996) showed this type of fibre slowing down colonic transit times in the spinal cord injured population. The subjects in this study were already taking a high fibre diet and it was increased further with the use of ground bran. This produced a total fibre intake significantly higher than that often achieved in the UK. Ensuring adequate fluid intake when taking this kind of high fibre diet is essential, to prevent faecal impaction.

Another reason for inconsistency seen in research may be due to the different analytical methods used for measuring dietary fibre content of foods. In the UK the Englyst method for calculating fibre content is used. This gives a figure about 30% lower than the AOAC method, which is used by the USA and the rest of Europe.

As insoluble fibre has the greater water-holding capacity, initially adjusting the intake of this would seem appropriate. Keeping soluble fibre intake within current healthy eating recommendations should be initially encouraged. Maintaining this soluble fibre intake, if tolerated, can help provide benefits to cholesterol and blood glucose levels. Foods containing soluble fibre are also associated with foods containing vitamins and minerals that have many other health benefits.

9.7 Fat

Although there has been no published evidence looking at how dietary fat influences bowel management specifically in the spinal cord injured population, there is some evidence that looks at the effect dietary fat has on colonic transit times in the non-spinal cord injured population.

These studies have shown that diets containing high levels of dietary fat can have delayed gastric emptying and slower colonic transit times. This could result in increased water re-absorption in the colon resulting in a drier stool. Diets high in dietary fat are often associated with diets low in dietary fibre, making it difficult to separate the specific effects dietary fibre and fat has on gastrointestinal transit. High fat diets also have a high caloric content, which would not be beneficial to anyone struggling with losing weight.

9.8 Probiotics

Evidence relating to the benefits of probiotics and neurogenic bowel is limited. There is some evidence in the non-spinal cord injured population that the use of probiotics can help in relieving symptoms of antibiotic induced diarrhoea when used during the course of antibiotics. They may also help in restoring colonic flora after antibiotic treatment. Less rigorous studies have shown some benefit in non-specific causes of diarrhoea.

The latest development in probiotics is the use of bacteria to specifically reduce colonic transit times. The benefits of this have yet to be investigated in the spinal cord injured population.

When taking probiotics it is important to make sure that they are not taken with hot food and drinks. This can deactivate the bacteria present reducing their benefit. If trying probiotics then they need to be taken daily for at least 4 weeks. If there is then no improvement in symptoms then they are unlikely to be of any benefit.

Patients with altered immune responses should be cautious about taking products containing live bacteria and, where necessary, this should be discussed with the relevant dietician.

9.9 Diuretic and stimulant foods/fluids

There are some foods and fluids that can over stimulate bowel activity or draw excessive fluid into the colon resulting in very watery stools. These include large quantities of:

- Alcohol

- Caffeine eg. tea, coffee, cola, chocolate

- Prunes and figs

- Pure fruit juice

- Sorbitol containing foods. (Sorbitol is a synthetic sweetener)

9.10 Enteral tube feeds

Following initial SCI it may be necessary to commence enteral feeding to ensure nutritional requirements are met. This should always be carried out with the involvement of the allocated dietitian, as agreed locally.

Development of enteral feeding products has shown that the use of fibre-containing feeds, when it is a mixture of insoluble and soluble fibre, can help in controlling both constipation and diarrhoea. Clinical experience has shown that introducing these feeds following initial injury should be done with caution and close monitoring. Anecdotal experience has shown these high fibre feeds, if used inappropriately, can cause abdominal distension.

Therefore it is more prudent to start the enteral feed by using a feed that does not contain any fibre. Once this is tolerated at the prescribed feeding rate, and following discussion with the relevant dietician it may be appropriate to gradually introduce a fibre-containing feed if it is necessary to help control bowel management. There is again some anecdotal experience that always administering a fibre-containing feed may provide too much fibre for the patient to tolerate. Therefore, a mixture of different feeds should be administered.

As with patients on oral diet, each patient will have their own tolerance of fibre. It is important to discuss adjustment to the enteral feed with the relevant dietician. It is also essential to maintain an adequate fluid intake with sufficient water flushes, as recommended by the dietician.

9.11 Fibre intake calculation

The following chart and information regarding the fibre content of foods may be given to individuals to assess their own fibre intake.

‘How Much Fibre Am I Taking?’

Changing your dietary fibre intake may help resolve constipation or loose stools and reduce the need for laxatives and other bowel medication.

1. Write down below what you ate yesterday
(Add in or remove foods if yesterday was not a typical day's intake)
2. Using the table on the following page work out approximately how much fibre you had

To achieve a high fibre intake increase your fibre intake slowly to 12 to 15 food portions containing 2 gms of fibre each (24-30g) per day.

If you need to reduce your fibre intake then start with the insoluble fibre foods e.g. instead of wholemeal bread take white bread.

