

## Introduction

85,000 people in the UK are estimated to have multiple sclerosis (MS), a chronic neurological disorder, sometimes benign, frequently remitting, but often progressive with gradually increasing disability. Although a cause of varying degrees of disability and distress, for most, MS does not have a significant effect on lifespan. Between 3 and 7 people per 100,000 are diagnosed per year. Although it was first described in the 1860s by a French neurologist named Jean Martin Charcot, for virtually a century little research was carried out into the condition. Whilst the cause of MS is unproven and a cure is elusive, much can be done to manage symptoms and, with the advent of disease modifying drugs, it is believed that incremental disability can be significantly slowed.

Good management of MS is a huge challenge to health and social care professionals because the disease course is unpredictable, symptoms endlessly variable and the psychosocial effects can have as heavy an impact as physical symptoms. People continually have to readapt to changes in their condition and live with the uncertainty that multiple sclerosis brings. For this reason, it is essential that a holistic and multidisciplinary approach is adopted, one in which the person with MS and their family are partners in any management programme.

## Prevalence

MS is the most common condition of the central nervous system (CNS) affecting people between the age of 20 and 40, with women diagnosed outnumbering men in a ratio of about 3:1<sup>1</sup>. Though MS can be diagnosed in children as young as five and in people over 65, this is unusual.

It is possible to identify regions of low, medium and high prevalence of MS. It is commonest in temperate countries (50- 120/100,000) decreasing with proximity to the equator (<5/100,000)<sup>2</sup>. In the UK, prevalence is approximately 100 – 120 per 100,000<sup>3</sup>. This figure is higher still in Scotland, especially Shetland and Orkney, where the highest known prevalence has been recorded<sup>4</sup>.

## Cause

The cause of MS is unproven, but evidence increasingly suggests that it is the result of an interplay between as yet unknown environmental factors (possibly viral agents) and genetic susceptibility. This results in triggering the engagement of the immune system to produce an autoimmune response by the body upon its own myelin.

In the healthy state, our bodies are protected from invasion or viral attack by a complex system of defences. In MS the myelin sheath around the nerve cells is attacked as though it were a foreign threat, the nerves become demyelinated, axons may be destroyed and may not function as they should.

There is almost certainly a genetic component though MS is not hereditary in the conventional sense. Families who already have a member with MS have a greater risk of developing the condition than families where no one has MS. If a parent has MS, the risk for their children is 15-20 times greater than that of the general population though the risk is still relatively low. So far there is no research that has shown conclusively what the hereditary process could be, though there is ongoing work in this area<sup>5</sup>.

The most common, but still speculative, explanation is that some environmental agent (probably infective) gains access to the genetically susceptible person before puberty. Evidence supporting this theory is that an individual living in the tropics is unlikely to develop MS but if that person moves to a temperate environment before the age of puberty they then take on the risk of that area.

# Multiple Sclerosis: an overview

## Neurophysiology

Myelin is a fatty substance, which coats the nerve axon and has an insulating effect enabling electrical impulses to move faster from the brain to the rest of the body and back again. People with MS have areas of damaged myelin that results in a disturbed transfer of information along the axons. In MS, the myelin sheath can be changed in two ways: the myelin itself may be damaged or there are patches of inflammation in the myelin. If the inflammation covers a wide area it can leave a scar (sclerosis) in the CNS, also referred to as a lesion. These lesions can appear in many sites throughout the CNS - hence 'multiple'.

There is also an increasing body of evidence that the axons themselves become damaged and that axonal loss is a cause of impairment. Once lost an axon can never regenerate and this is thought to account for the progressive disability which is often part of the condition. Axonal loss is now believed to occur much earlier in the disease process than was once thought.

MS can affect any part of the CNS and can potentially affect movement and muscle activity at several different sites, giving rise to a variety of physical and sometimes cognitive symptoms, in addition to the psychosocial problems that can also result.

