

Care Pathway

The role of the health care professional in the management of spasticity

Multiple
Sclerosis
Trust

MS

Liz Keenan
Specialist nurse spasticity

Val Stevenson
Consultant neurologist

Louise Jarrett
Specialist nurse neuroscience

Spasticity

Spasticity is a common symptom of neurological disease and may be experienced by people with multiple sclerosis, cerebral palsy, stroke, hereditary spastic paraparesis, brain and spinal cord injuries.

What is spasticity? Spasticity has been defined as

*'the velocity dependant increase in resistance of a passively stretched muscle... often this is associated with a sudden melting of resistance.'*¹

In simple terms spasticity can be described as **stiff muscles that resist passive movement**. It is one component of the upper motor neurone syndrome, which occurs as a result of acquired damage to any part of the central nervous system². As well as this involvement of nerves, spasticity can be made worse by changes to muscle and other soft tissues caused by immobility and disuse. The upper motor neurone syndrome has a range of symptoms including spasms, clonus, increased reflexes, weakness, fatigue and loss of dexterity². Most people present with a combination of these features. The term 'spasticity' is often used by health care professionals to describe an individual's presentation of a range of these symptoms.

Consequences of the upper motor neurone syndrome

These include³:

- Restricted movement
- Excessive or inappropriate movement
- Pain

Upper motor neurone syndrome can affect function for the person, impacting on physical activities such as walking, transferring, washing, dressing and sexual activity. It can also have an emotional impact on for example, mood, self-image and motivation. Safety in sitting and lying can also be compromised due to spasms or persistent poor positioning.

Symptoms of the upper motor neurone syndrome are not always detrimental and they may even be positive in improving vascular flow, maintaining muscle bulk, assisting in transfers and even walking³. Therefore the **treatment of spasticity needs to be carefully selected and reviewed over time in order to maintain function**.

Management and treatment of spasticity

The degree of spasticity and spasms can vary from person to person, day to day, hour to hour and can impact on many activities. Nevertheless, spasticity can be successfully managed. Education of and commitment by the person with spasticity, multidisciplinary teamwork and the appropriate timing and use of various drug treatments can maximise management.

What can health care professionals do?

Nurses and therapists can play a key role in educating and supporting people in managing their own spasticity. Often the nurse is the main point of contact for people with spasticity. The following strategies, summarised in the management algorithm (Figure 1), can form the basis of good practice and health education^{4,5}.

1

Prevention of sensory stimuli

Preventing sensory stimuli can minimise spasticity and spasms.

- **Optimising bladder and bowel management:**
Any change, such as urinary retention or infection, constipation or diarrhoea, can trigger an increase in spasms. Resolving these issues is important before considering changing other aspects of spasticity management such as drug regimes.
- **Maintaining skin integrity:**
Preventing skin irritation, breakdown, infection and pressure sores minimises the risk of triggering spasticity.
- **Maximising hygiene:**
Good hygiene not only promotes healthy skin but also identifies other spasticity trigger factors such as ingrown toenails, deep vein thrombosis (DVT) or tight fitting clothes or orthoses⁴.

These procedures are paramount in the management of spasticity irrespective of other treatment options used⁶.

2

The importance of posture

Posture in standing, lying and sitting is crucial in managing a person's spasticity, and for preventing pain, soft tissue shortening and skin breakdown³.

Correct positioning cannot be underestimated in reducing an individual's spasticity and pain. Further, it can improve comfort and prevent secondary tissue changes such as skin breakdown⁷. Over time an individual's posture and positioning needs are likely to change, especially if their spasticity persists, and a physiotherapist or occupational therapist may be helpful in reviewing posture both in lying and sitting positions.

3

Moving and handling

People who have severe spasms can be complex to move and to handle and can pose a threat not only to their own safety but also to that of their carers.

Simple strategies can be useful, for instance

- Getting a person up in the morning after a long period of lying predominantly in extension can be one of the most difficult times. Winding a hospital bed up so that the person is sitting in flexion can help break the extensor pattern. In the community electronic pillow raisers can be used for the same purpose. Further positioning at night can be key to minimising spasticity in the morning. The use of T-rolls or pillows can help to minimise adductor spasticity and wedges can help reduce extensor spasms (Figure 2). Hygiene maintenance can then become easier.
- If in doubt about the safety of moving a person, available equipment, such as a hoist, should be used. However, rather than using the hoist straight from a lying position, it is safer to put the individual in a more flexed position (described above) and allow the spasms to settle before starting the manoeuvre from the bed. (Figure 2).
- Encouraging individuals to incorporate into their daily routines stretching and standing programmes outlined by a physiotherapist can help to manage spasticity and improve the ease of movement throughout the day.
- If an individual is carrying out independent transfers or requires slight assistance, such as use of a sliding board, to promote safety and minimise triggering spasms during the transfer the individual may find the following helpful:
 - keep feet flat on the floor and pass as much weight through them as possible.

