**Symptoms and symptom management**

**Özcan ME, Ince B, Bingöl A, et al.**

*Association between smoking and cognitive impairment in multiple sclerosis.*

72 people with MS were included in the study. Participants smoking habits and cognitive function was assessed. Smoking rate was determined using the ‘pack year’ calculation, participants who had smoked for at least 10 pack years were considered heavy smokers. The study found that heavy smokers were more likely to have cognitive difficulties than non-smokers and the cognitive impairment was also significantly greater. The authors conclude that this study is the first to investigate the effect of smoking on cognition in people with MS. They recommend future studies compare smokers to snuff users to investigate whether chronic nicotine exposure or tar substances contribute to the cognitive impairments observed.

Neuropsychiatr Dis Treat 2014;10:1715-9. [Ref 19-1-1]

http://tinyurl.com/QMSRU-19-1-1

**Andretta E, Simeone C, Ostardo E, et al.**

*Usefulness of sacral nerve modulation in a series of multiple sclerosis patients with bladder dysfunction.*

17 people with MS with bladder symptoms which had been unresponsive to conventional therapies were treated with sacral nerve modulation (SNM). A three week trial test was conducted prior to implantation. The stimulation parameters were individually tailored to each participant. Follow up time post-implantation ranged from 12-97 months with a mean of 32 months. The study found that 75% of participants reported a subjective improvement in quality of life and their bladder symptoms. There were also significant reductions in frequency, urgency, number of pads, number of catheterisations, residual volumes and an increase in voided volumes. The authors conclude that based on their results SNM could be a treatment option for bladder symptoms that have not been improved by conventional treatments.


**Jawahar R, Ob U, Yang S, Lapane KL.**


13 studies examining the use of non-pharmacological strategies for the management of chronic pain met the criteria for inclusion in this review. Five education, two TENS and six physical therapy (such as yoga, multidisciplinary rehabilitation or reflexology) trials were included. The study found that TENS gave pain relief when compared to placebo. There was no conclusive evidence to support the use of the other strategies analysed in pain relief, although they could improve physical functioning and quality of life. The authors conclude that as there were no more than three trials identified for each intervention type they could not perform a meta-analysis and the small number of trials meant they could not make specific recommendations for treatment strategies.


http://tinyurl.com/QMSRU-19-1-3
MS relapses
Kalincik T, Buzzard K, Jokubaitis V, et al.
Risk of relapse phenotype recurrence in multiple sclerosis.
Data on 49,279 relapses from 14,969 people with MS were extracted from the MSBase registry to examine trends in clinical presentations of MS relapses. Sensory or visual relapses were more common in women and pyramidal, brainstem and cerebellar relapses were more common in men. The study found that relapses were more likely to involve previously affected functions. Despite this increased risk of relapse phenotype reoccurring, the study also found an unexplained pattern. Visual relapses were more common early in the disease course and in younger people, these decreased over time with a concomitant increase in bladder and bowel relapses. The authors conclude that discovering the mechanism underlying this shift could have major implications for the understanding of MS pathogenesis.

Seasonal variation of relapse rate in multiple sclerosis is latitude-dependent.
Using the MSBase registry the study identified 32,762 relapses from 9,811 people with MS across 30 countries. Data on daily average UV radiation for each month for each of the locations included in the study was also obtained. The study found that for both hemispheres relapses were most common in the spring and least common in the autumn. The study also found with increasing latitude there was a statistically significant decrease in the time between the UV radiation trough and the subsequent relapse peak. The authors conclude that this relationship between season and risk of relapse could be due to one of several reasons: levels of vitamin D, effect of UV on the immune system via some other route or a peak in infections triggering relapses.
Ann Neurol 2014;76(6):880-90. [Ref 19-1-5]

Disease modifying treatments
The influence of patient demographics, disease characteristics and treatment on brain volume loss in Trial Assessing Injectable Interferon vs FTY720 Oral in Relapsing–Remitting Multiple Sclerosis (TRANSFORMS), a phase 3 study of fingolimod in multiple sclerosis.
1,280 people with RRMS were randomised to receive oral fingolimod 0.5mg or 1.25mg once a day or interferon beta 1a (IFNβ1a) 30µg once a week for the 12 month study period. MRI scans were obtained at baseline and at 12 months. Treatment with fingolimod reduced brain volume loss compared to IFNβ1a, regardless of age, gender, baseline EDSS score or the number of relapses in the year before the study commenced. The authors conclude that this exploratory study is limited as it only studied the participants for 12 months, a longer period would be required to fully correlate changes seen on MRI with clinical measures.