### Onset

Onset of MS rarely occurs before puberty and is usually in early adult life. The incidence of onset rises during the 20s, reaching its peak in the late 20s and early 30s. The onset of the disease is often monosymptomatic, with evidence of a single lesion of the CNS in 45% of cases. However, there may be symptoms indicating multiple lesions from onset. Initial symptoms are, most commonly, visual disturbances, including pain in and around the eyes, blurred or double vision, and sensory problems that take the form of 'pins and needles' in the hands and feet. Symptoms vary enormously, not only from one person to another, but also in the same person from one time of day to another.

### Diagnosis

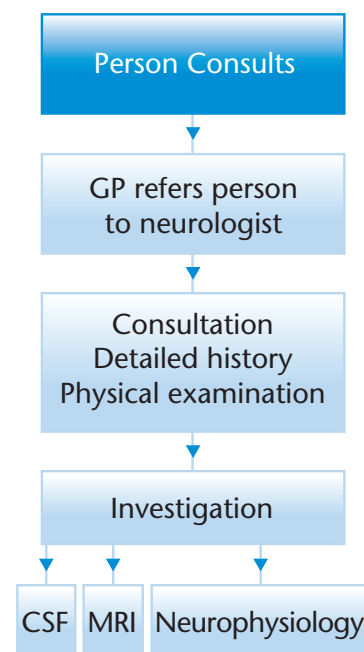
MS is difficult to diagnose since there is no single test, or clinical feature which is exclusive to the condition, and so other possible causes must be eliminated. A diagnosis of definite MS is based upon objective evidence of lesions separated in time and space, ie relapsing and remitting symptoms affecting at least two separate areas of the brain or spinal cord. Confirmation of the condition can therefore take some time.

There are established criteria that have to be met to positively identify MS. These are known as the 'McDonald Criteria' and are relevant in diagnosis of both relapsing remitting and primary progressive MS<sup>6</sup>. Revision of these criteria in 2005<sup>7</sup> allows for earlier diagnosis of MS without any loss of accuracy. This facilitates earlier use of disease modifying drugs that may have an impact on later accumulation of

disability for people experiencing relapses.

NICE guidance<sup>8</sup> states that the individual should be involved in the diagnostic process and should be informed as soon as a diagnosis of MS is considered reasonably likely. In a study of patient satisfaction and timing of diagnosis patients themselves preferred early diagnosis<sup>9</sup>.

The typical diagnostic process is shown below:



A critical element in the diagnostic process recognised by NICE is around information giving. The healthcare professional should find out how much and what information the individual wants to receive. Explanations of diagnostic tests should be given. The importance of patient information in the management of MS is further highlighted in the recommendation that:

‘People with MS should be enabled to play an active part in making informed decisions in all aspects of their MS healthcare by being given relevant and accurate information about each choice and decision’.

Appendix E of the Guideline details principles of good communication. Research into the information needs of people who have MS also makes recommendations about how information should be delivered<sup>10</sup>.

## Clinical evidence

A thorough physical examination of the current function of the nervous system is made. Specifically, signs of weakness or stiffness in the limbs and areas of abnormal/reduced sensitivity on the body surface will be looked for. Evidence of current or previous damage in the optic nerve is important (and can be detected through an ophthalmoscope) as this is a common site of lesions in MS. However, it is becoming less common to make a certain diagnosis of MS on clinical evidence alone, since in many cases such evidence is subjective.

## Diagnostic tests

There are three major investigations, all or some of which may be carried out when MS is suspected though none are 100% conclusive without supporting clinical evidence.

