Introduction

Patients with MS rank fatigue as one of the MS-related symptoms that most impairs their quality of life (QoL). Overall 50-90% (Debouverie, M. et al. 2009) of people with MS report having fatigue at all stages of the condition, and 50-60% state that it is the worst symptom they experience (Friel et al., 1984; Fisk et al., 1994; MS Society, 1997). It is described as the most debilitating symptom of the disease (Lee. D. et al 2008), effecting everyday life (Thomas 2010) and health-related quality of life (Johnson, 2008). Fatigue is considered a chronic condition that can be accompanied by neurological exacerbations or no change in neurological symptoms.

Fatigue is a subjective symptom and is often classed as a hidden problem (NICE, 2003). The etiology of MS-related fatigue is not well understood but is generally described as either primary or secondary fatigue where primary fatigue is thought to be as a result of the demyelination process within the central nervous system. Contributing factors may be default conduction of the demyelinated fibres and the presence of circulating cytokines in serum and cerebrospinal fluid. Vucic S. et al 2010 suggests there is now strong evidence to suggest fatigue results from reduced voluntary activation of muscles by central mechanism and conduction block as a result of demyelination. Secondary fatigue is where many MS-related symptoms may contribute to fatigue, including depression, pain, insomnia, or mobility impairment. Therefore before appropriate treatment can be administered, the origin of fatigue should be determined (Krupp et al., 1989; Fisk et al., 1994; Coulthard-Morris and Vollmer, 1995; Vercoulen et al., 1996; MS Council for Clinical Practice Guidelines 1998; van den Noort and Holland, 1999). Mills RJ & Yong CA 2010 reported that fatigue was worse with disease progression and reduced mobility and Patti F et al. (2011) discussed the relationship between fatigue, mood and quality of life.

Assessment

• Determine the nature of fatigue:
  o Determine if fatigue is a new symptom
  o Determine patterns of fatigue, if symptoms of fatigue are continuous or intermittent (use of a diary may be helpful here)
• Identify possible contributing factors, such as:
  o Relapse
  o Medications (prescribed, non prescribed, alcohol, caffeine etc)
Sleep disturbances (Veauthier C. et al 2011)
Concurrent illness (e.g. infection, medical conditions eg Anaemia or thyroid function))
Environmental changes (including any major change in levels of activity)
Heat
Lifestyle patterns including diet exercise (Fragoso Y D et al 2008)
Depression/anxiety
Pain
Mobility difficulties
Respiratory problems
Cognitive functioning
- Assess the severity of fatigue by:
  - Administering fatigue measurement scales (e.g. Modified Fatigue Impact Scale [MFIS], MS Impact Scale [MSIS-29] Fatigue Severity Scale or referring patient for fatigue assessment using measurement scales. See Tool Kit for these scales
  - Determining its effect on daily activities
  - Asking patient to complete an activity diary
    - Determine the impact of fatigue on other MS-related symptoms
    - Identify existing management strategies and coping behaviours.
Considerations for under 18 year olds
- Involve school nurse
- Paediatric Nurse Specialist
- Assessment by educational psychologist re exams work deadlines etc (Ketelsledgers 2010)

Non-Pharmacological Interventions
- Promote patient understanding of MS-related fatigue
- Implement energy-conservation strategies through adaptations to home and work environments
- Encourage appropriate lifestyle modifications with regards to the following:
  - Sleep patterns
  - Activity and rest patterns
  - Temperature control
  - Cooling techniques
  - Environmental temperature control (e.g. air conditioning)
  - Avoiding temperature extremes
o Refer to a Dietician for:
Nutrition and fluid balance advice

o Refer patient to an occupational therapist for:
Fatigue-management strategies (e.g. prioritisation, relaxation and energy conservation) See Toolkit for Fatigue management programme; Activity Diary; Energy Conservation
Assistive devices at work and at home

Personal exercise programme to increase stamina
Assistive devices

Use of CBT (Casio D et al 2011: Van Kessel K et al 2008
+ telephone follow up (Finlayson M et al 2011: Kinsinger SW et al 2010:
Role of “Mindfulness” (Grossman P et al 2010)
• Inform patient of the following therapies that may contribute to fatigue as well as their side-effect profiles:
o Anti-spasticity medications
o Anti-convulsants/anti-epileptics
o Anti-depressants
o Certain alternative medicines (e.g. chamomile, ginseng, and sage)
• Provide ongoing evaluation of fatigue-management strategies [Note: Refer to MS Council Clinical Practice Guidelines (1998) Fatigue and MS. Evidenced-Based Management Strategies for Fatigue in MS. Paralyzed Veterans of America or refer to www.pva.org.uk].
If your MS Service provides a multidisciplinary fatigue management programme, this will enable ongoing evaluation.