Remember you should also drink plenty of fluid to help the fibre work. Check you are having at least 10 cups of fluids (not including alcohol) per day. This is 2 litres or about 3 ½ pints. Keep a record for a day if you are not sure.

Name:.....

Date:.....

	Food Intake	Amount of Fibre
Breakfast		
Mid-morning		
Midday meal		
Mid-afternoon		
Evening meal		
During evening/supper		
	Total Fibre Intake:	

Fibre content table - Each of these portions contains approximately 2g of fibre:

Bread:	Wholemeal	1 small slice
	Brown	1½ slice
	Soft Grain	2 small slices
	White	4 small slices
	Wholemeal roll	½ roll
	White roll	2 rolls
Breakfast Cereals:	All Bran	1 tablespoon
	Branflakes or Muesli	2 tablespoons
	Cornflakes	8 tablespoons
	Porridge	1 ladle
	Shredded Wheat	1 biscuit
Rice and Pasta:	Brown Rice	3 tablespoons (cooked)
	White Rice	5 tablespoons (cooked)
	Wholemeal pasta	2 tablespoons (cooked)
	White pasta	4 tablespoons (cooked)
Miscellaneous:	Wholemeal Scone	1 small
	Plain scone	2 small
Soluble fibre		
Vegetables:	Cabbage, cauliflower	Large serving (4oz/110g)
	Carrots, broccoli, green beans	
	Parsnip, turnip	Med serving (3oz/85g)
	Spinach	Small serving (1oz/28g)
	Sweetcorn	2 tablespoons
	Potato + skin	1 medium (3oz/85g)
	Potato without skin	3 medium (9oz/250g)
Fresh Fruit:	Apple, orange, pear, peach	1 medium
	Banana	1 small
	Grapes	4oz/110g
	Melon	½ melon
	Raspberries	1oz/28g
	Strawberries	6 (3oz/85g)
Dried Fruit:	Apricots	4
	Prunes	4
	Raisins, sultanas	1 tablespoon
Pulses:	Butter, baked or kidney beans	1 tablespoon
	Lentils	2 tablespoons (cooked)
	Peas	3 tablespoons
Nuts:	Peanuts	1oz/28g
	Peanut Butter	2 tablespoons
Miscellaneous:	Fruit cake	2oz/57g (small slice)

10. Glossary of Terms

Anal reflex/wink: Visible reflex contraction of the external anal sphincter in response to pinprick or touch. The presence of the anal reflex indicates a reflex or upper motor neuron (UMN) bowel dysfunction (Zejdlik, 1992, p 400).

Autonomic dysreflexia/hyperreflexia: A syndrome unique to individuals with spinal cord injuries at the 6th thoracic vertebra and above. Autonomic dysreflexia is an abnormal sympathetic nervous system response to a noxious stimulus below the level of injury resulting in rapidly rising blood pressure (Kavchak-Keyes 2000). It is characterized by sudden severe headache secondary to raised blood pressure, which, if untreated, may progress to fatal complications, such as cerebral haemorrhage (Zedlick, 1992, p415). The patient may present with hypertension, bradycardia, pounding headache, profuse sweating and flushing above the level of injury. Acute autonomic dysreflexia is a medical emergency. Any noxious stimulus below the injury can trigger an episode of autonomic dysreflexia but bladder distension is the most common trigger (Adsit and Bishop 1995). Bowel distension is the second most common trigger; impaction, digital rectal stimulation, suppository insertion and enemas have all been reported as triggering autonomic dysreflexia (Colachis 1992). In an acute episode of autonomic dysreflexia, the stimulus for the episode should be identified quickly and corrected immediately; the symptoms will then subside. If this is not possible, sublingual nifedipine or a glycerine trinitrate patch may be given to reduce blood pressure while the cause is explored further.

Bowel care: Activity undertaken to periodically evacuate stool from the rectum and sigmoid colon.

Bowel management: Regular, pre emptive individually developed and prescribed procedure carried out by the patient/nurse/attendant/carer to prevent faecal incontinence and constipation, usually in individuals with neurogenic bowel dysfunction.

Bowel programme: A combination of interventions in a given order conducted to achieve the predictable evacuation of the bowel at a chosen time and frequency with the aim of promoting continence and avoiding constipation and other secondary complications of the neurogenic bowel (Bedbrook 1981; Han et al 1998; Stiens et al 1997; Zejdlik 1992).

Bulboanal reflex: A reflex stimulated by squeezing the glans penis or clitoris. It results in a palpable and visible contraction of the anal sphincter (Zejdlik, 1992, p 400). A positive bulboanal reflex indicates that the reflex pathways between the bowel and sacral cord are intact. If present, it indicates reflex or upper motor neuron (UMN) bowel dysfunction.