- ▶ Magnetic resonance imaging
- ▶ Neurophysiological tests
- ▶ Examination of CSF (Cerebrospinal Fluid)

## Magnetic resonance imaging (MRI)

MRI is the most sensitive investigation, superseding previous scanning methods due to its superior resolution and ability to highlight areas of active and non-active demyelination. MRI uses the magnetic properties of hydrogen atoms in the body to create cross-sectional images. Unlike CT scans which measure density in body tissues, MRI measures water content in different parts of the brain. The water content in an area of demyelination is very different from that in the surrounding areas. The use of an enhancing agent, such as gadolinium, will show whether a lesion is active or not. In active inflammatory lesions the blood-brain barrier is disrupted and the gadolinium leaks into the surrounding brain tissue and can be detected on the MRI image.

Further developments in this area include magnetic resonance spectroscopy and magnetisation transfer imaging. However, there are still problems in establishing a correlation between the lesions as revealed by MRI and the clinical presentation.

### Neurologists use MRI for the following purposes:

- ▶ To observe abnormalities that are suggestive of multiple sclerosis
- ▶ To rule out alternative diagnoses such as tumours or stroke
- ▶ To help in the evaluation of patients who have subjective complaints but few objective signs of abnormality
- ▶ As a surrogate marker for disease activity in clinical trials

## Neurophysiological tests

These relatively simple, non-invasive investigations are carried out on vision, hearing or sensation to look specifically for delay in the conduction of nerve impulses to and from the brain.

The most common test is the visual evoked potential (VEP). Visual tests involve watching a television screen that has alternating black and white squares. An electrode is placed over the visual cortex and a computer analyses the received visual signal from the television set. The length of time it takes for the signal to leave the television set and reach the visual cortex is known and thus a delay in the signal transmission can be identified. Such a delay may be indicative of damage due to an MS lesion.

## CSF examination

Examination of the cerebrospinal fluid (CSF) used to be an important diagnostic aid but the increased use of MRI has reduced the need for this invasive procedure. Fluid is drawn off the spinal cord by means of a lumbar puncture. NICE guidance states that this should only be used when the situation is clinically uncertain; however it is still of importance in the diagnosis of primary progressive MS.

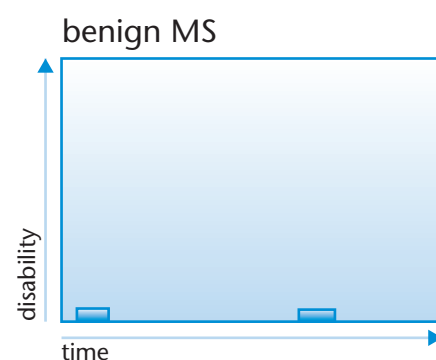
The sample of CSF is analysed by electrophoresis for its protein level and leucocyte count. Approximately 80% of people with MS have an elevated IgG index or oligoclonal immunoglobulin bands present in the spinal fluid but not in the serum, indicating inflammation and immunological disturbance.

# Multiple Sclerosis: an overview

## Types of MS

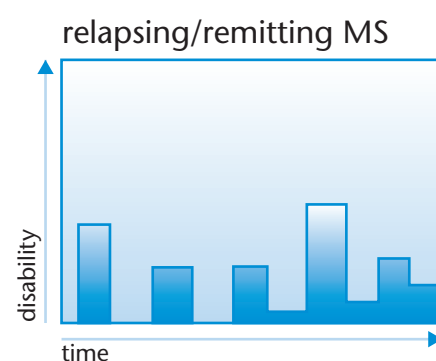
### ▶ Benign

About 10% of people diagnosed with MS experience only a few relapses with little or no residual disability. If this pattern continues over a period of 15 years or more they are said to have the benign form of MS though clearly this classification can only be made retrospectively.