Top Tips for overcoming fatigue

• Bathing/Showering
  - Sit while showering or at the sink
  - Avoid hot baths/showers
  - Consider using an electric toothbrush/shaver
  - Organise toiletries within easy reach
• Dressing
  - Lay out clothing for the next day before going to bed
- Sit down while dressing wherever possible
- Simplify fastenings on clothing
  - Household chores
- Spread tasks out over a period of time
- Alternate heavier cleaning tasks with lighter tasks
- Buy duplicate cleaning materials for upstairs/downstairs to avoid carrying them
- Do smaller loads of laundry during the week, rather than one big load
- Slide iron on heat resistant pad to avoid lifting
- Purchase clothes that require minimal or no ironing
- Fitted sheets and continental quilts require less effort than plain sheets and blankets when making a bed
  - Meal preparation
- Where possible sit down to carry out food preparation
- Choose foods that require minimum preparation
- Let pots and pans soak in water first instead of scrubbing clean

Pharmacological Interventions
  - Modify fatigue-contributing medication regimens
  - Inform patient of pharmacological treatment options as well as their side-effect profiles.
### Pharmacological Treatment Options for MS-Related Fatigue

<table>
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<tr>
<th>Medication</th>
<th>Examples of Brand Names</th>
<th>Description</th>
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| Amantadine       | Symmetrel®              | - An antiviral agent and dopamine agonist  
|                  |                         | - Widely used to treat fatigue, but mechanism of action not known  
|                  |                         | - Usual dose: 100 mg BID  
|                  |                         | - Side effects are generally mild and infrequent but may include hallucinations, nausea, hyperactivity, anxiety, insomnia, rash, and constipation |
| Dextroamphetamine| Dexedrine®              | - A sympathomimetic agent that has been shown to lessen fatigue and improve mental alertness  
|                  |                         | - Usual dose: 5-60 mg/day  
|                  |                         | - Side effects may include heart palpitations, increased blood pressure, restlessness, insomnia, tremor, dry mouth, loss of appetite, diarrhea, constipation, and weight loss |
| Fluoxetine       | Prozac®                 | - An antidepressant  
|                  |                         | - Often used for patients who do not respond to amantadine treatment  
|                  |                         | - Usual dose: 20-60 mg/day  
|                  |                         | - Side effects may include nervousness, anxiety, insomnia, and nausea |
| Modafinil        | Alertec®                | - A CNS stimulant  
|                  |                         | - Often used to treat the excessive daytime sleepiness  
|                  |                         | - associated with narcolepsy Usual dose: 200–400 mg/day  |
|                  | Provigil®               | - Side effects may include headache, asthenia, and nausea  
|                  |                         | - Should not be used in patients with mitral valve prolapse (MVP) or left ventricular hypertrophy (LVH) |
| Sertraline       | Zoloft™                 | - A selective serotonin reuptake inhibitor (SSRI) used to treat depression  
|                  |                         | - Usual dose: 25-200 mg/day  
|                  | Lustral®                | - Side effects may include agitation, insomnia, male sexual dysfunction, somnolence, dizziness, headache, tremor, anorexia, diarrhea/loose stools, and nausea |

Fluoxetine & Sertraline (may influence choice of antidepressant if mood low)  
NB: Some of the treatments listed may not be used or available in all European countries.  

**The EMA recommendations on Modafinil published 27/01/2011:**  
Doctors prescribing modafinil-containing medicines should keep in mind the change in the indication: modafinil is only indicated to treat narcolepsy.  
Modafinil should no longer be used to treat:
• Obstructive sleep apnoea;
• Shift work sleep disorder;
• Idiopathic hypersomnia.

Doctors should also be aware of the safety profile of modafinil-containing medicines, and they should monitor their patients appropriately.

Patients who are receiving modafinil-containing medicines should contact their doctors at a convenient time to check that they should continue receiving it.

There is no need for patients to stop treatment with modafinil immediately, but patients who wish to stop can do so at any time.

Patients who have any questions should speak to their doctor or pharmacist.

The European Commission issued a decision on 27 January 2011.

**Fatigue Management Sessions**

**Week 1**

- Outline aims of the programme
- Icebreaker and introduction to each other
- Introduction to MS related fatigue

Fatigue assessment (Modified Fatigue Impact Scale, Canadian Occupational Performance Measure [Law et al., 1990])
- Homework - Introduction to fatigue diary

**Week 2**

- Discuss fatigue diary
- Fatigue management principles
- Complete sleep questionnaire
- Introduce prioritisation and explain homework
- Relaxation

**Week 3**

- Work through homework - prioritisation management
- Energy conservation /‘Tips and Advice’ leaflet
- Yoga talk
- Relaxation

**Week 4**

- Physiotherapist talk
• Drugs used in fatigue
• Relaxation

Week 5
• Healthy eating
• Alternative therapies/healthy lifestyle
• Relaxation

Week 6
• Invitation to partners to come along
• Individual plans of fatigue management
• Evaluation of course


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**Suggested Reading**


MS Society (2005). MS Essentials 14: Fatigue

NANOT (undated). Fatigue Management Pack. College of Occupational Therapists


**Reading List 2001 - 2008**


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