Conus medullaris: The conical end of the spinal cord at the level of the lower end of the first lumbar vertebra.

Haemorrhoids: Vascular swellings which may involve the internal or external venous plexuses of the anal canal and may be associated with redundancy of the mucosa and/or perineal skin (skin tags).

Classification of haemorrhoids:

Grade 1 – bulge but maintain the position relative to the dentate line

Grade 2 – protrude past the dentate line on defaecation but return to normal position following defaecation

Grade 3 – require manual replacement back into position following defaecation

Grade 4 – protrude with any rise in intra-abdominal pressure and cannot be manually reduced. They have an increased likelihood of becoming thrombosed and excoriated and are prone to haemorrhage

Constipation with overflow: (overflow diarrhoea, spurious diarrhoea). When hard constipated stool accumulates in the bowel and reduces throughput, liquid stool from higher in the bowel may flow around the hard stool and leak from the bowel. Where results from recent bowel management episodes have been constipated or absent and leakage of thin diarrhoea then occurs, overflow diarrhoea should be suspected.

Diarrhoea: Frequent (more than 3 times a day) passage of watery stool (Zedlick, 1992, p 413).

Faecal impaction: Progressive accumulation of faeces which forms a mass of hard stool, blocking the bowel (Zejdlik, 1992, p 411).

Manual evacuation: alternative term for digital removal of stool.

Rectocolic reflex: This is a pelvic nerve mediated pathway that produces propulsive colonic peristalsis in response to pharmacological (suppositories) or mechanical (digital) stimulation of the rectum and anal canal.

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12. Spinal cord injury centres in the United Kingdom and Ireland

Belfast Spinal Cord Injuries Unit

Musgrave Park Hospital, Stockman's Lane, Balmoral, Belfast BT9 7JB

T: 0289 066 9501

www.belfasttrust.hscni.net

info@belfasttrust.hscni.net

The Duke of Cornwall Spinal Treatment Centre

Salisbury District Hospital, Odstock Road, Salisbury, SP2 8BJ

T: 01722 429291

www.spinalinjurycentre.org.uk

The International Spinal Injuries & Rehabilitation Centre

Royal Buckinghamshire Hospital, Buckingham Road, Aylesbury, Buckinghamshire HP19 3AB
(private healthcare facility)

T: 01296 678800

www.royalbucks.co.uk

Golden Jubilee Spinal Injuries Centre

James Cook University Hospital, Marton Road, Middlesbrough TS4 3BW

Reception: T: 01642 283644

Acute Ward: T: 01642 282641

Rehabilitation Ward: T: 01642 282645

www.southtees.nhs.uk/live

The London Spinal Injuries Centre

Royal National Orthopaedic Hospital, Brockley Hill, Stanmore HA7 4LP

T: 020 8954 2300

www.rnoh.nhs.uk

The Midland Centre for Spinal Injuries

The Robert Jones & Agnes Hunt Orthopaedic Hospital, Oswestry, Shropshire, SY10 7AG

Reception: T: 01691 404655

Liaison staff: T: 01691 404109/404655

www.rjah.nhs.uk

National Rehabilitation Hospital

Rochestown Avenue, Dun Laoghaire, Dublin, Eire SB 30

T: 00 353 2355214

T: 00 353 2355000 bleep 8017

www.nrh.ie

The National Spinal Injuries Centre, Stoke Mandeville Hospital

Mandeville Road, Aylesbury, Bucks HP21 8AL

T: 01296 315818

www.spinal.org.uk

Princess Royal Spinal Injuries and Neurorehabilitation Centre

Northern General Hospital, Osborne Building, Herries Road, Sheffield S5 7AU

Reception: T: 0114 2715644

Acute Ward: T: 0114 2715608

Rehabilitation ward 0114 2715636

www.sth.nhs.uk (then search for Northern General Hospital)

Queen Elizabeth Spinal Injuries Centre

Southern General Hospital, 1345 Govan Road, Glasgow G51 4TF

T: 0141 201 2555

www.spinalunit.scot.nhs.uk

Email: spinalunit@sgh.scot.nhs.uk

Welsh Spinal Injuries and Neurological Rehabilitation Centre

Rookwood Hospital, Fairwater Road, Llandaff, Cardiff CF5 2YN

Reception: T: 029 2041 5415

www.cardiffandvale.wales.nhs.uk

The Regional Spinal Injuries Centre

Southport and Formby General Hospital, Town Lane, Kew, Southport PR8 6NJ

T: 01704 547471

www.southportandormskirk.nhs.uk/spinal.asp

Yorkshire Regional Spinal Centre

Pinderfields General Hospital, Aberford Road, Wakefield WF1 4DG

Reception: T: 01924 201688

Medical Secretary: T: 01924 212273

Liaison staff: T: 01924 212056

www.midyorks.nhs.uk

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