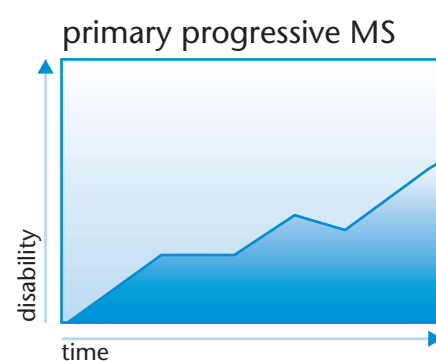
### ▶ Relapsing/Remitting

In about two thirds of people diagnosed, MS takes the form of a series of relapses or attacks, interspersed with periods of remission. On average, a relapse occurs approximately once or twice every two years. Length of relapse may range from 24 hours to a period of weeks or months. While in a period of remission, symptoms, which may have been disabling during relapse, can virtually disappear. A remission can last for months or decades. In some cases, there is some residual damage after a relapse leading to an incremental disability.



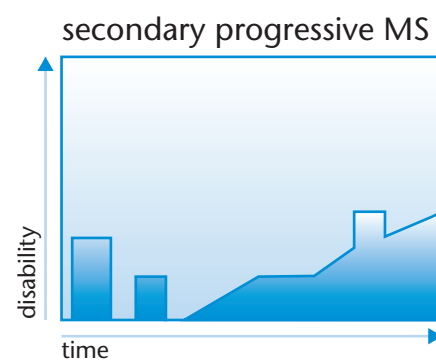
### ▶ Primary progressive

About 10% of people have a chronic condition from onset in which symptoms gradually worsen over a period of years, with neither relapse nor remission.



### ▶ Secondary progressive

About 75% of people whose disease pattern begins with relapsing and remitting symptoms later develop secondary progressive MS (50% of those with relapsing remitting MS develop secondary progressive MS in the first 10 years following diagnosis). In some cases, people with secondary progressive MS continue to experience relapses.



Adapted from Lubin FD<sup>15</sup>

## Clinical Measures

Measurement of a condition as variable as MS is notoriously difficult but the need for evidence-based decisions has highlighted the importance of the development of adequate measures<sup>11</sup>. For any measure to be acceptable it must be reliable, reproducible and valid. Reliability concerns the extent to which scores produced by a scale are free from measurement error and able to be reproduced, whilst validity concerns the extent to which an instrument is measuring what was intended. In the field of health another parameter is also necessary: whether the measure can detect clinical change in the attribute being measured even if the change is small. This property is termed responsiveness.

### Clinically useful scales therefore:

- ▶ reflect the extent of the disease process
- ▶ are multi-dimensional to reflect the main ways in which the disease affects an individual
- ▶ are scientifically sound
- ▶ are capable of reflecting change over time.

A further consideration is also necessary. Are the aspects of life considered important by the person with MS the same as those which the clinician considers important? There is increasing recognition that these two viewpoints can be quite different and thus the choice of measurement should be given careful consideration depending on the requirement of the outcome<sup>12</sup>. NICE made no recommendation regarding outcome measures, recognising the need for careful choice of measures to reflect change in different situations and from different perspectives.

### Scales to monitor impairment:

- ▶ The most frequently used scale for the assessment of MS has been Kurtzke's Expanded Disability Status Scale (EDSS). This is an observer-rated scale, usually performed by a neurologist. It addresses impairment in its lower levels and mobility in its higher levels. It is of limited reliability and poor responsiveness with a bias towards physical (especially ambulatory) rather than cognitive effects. It is not a linear scale and people with MS spend more time at some levels on the scale than others. Despite its limitations this is the most widely used impairment assessment scale in

MS particularly in clinical trials.

- ▶ The Scripps Neurological Rating Scale is based on the standard neurological examination with an extra category for bladder, bowel and sexual dysfunction. Correlation between the Scripps scale and EDSS is not good and further psychometric evaluation is necessary.

### Scales to monitor a person's need for care:

- ▶ The Extended Barthel Index is well-established, monitoring ten areas of activities of daily living: bowel, bladder, grooming, toilet use, feeding, transfer, mobility, dressing, stairs, and bathing on 0-3 point scales. It does not however include cognition or communication.
- ▶ The Functional Independence Measure (FIM) is more detailed than the Barthel scale in that it includes an assessment of communication and social cognition and uses 1-7 point rating scales.