156 people with RRMS took part in the study. Participants were presented with 64 pairs of hypothetical treatment scenarios and had to pick which one they would choose. Each scenario compared the attributes: route of administration, treatment frequency and frequency of flu-like/gastrointestinal symptoms. Treatment frequency and route of administration showed a stronger influence on preference than frequency of mild side effects. Side effects were more of a concern for treatment naïve participants. 91% of participants preferred a pill, when frequency of treatment and side effects were the same as for the injection option. However preference switched to injections if the pill had to be taken much more often than an injection and also when pills were associated with more frequent side effects. The authors conclude that as their study involved hypothetical scenarios, many of the situations posed to the participants do not directly correspond to a particular DMT or include all of the factors that could influence a person’s choice, but it does provide some indication of how benefits and risks are weighed up by people with MS.
Ther Adv Neurol Disord 2014;7(6):263-75. [Ref 19-1-7]
http://tinyurl.com/QMSRU-19-1-7

Epidemiology
Overview which summarises the 2013 update of the Atlas of multiple sclerosis. The new survey now includes information on paediatric MS, neuromyelitis optica and access to recently licensed drugs. The key findings from the survey include an increase in the incidence and prevalence of MS, a general improvement in healthcare and support services although access to these is not equal. The authors suggest five ways the data could be used to improve the lives of people with MS.
Neurology 2014;83(11):1022-4. [Ref 19-1-8]
http://tinyurl.com/QMSRU-19-1-8

www.mstrust.org.uk
Causes of MS
Neonatal vitamin D status and risk of multiple sclerosis.

459 people with MS in Sweden took part in the study, each was matched to two control participants, for age, gender and residential area. The Swedish PKU register stores blood samples from nearly all infants born in Sweden since 1975. Each of the participants’ blood samples were obtained from the register and were analysed to determine how much vitamin D was present in their blood just after birth. The study found that the level of vitamin D in the blood was not associated with risk of developing MS later in life. The researchers performed further analysis to adjust for environmental factors in early life and adult life, as well as family history of MS, ancestry and social group, and none of these significantly affected the result. The authors conclude that although this was the first study to directly examine the link between vitamin D levels at birth and risk of MS, this study could be due to one of several reasons: levels of vitamin D, seasonal variation of relapse rate in multiple sclerosis is latitude-dependent.

Ann Neurol 2014;76(3):338-46. [Ref 19-1-9]

Torkildsen O, Aarseth J, Benjaminse E, et al.
Month of birth and risk of multiple sclerosis: confounding and adjustments.

The study analysed the entire Norwegian population born between 1930 and 1979, including 6,649 people with MS, and their mothers, fathers and unaffected siblings. Information on month, year and county of birth were used to calculate the observed and expected births for each month. In an initial analysis there were more MS births than expected in April and December and fewer than expected in February. When the data was adjusted to take into account year and place of birth also, the effect seen in February and December disappeared, however there were still 10% more people with MS born in April than would be expected. The authors conclude that there are confounding factors that need to be taken into account when studying month of birth and risk of developing MS, but the month of birth effect in MS does appear to be real based on their results.

Ann Clin Transl Neurol 2014;1(2):141-4. [Ref 19-1-10]
http://tinyurl.com/QMSRU-19-1-10

Paediatric MS
Aubert-Broche B, Fonov V, Narayanan S, et al.
Onset of multiple sclerosis before adulthood leads to failure of age-expected brain growth.

181 MRI scans from 16 people with RRMS prior to 18 years of age were age and gender matched with 24 healthy controls. A reference group of 874 scans from 339 controls, which had been part of a study of normal brain development were also used. The study found that onset of MS during childhood resulted in abnormally small brain volumes and impairment of age expected brain growth. The brain volumes showed a progressive loss which was consistent with brain atrophy. The authors conclude that neurodegeneration appears to be a feature in early MS, rather than an effect later in the disease course.

Neurology 2014;83(25):2140-6. [Ref 19-1-11]

Psychological aspects
Pagnini F, Bosma CM, Phillips D, Langer E.
Symptom changes in multiple sclerosis following psychological interventions: a systematic review.