- keep the trunk flexed if extensor spasms dominate
- maintain an upright posture if flexor spasms dominate⁸.

4

Drug education

A key role of the nurse is to assess whether the individual is maximising the use of drugs to ease care and function. A detailed assessment of their daily routine to find out when drugs are taken and how this impacts on function can be beneficial. For example, taking drugs 20-30 minutes before getting up in the morning may help ease transfers, washing and dressing. However if extensor spasms are used to transfer, it may be advisable to delay taking drugs until after the transfer from bed⁶.

5

Pain

Pain can be associated with spasticity, spasms and/or be a result of poor positioning. The pain associated with spasticity and spasms can be very difficult to treat; it is often described as a deep, gnawing, constant pain. Anti-spasticity drugs can be helpful. Repositioning, physiotherapy and readjustment of seating systems can help to relieve discomfort from malalignment. The nurse can often play a key role in helping individuals assess the effectiveness of treatments and in relaying this back to other members of the multidisciplinary team.

6

Sexual dysfunction

The extent of an individual's spasticity and spasms may mean that they are unable to physically fulfil their sexual needs. Many couples adapt their sexual activities around their physical constraints. However it may be that a specialist counsellor is required and nursing assessments may be key in identifying this need^{9,10}.

7

Emotional issues and depression

Acute or prolonged episodes of stress and emotional disturbance can have an adverse effect on an individual's spasticity. Spasticity can affect how an individual perceives themselves and how they feel others view them, causing low mood, frustration and depression leading to poor body image. The impact of disability on family, friends, and work colleagues can also be immense. Nurses are in a unique position to assess the impact of these factors and to refer to other professionals and organisations if appropriate, such as counsellors or psychiatrists¹¹.

8

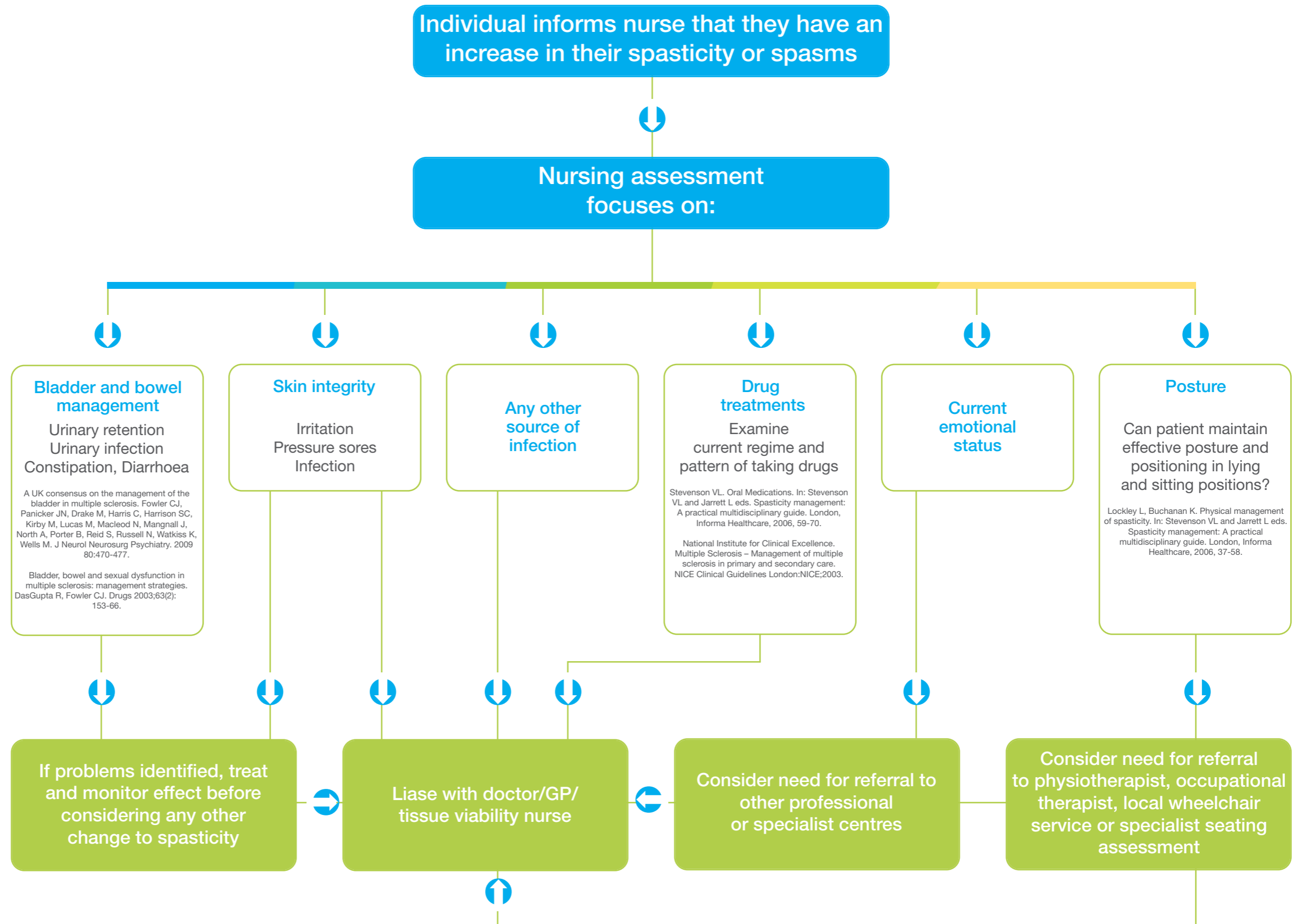
Impact on role, employment and social activities