# Multiple Sclerosis: an overview

## Health Status Scales:

All the scales listed in this section are questionnaires and would be completed by the person with MS following an introduction from a health professional.

- ▶ The Multiple Sclerosis Impact Scale (MSIS-29) measures 20 physical and 9 psychological items assessing how much impact they have on life from the patient's perspective. This combines both quality of life issues and psychometric testing.
- ▶ The Medical Outcome Study Short Form 36 Health Survey (SF36) measures the health status in eight dimensions including physical function, pain, general health, vitality, and social functioning. This scale is widely used but because it is not MS specific, its usefulness can be limited. However this can compare the impact of MS with other conditions.
- ▶ The MS Quality of Life Instrument (MSQOL 54) is a variant of the SF36 with an additional 18 items that are specific to MS.
- ▶ MS Quality of Life Inventory (MSQLI) is composed of SF36 plus pre-existing established symptom related scales, this allows comparisons of specific symptoms across subject samples and with other illness groups.
- ▶ The Functional Assessment of Multiple Sclerosis quality of life instrument (FAMS) is based on a scale developed within the oncology environment.
- ▶ The Leeds MS Quality of Life Scale (LMSQoL) is a recent development and again is MS specific.

- ▶ The UK Neurological Disability Scale, formerly known as the Guys Neurological Disability Scale (UKNDS/GNDS) is based on 12 areas which are considered important by neurologists. This captures many aspects of disabilities that can be experienced by people with MS and is commonly used by health professionals in practice as a basis for assessment.

## Mobility Scales:

- ▶ The A1 scale is similar to EDSS but gives a more precise measure within levels 4 – 6.
- ▶ The ten metre timed walk.
- ▶ Rivermead Mobility scale covers mobility, including bed mobility, lying to sitting, transfer and gait.

## Upper Limb Function:

- ▶ Nine hole peg test
  - ▶ Box and block.
- Both are tests of manual dexterity with the former requiring greater dexterity. Both are commercially available, simple and can be administered in less than 10 minutes.

## Spasticity scales:

- ▶ The Ashworth scale is most frequently used with a clinical rating being given after an assessor tests the passive resistance to passive movement of a joint. A physiotherapist would normally administer this scale.

## Cognition scales:

- ▶ Paced Auditory Serial Addition Test (PASAT). Two variations of this test are used: a 2 or 3 minute version.
- ▶ Symbol-digit modalities test (SDMT). Both these cognition tests need to be administered by trained personnel.

## Composite assessment scores:

The complexity of the disease and the range of measures available have now led to research with the aim of validating composite measures which encompass the major clinical dimensions that are of relevance both to the clinician and to the person with MS.

The MS Functional Composite is a recently evaluated example. This involves:

1. Timed walk of 25ft
2. Nine hole peg test
3. PASAT 3 minute version.

Each of the test results is standardised using a reference population and the resulting scores are averaged to provide a single score.

## Prognosis

One of the chief characteristics of MS is its unpredictability from one person to another, from one day to another, from one time of day to another. However, some prognostications can be made from the pattern of the disease over the first 5 years. For example, early problems with sensation and eyesight (as opposed to problems related to the cerebellum, i.e. unsteadiness and clumsiness) usually indicate a more benign form of MS. Younger age at onset is also a good prognostic sign.

## Factors that influence prognosis

Favourable	Unfavourable
Females	Males
Low rate of relapses per year	High rate of relapses per year
Complete recovery from the first attack	Incomplete recovery from the first attack
Long interval between first and second attack	Short interval between first and second attack
Symptoms predominantly sensory	Symptoms predominantly of motor tract involvement
Younger age of onset	Older age of onset
Low disability at 5 years from onset	Significant disability at 5 years onset
Later cerebellar involvement	Early cerebellar involvement
Involvement of only one CNS system at the time of onset	Involvement of more than one CNS system at the time of onset

Eventually it may be possible to predict the course of the disease more accurately with magnetic resonance imaging (MRI), but at present accurate prediction cannot be made.