22 studies, with a total of 5,705 participants, met the inclusion criteria for this review. The studies included psychological interventions such as cognitive behavioural interventions, stress management, relaxation training, coping skills training and meditation. Psychological measures were the primary outcomes in all the studies and the majority used self-report measures to determine the effects on physical symptoms. The analysis found that psychological interventions had positive effects on physical symptoms, in particular fatigue, pain, sleep disturbances and physical vitality. The authors conclude that the available data suggests that psychological interventions could have the potential to improve quality of life for people with MS from the psychological and physical perspective and they suggest further research should be conducted.

BMC Neurol 2014;14(1):222. [Ref 19-1-12]
http://tinyurl.com/QMSRU-19-1-12

Reynard AK, Sullivan AB, and Rae-Grant A.
A systematic review of stress-management interventions for multiple sclerosis patients.

Eight studies met the criteria for inclusion in the review. Research samples ranged from seven to 121 participants. Most of the studies used some form of cognitive behavioural technique and relaxation training. Most studies showed positive changes in the outcomes measured, but only one study provided class one evidence. The authors conclude that as the studies were so varied in their interventions and outcome measures it was difficult to draw firm conclusions. They suggest further research trials should be larger and include outcome measures based on biological and clinical markers of disease.

Int J MS Care 2014;16(3):140-4. [Ref 19-1-13]
Difficulties with emotion regulation in multiple sclerosis: links to executive function, mood, and quality of life.

32 people with MS and 32 age and education matched controls completed the study. Emotion regulation, executive function, mood and quality of life were assessed using several questionnaires. The study found that the participants with MS reported more difficulties in emotion regulation across all measures than the control participants, suggesting that the effects of MS were similar on all aspects of emotion regulation. Participants with MS also had significantly higher depression scores and lower self-rated quality of life. The authors conclude that emotional control skills should be investigated in further detail and should be included when considering how to enhance well being in people with MS.

J Clin Exp Neuropsychol 2014;36(8):831-42. [Ref 19-1-14]

Hormones and MS


Low testosterone is associated with disability in men with multiple sclerosis.

96 men with RRMS within ten years of first symptom onset were included in the study. Hormone levels in morning blood samples, clinical characteristics, demographics and lifestyle factors were analysed. Participants were followed up for at least two years after the blood sample was taken. The study found that 35% of participants were hypogonadal at the point when the blood samples were taken. Lower baseline testosterone levels were associated with more significant declines in cognitive function as measured by the Symbol Digit Modalities Test (SDMT). The authors conclude that further research would be needed to confirm the role and function of testosterone in MS.


Provision of care


Overview that discusses the ways that MS nurses can address the factors that contribute to treatment fatigue and support people with MS to adhere to their medication. The paper explores the factors that contribute to treatment fatigue, how to identify problems, manage adverse events and other techniques. Several strategies and the evidence are explored.

Patient Prefer Adherence 2014;8:1093-9. [Ref 19-1-16]

http://tinyurl.com/QMSRU-19-1-16

Mynors G, Bowen A.

Modelling sustainable caseloads for MS specialist nurses.

Overview explores the development of a model to establish a sustainable caseload for a MS specialist nurse (MSSN). The paper outlines the steps taken by the expert consensus group to agree standards for MSSN services and assumptions about working practices and patterns to construct the model. A mixed caseload of 358 people with MS was determined to be sustainable, subject to several conditions which are outlined by the authors.


Falls

Mazunder R, Murchison C, Bourdette D, Cameron M.

Falls in people with multiple sclerosis compared with falls in healthy controls.

52 people with MS and 49 age and gender matched controls completed a daily fall diary for six months, including the circumstances and consequences of each. The participants with MS recorded 145 falls and the controls 35 falls. People with MS were more likely to fall, had more falls per person per month, and sustained more injuries from falls. For controls falls were most likely to be due to a slippery surface and outside. People with MS fell almost equally inside and outside, and reported falling as a result of fatigue and heat, which were not issues identified by the controls. The authors conclude that fall risk, causes and consequences are different for people with MS than for other people of the same age and gender and further research would be needed to identify the optimal interventions to prevent falls in people with MS.

PLoS One 2014;9(9):e107620. [Ref 19-1-18]

http://tinyurl.com/QMSRU-19-1-18