The impact of spasticity can be far-reaching on an individual's lifestyle and that of family and carers. Family roles can be challenged if caring issues become dominant and loss of employment can lead to socio-economic problems. Health care professionals can provide vital support to individuals and signpost them appropriately towards other professionals and organisations for information and support.

The management of spasticity can be a rewarding challenge for health care professionals in both hospital and community settings. Tailoring treatment strategies to suit an individual requires detailed ongoing liaison between the person with spasticity, carers and their treating teams.

It can be difficult to establish why a patient may experience a sudden increase in spasticity but it is always worth determining if anything is triggering it like bladder infection or constipation. For instance, it took a couple of phone calls with a patient who felt he needed to increase his baclofen to find that the increase in his flexor spasms was being caused by a blister from his new trainers. Subsequent healing of the blister stopped his spasms without needing any other changes to his spasticity management.

Figure 1. Algorithm: Managing an increase in spasticity



Potential spasticity treatments

Physiotherapy

Physiotherapists can carry out specific treatments to assist an individual to manage their spasticity and can also recommend appropriate stretching, splinting and standing programmes³.

Occupational therapy

Occupational therapists can play a key role in assessing and recommending appropriate adaptations to an individual's environment, appropriate seating systems being of particular importance.

Doctors

Doctors have a key role in assessing, prescribing and evaluating the use of antispasticity drugs. In conjunction with other members of the team they can advise on the appropriate timing and selection of more invasive treatments⁶.

Rehabilitation

Inpatient rehabilitation may be appropriate to provide a more thorough assessment of an individual's spasticity throughout a 24 hour period and allow a more detailed management programme to be developed.

Oral medication

Baclofen

Acts on the central nervous system and is the most commonly used antispasticity drug. To avoid side effects it needs to be started at low doses, slowly increased and maintained at a dose that does not cause undue side effects. The effect of an oral baclofen dose can last between 4-6 hours so doses need to be taken regularly to ensure adequate control of symptoms. Side effects can include weakness, drowsiness and dizziness.

Tizanidine

Also works on the central nervous system and needs to be introduced slowly to avoid side effects. It is claimed that tizanidine does not increase muscle weakness as much as baclofen but this varies from individual to individual. Regular blood tests need to be completed to ensure there is no adverse effect on liver function. Other side effects can include dizziness (postural hypotension), drowsiness and dry mouth.

Diazepam / Clonazepam

These can be used on their own or in combination with other drugs. If spasms are particularly troublesome at night they can be useful prior to sleep. Side effects can include drowsiness and dizziness.

Dantrolene

Is the only antispasticity drug that works directly on the muscles. It can be used in combination with other drugs. Often it is not well tolerated and can cause nausea, vomiting, diarrhoea and weakness. Regular blood tests need to be completed to check for any adverse effect on liver function.

Gabapentin

An anti epileptic drug has also been found to be useful in reducing spasticity and associated pain. Side effects can include drowsiness, dizziness and fatigue.

Cannabinoids

Several studies have shown a small benefit or trend in reducing spasticity with a combination of the cannabis extracts delta-9-tetrahydrocannabinol (THC) and cannabidiol (CBD). Generally the treatment was well tolerated however all of the studies reported some side effects, mostly the psychotropic effects of cannabis, which seemed to be dose related¹². Delta-9-tetrahydrocannabinol (THC) and cannabidiol (CBD) (Sativex®) is an oromucosal spray containing a 50:50 combination of cannabis extracts THC and CBD. It has been used as add-on therapy in MS patients, previously identified as Sativex responders, who have not had adequate symptom relief with their existing anti-spasticity therapy. As of May 2010, a licence decision is awaited in the UK.