It is not known whether there is any difference in longevity in the population of people with MS compared with the rest of the population<sup>13</sup>. The disease varies widely from person to person and life expectancy also varies widely, but seems to be close to normal for most, except those with unusually aggressive disease. Some of the most common causes of death in people with MS are secondary complications resulting from immobility, chronic urinary tract infections, and compromised swallowing and breathing.

Frequency of death by suicide has been found to be 7.5 times higher among patients with MS compared to the general population<sup>14</sup>. It was found that in suicidal patients, suicide rate did not correlate with disability.

The uncertainty of prognosis is hard to deal with. Many people ask if there is any way of identifying 'triggers' which will cause the condition to worsen but there is very little proof that any particular event or circumstance can be identified. There is some evidence that stressful life events, such as a car accident or severe emotional stress, can make deterioration more likely. However even this is controversial and there is usually little that can be done to prevent such stresses occurring.

# Multiple Sclerosis: an overview

## 12 Multiple Sclerosis Information for Health and Social Care Professionals

Sometimes increased temperature, either from a hot climate or due to infection, can worsen symptoms and can occasionally cause a relapse. Not everyone is prone to this problem but those who are should try to reduce body temperature by such means as cooling or by taking aspirin at times of infection.

There is no known reason why someone with MS should avoid either immunisation or a necessary surgical operation. NICE guidance recommends people with MS should be offered immunisation against influenza and have any other immunisations and surgery that they need. There is no known risk of bringing about a relapse from prescribed medication.

### References

1. Orton SM, Herrera BM, Yee IM et al. Sex ratio of multiple sclerosis in Canada: a longitudinal study. *Lancet Neurology* 2006;5(11):932-36.
2. Paty DW, Ebers GC. *Multiple sclerosis*. Philadelphia: F.A. Davis; 1998. p7
3. Richards RG, Sampson FC, Beard SM et al. A review of the natural history and epidemiology of multiple sclerosis: implications for resource allocation and health economic models. *Health Technol Ass* 2002;6(10).
4. Cook SD, MacDonald J, Tapp W et al. Multiple sclerosis in the Shetland Islands: an update. *Acta Neurol Scand* 1988;77:148-51.
5. Compston A. The genetic epidemiology of multiple sclerosis. *Philos Trans R Soc Lond B Biol Sci* 1999;354(1390):1623-34.
6. McDonald WI, Compston A, Edan G et al. Recommended diagnostic criteria for multiple sclerosis: guidelines from the International Panel on Diagnosis of Multiple Sclerosis. *Ann Neurol* 2001;50(1):121-27.
7. Polman CH, Reingold SC, Edan G et al. Diagnostic criteria for multiple sclerosis: 2005 revisions to the "McDonald criteria". *Ann Neurol* 2005;58(6):840-46.
8. National Institute for Clinical Excellence. *Multiple Sclerosis – Management of Multiple sclerosis in Primary and Secondary Care*. NICE Clinical Guideline 8. London:NICE; 2003.
9. Janssens ACJW, de Boer JB, Kalkers NF et al. Patients with multiple sclerosis prefer early diagnosis. *Eur J Neurol* 2004;11:335-37.
10. Box V, Hepworth M, Harrison J. Identifying the information needs of people with multiple sclerosis. *Nurs Times* 2003;99(49):32-36.
11. Thompson AJ, Hobart JC. Multiple sclerosis: assessment of disability and disability scales. *J Neurol* 1998;245:189-96.
12. Rothwell PM, McDowell Z, Wong CK et al. Doctors and patients don't agree: cross sectional study of patients' and doctors' perceptions and assessments of disability in multiple sclerosis. *BMJ* 1997;314(7094):1580-83.
13. Bronnum-Hansen H, Koch-Henriksen N, Stenager E. Trends in survival and cause of death in Danish patients with multiple sclerosis. *Brain* 2004;127(4):844-50.
14. Sadovnick AD, Eisen K, Ebers GC et al. Cause of death in patients attending multiple sclerosis clinics. *Neurology* 1991;41:1193-96.
15. Lublin FD, Reingold SC. Defining the clinical course of multiple sclerosis: results of an international survey. *Neurology* 1996;46(4):907-11.

### Bibliography

Jones C. Multiple sclerosis. *Prim Health Care* 2004;10(4):29-34.

Miller D, McDonald W, Smith K. The diagnosis of MS. In: Compston A, Confavreux C, Lassman H et al. editors. *McAlpine's Multiple Sclerosis*. 4th ed. Churchill Livingstone: Philadelphia; 2006.

## Introduction: a multidisciplinary approach

Despite recent developments in drug therapies which impact on the course of MS rather than on its symptoms, sound symptom management is still the key to optimising quality of life for most people with MS. Because the lesions characteristic of MS can occur anywhere within the central nervous system, the symptoms can be extremely diverse, present in many different combinations and with variable severity. No two people with MS have exactly the same symptoms.

A list follows of the more common symptoms, though it cannot be overstressed that most people with MS will only experience a few of these, either at any one time or over the whole course of the disease.

- ▶ Bladder dysfunction
- ▶ Bowel dysfunction
- ▶ Visual disturbances
- ▶ Fatigue
- ▶ Pain
- ▶ Spasm
- ▶ Cognitive dysfunction
- ▶ Tremor
- ▶ Muscle weakness
- ▶ Balance
- ▶ Vertigo
- ▶ Mobility problems
- ▶ Sexual dysfunction
- ▶ Depression
- ▶ Emotional problems

A distinction can be made between symptoms and effects, where, for example, pressure sores may be an effect of untreated continence problems rather than a symptom of MS. Less clear perhaps is pain, which may be either a primary symptom deriving from damage to the CNS or a secondary symptom, the effect of bad posture.

Symptoms can also be divided into visible and invisible. Those which are invisible – sexual dysfunction, fatigue, cognitive problems – are less likely to be identified by most health professionals yet there is evidence that these may impact as much on quality of life as those such as lack of mobility which are immediately apparent.

From the diversity and range of symptoms, it will be obvious that many health and social care professionals may be involved in the care of a person with MS. A study reported up to 60 workers from different sources visiting the home of a person with MS<sup>1</sup>. NICE guidelines<sup>2</sup> state that 'when several healthcare professionals are involved with a person with MS they should work together with the person and his or her family as a team towards common agreed goals and using an agreed common therapeutic approach.'

It would be hard to envisage a situation in which the need for a coordinated approach by health and social care professionals were greater. GP, neurologist, radiologist, rehabilitationist, physiotherapist, occupational therapist, psychologist, counsellor, orthotist, dietitian, nurse, continence adviser, speech and

language therapist, pain specialist, social worker, complementary therapist – all can have a role to play in helping the person with MS manage their condition. For the successful management of one symptom, several different professionals may have useful input. However, treatment must never be of a symptom or collection of symptoms but of the person who experiences the symptoms.

Provision of specialist MS services is still patchy. In some areas, people with MS have access to a specialist multidisciplinary team, often with a specialist nurse or key worker to work with them and to coordinate an appropriate care programme. For others, it may be difficult to obtain the right advice at the right time, ignorant of what might be useful, and still more so of how to access it.

### References

1. Thompson A, Johnston S, Harrison J et al. Service delivery in multiple sclerosis: the need for co-ordinated community care. *MS Management* 1997;4(1):11-8.
2. National Institute for Clinical Excellence. Multiple Sclerosis – Management of Multiple sclerosis in Primary and Secondary Care. NICE Clinical Guideline 8. London: NICE;2003 p.9

## Further Reading Publications from the MS Trust\*

### ► For people with MS

**MS: what does it mean for me?** - For people newly diagnosed with MS, a practical introduction to MS to help answer questions at a time of uncertainty.