Intramuscular

Botulinum toxin

This is a toxin which when injected into muscles causes them to become weak. It can take 14 days for the full effect to occur and must be used in conjunction with therapy. Often the injections can allow the individual and therapists to work with the muscle more effectively to minimise the effects of the spasticity, but this does not always lead to functional change^{13,14}.

Intrathecal

Baclofen

Baclofen delivered directly into the spinal fluid acts by binding to gamma aminobutyric acid (GABA) receptors, thus reducing spasticity, spasms, clonus and pain. A concentration of GABA receptors is situated in the intrathecal space of the spinal cord. Delivering baclofen intrathecally accentuates its antispasticity effect while minimising the troublesome systemic side effects associated with oral intake. An implanted pump can deliver baclofen directly to this area and can be used to treat generalised lower limb spasticity^{15,16}. It requires commitment from the individual during a trial implant phase and for ongoing maintenance of regular reservoir refills and pump replacements.

Phenol

Phenol can be injected into the intrathecal space where it destroys nerves and thus reduces lower limb spasticity. Repeat injections can be required. Negative effects on lower limb sensation, sexual function, bladder and bowel management can occur and may be permanent. Selection criteria include that effective management strategies for bladder and bowel management are in place, such as urinary catheter or regular use of suppositories^{16,17}.

Surgical options

Myelotomy (severing of tracts in the spinal cord), which is rarely used, or microDREZotomy (incisions within the dorsal root entry zone) may be considered in intractable cases, though this is more commonly used in children with cerebral palsy^{18,19}. Occasionally orthopaedic procedures such as tenotomies can be used to treat fixed contractures; it is essential that care is taken to establish clear functional goals of treatment.

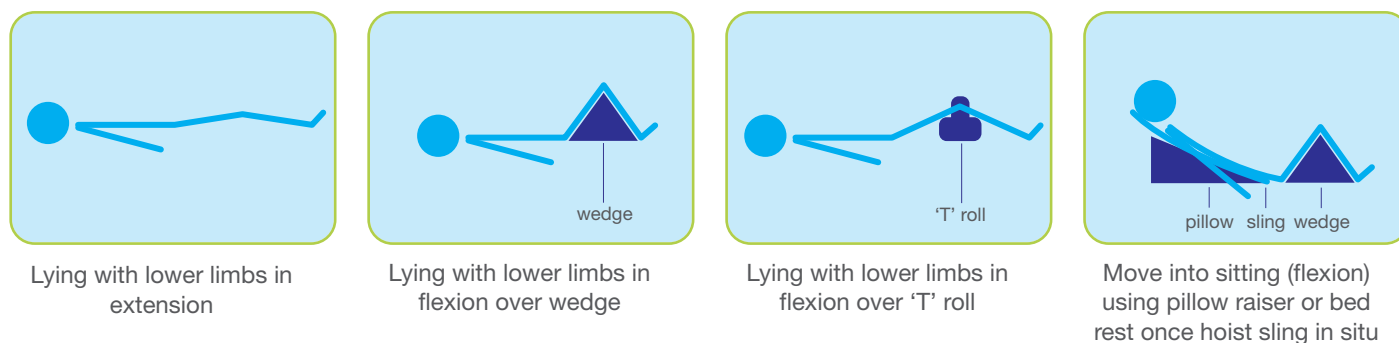
Alternative therapies

Some individuals with spasticity report that alternative therapies such as acupuncture can help relieve symptoms.

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Figure 2.



Glossary

Flexor spasms:	The limb bends upwards towards the body.
Extensor spasms:	The limb shoots straight out away from the body.
Adductor spasms:	The limb pulls inwards towards the body.
Clonus:	A repetitive movement often described as a constant tapping of the ball of the foot on a wheelchair footplate.
Contracture:	When muscles become shortened and fix a limb in one position.
Orthosis:	An appliance / device worn to help keep limbs in alignment.

Useful telephone numbers:

- MS Trust: 01462 476 700
- Stroke Association Helpline: 0303 303 3100
- SCOPE (Cerebral Palsy) Helpline: 0808 800 3333
- British Brain and Spine Foundation Helpline: 0800 808 1000
- The Bladder and Bowel Foundation Helpline: 0845 345 0165

Useful resources

- National Service Framework for long term conditions (2005)
- Multiple Sclerosis – Management of multiple sclerosis in primary and secondary care. NICE Clinical Guidelines 8 (2003).

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Multiple Sclerosis Trust
 Spirella Building, Bridge Road
 Letchworth Garden City
 Hertfordshire SG6 4ET

T 01462 476700
E info@mstrust.org.uk
www.mstrust.org.uk

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