**MS together** - A DVD that offers clear and concise information on MS.

**Disease modifying drug therapies** - A general guide to people with MS that covers disease modifying drug therapies licensed for use in the UK.

**At work with MS: managing life and work** - Elements that make for a successful working life when someone has MS and considers the support available to both the person with MS and the employer.

**Living with fatigue** - Offers advice on how to live with fatigue, one of the commonest symptoms of MS.

**MS Explained** - A guide to the mechanisms of the disease.

**Sexuality and MS - a guide for women** - Explains how MS can impact on sexuality and intimacy and offers positive practical solutions.

**Young person's guide to MS** - For young people aged 10-15 who have a parent with MS.

**Exercises for people with MS** - Exercises from a senior physiotherapist illustrated throughout by easy to follow diagrams and on DVD in **Move it for MS**.

**Move it for MS** - A DVD of exercises for people with MS.

**Factsheets** covering a wide range of symptoms and therapies - for further details and to order any of the publications contact the MS Trust Information team 01476 476 700 email [infoteam@mstrust.org.uk](mailto:infoteam@mstrust.org.uk).

### ► For health and social care professionals

**Spasticity care pathway - The role of the nurse in the management of spasticity**

**Therapists in MS: delivering the long-term solutions**

Comprehensive resources are available to download from our website [www.mstrust.org.uk](http://www.mstrust.org.uk).

\* As of November 2007

## Publications

We hope that you have found this information helpful. The MS Trust offers a wide range of publications, including our quarterly newsletter Way Ahead and the MS Information Update. These provide details of latest developments and recently published papers in the field of MS. Our website is regularly updated [www.mstrust.org.uk](http://www.mstrust.org.uk)

**Contact us to receive our newsletter or to request another publication. All our services are free within the UK.**

### MS Trust Information Service

The MS Trust Information Service is here to answer YOUR questions about MS. To contact us you can:



#### phone

01462 476700 (Lines are open Monday – Friday 9am-5pm)



#### email

[infoteam@mstrust.org.uk](mailto:infoteam@mstrust.org.uk)



#### write

MS Trust, Spirella Building,  
Letchworth Garden City, Herts, SG6 4ET

## Publications

We hope that you have found this information helpful. The MS Trust offers a wide range of publications, including our quarterly newsletter Way Ahead and the MS Information Update. These provide details of latest developments and recently published papers in the field of MS.

All our services are free within the UK.

Contact us to receive our newsletter or to request another publication.

## MS Trust Information Service

The MS Trust Information Service is here to answer any questions that YOU or the people who have MS that you work with may have about MS. To contact us you can:



### Phone

01462 476 700

(lines are open Monday to Friday 9am to 5pm)



### Email

[infoteam@mstrust.org.uk](mailto:infoteam@mstrust.org.uk)



### Write

MS Trust  
Spirella Building  
Letchworth Garden City  
Herts  
SG6 4ET

Published in the United Kingdom by

**MS Trust,**  
Spirella Building, Bridge Road,  
Letchworth Garden City,  
SG6 4ET

Tel: 01462 476700

Email: [info@mstrust.org.uk](mailto:info@mstrust.org.uk)  
Website: [www.mstrust.org.uk](http://www.mstrust.org.uk)

Registered charity no 1088353  
© 2007 Multiple Sclerosis Trust

MS Trust  
Multiple sclerosis information for Health and  
Social Care Professionals  
ISBN 1-904156-14-2  
© 2007 Multiple Sclerosis Trust

Published: November 2007

All rights reserved. No part of this book may be reproduced, stored in a retrieval system of transmitted in any form by any means, electronic, electrostatic, magnetic tape, mechanical, photocopying, recording or otherwise without the written permission of the publisher.