

Reference	Supplementary Information
Neurological	Patients should be divided into those with a known diagnosis of MS and those in whom the diagnosis is suspected. There may be a requirement for combined primary/secondary/tertiary care management (in any combination) or management in primary care dependent or clinical need.
1.1 Symptom Description	<ul style="list-style-type: none"> - Unexplained weakness e.g. tripping, falling/ dropping things - Loss or change of sensation e.g. numbness, pins and needles, painful dysaesthesia, altered temperature sensation - Visual disturbance, for example, optic neuritis - Problems with balance/co-ordination, vertigo, internuclear ophthalmoplegia. Facial myokymia and ocular flutter raise index of suspicion - Cognitive changes - Spasticity/spasm - Depression
1.2 Incidence/ Prevalence of MS	<p>Incidence / prevalence in population</p> <ul style="list-style-type: none"> - 3:1 female to male ratio - level of around 1 in 850 and approximately 2,500 new cases diagnosed per yr - age most likely to be diagnosed between 20 and 30, childhood MS is rare and can also be diagnosed over the age of 50.
1.6 Escalation thresholds	Escalation thresholds at this stage are intended to be helpful to the patient and their family / carers or advisor if they have taken advice from the pharmacist, NHS Direct or MS charity
1.7 Red Flags	<p>Red Flags at this stage are to help guide the patient / family when there is a need to seek assessment urgently inc disturbance of urinary / bowel function. Loss of coordination/ tremor</p> <p>Also consider cognitive changes e.g.forgetfulness & change in mood e.g. swinging mood & feeling low</p> <p>Relapse is defined as new or deteriorating neurological symptoms lasting for at least 24-hours with objective evidence for change against a stable clinical background of at least a month. Absence of fever</p>

2.0 Primary Assessment

2.0: -Assessment by GP for first episode may require extended appointment as accurate clinical history is most important factor.
-Diagnosis of MS or CIS (clinically isolated syndrome) MUST BE MADE BY CONSULTANT NEUROLOGIST.
-Assessment by GP (or MS Specialist Nurse) of subsequent episodes/relapse in confirmed MS or CIS will indicate further review by Neurologist and/or MS Specialist team for disease modifying therapies, complex symptom management or clinical trials.

NICE clinical guideline: multiple sclerosis
Management of multiple sclerosis in primary and secondary care (2003)
<http://www.nice.org.uk/guidance/index.jsp?action=byID&o=10930>

Multiple Sclerosis Society
A guide to MS for GPs and primary care teams (2006)
<http://www.mssociety.org.uk/document.rm?id=1077>

Royal College of General Practitioners
Introduction to multiple sclerosis e-learning (2007)
http://www.rcgp.org.uk/continuing_the_gp_journey/distance_learning/multiple_sclerosis.aspx

UKMSSNA (UK Multiple Sclerosis Specialist Nurse Association)
The United Kingdom multiple sclerosis clinical management manual (2006)
<http://www.ukmssna.org.uk>

2.2 Diagnostics (Dx)

2.2.3 Blood tests may also include FBC, LFTs', Electrolytes, Glucose, Auto-antibodies, TFTs', Vit B12

MRI not included at this stage as (1) A normal MRI does not rule out MS
(2) White matter changes can be present in other conditions (e.g. Migraine)
(3) MRI needs to be part of specialist assessment

2.4 Treatments 2.4.3 - 2.4.6 Tx for confirmed MS

2.4.1 Information for family/significant others must include
- Guidance on self care and management and reporting change
- Impact of healthy lifestyle and well being upon MS symptoms
- Realistic hope and expectation

Useful websites include www.mstrust.org.uk / www.mssociety.org.uk

2.4.4 If diagnosis established consider symptomatic treatment for
- Depression
- Pain
- Sexual dysfunction
- Spasticity
- Incontinence/constipation
- Fatigue is most commonly reported debilitating symptom of MS
- For urinary symptoms perform bladder scan and urinalysis prior to any

antibiotics, anticholinergics or bladder training (including intermittent self catheterization)

2.4.5 Self Mx is an effective approach in managing MS and must include expert information on practical support and specialist clinical support, with shared decision making and timely information on: -Access to

work/education

-Benefits

-Housing

-Insurance

-Driving

-Family and home

-Healthy living

2.4.6 Relapse Mx; Triggers include infection (inc urinalysis to rule out UTI prior to starting any steroid Tx)

Other triggers may include stress / trauma

Spontaneous relapse also occurs

Treat with IV methylprednisolone 500mg/1gram 3-5 days or oral

methylprednisolone 250mg/500mg 3-5 days

NICE clinical guideline: multiple sclerosis

Management of multiple sclerosis in primary and secondary care (2003)

<http://www.nice.org.uk/guidance/index.jsp?action=byID&o=10930>

If relapsing/ remitting MS early discussion/ information about disease modifying treatments (DMT) with both patient and family must be provided. Only after positive MRI in specialist assessment. Whilst a DMT may not be prescribed this early it is extremely important to begin discussions at an early stage

Relapse management - Key steps of relapse management doc - to be published shortly

Relapse management pathway on NHS Scotland CCI website -

<http://www.pathways.scot.nhs.uk/Neurology/Neurol MS 23Sep05.htm>

2.4.1 & 2.4.6 If confirmed MS refer to fatigue management programme if appropriate

2.6 Escalation thresholds, QOL meas., decision aids, remote advice

All patients with suspected MS must be referred to a neurologist. Patients with confirmed MS should be referred for specialist assessment (a neurologist / other specialist e.g. nurse) if

-Patients develop new symptoms that cannot be managed in primary care.

-Frequent relapses or rapid progression of disability.

-Assessment for DMTs.

-Participation in MS clinical trials.

2.7 Red Flags Previous unreported episodes, rapidly evolving symptoms, brain stem signs, visual loss or disturbance, severe depression (higher suicide rate in MS pop.).
Distressing / disabling relapse that cannot be managed in primary care.
Some episodes of relapse management may require emergency care and exit from this planned care pathway

3.0 Specialist Assessment 3.1 NICE guidelines (2003) Polman C et al. Diagnostic criteria for multiple sclerosis: 2005 revisions to the "McDonald Criteria".Ann Neurol. 2005 Dec;58(6):840-6

3.2 Diagnostics (Dx) 3.2.2 MRI scans need to be appropriately arranged by those with the clinical competence to ensure that patients are given the correct diagnosis. Imaging of spinal cord, orbits, enhanced imaging & serial MRI may be indicated in individual cases. Brain sequences should include sagittal images & T1, PD/ T2 & FLAIR sequences

3.2.3 Consider FBC, electrolytes, ANA, autoantibodies, serum ACE, ANCA, Lyme serology, vitamin B12, anticardiolipin antibody, lupus anticoagulant, rheumatoid factor, TFTs

3.2.4 CSF / VEPs should be performed if any diagnostic doubt persists after history / examination / MRI

3.3 NICE guideline no. 8 (2003) Whether treatment can be given by any neurologist or whether patient needs referral to subspecialist clinic for DMTs depends on local protocol. If treatment available refer to: ABN guidelines for the Treatment of MS with beta-interferon and glatiramer acetate (2007) (www.theabn.org/downloads/ABN-MS-Guidelines-2007.pdf) NB The current funding of these drugs is based on the earlier ABN guidelines for the use of beta inteferons and glatiramer acetate in multiple sclerosis (2001) (www.theabn.org/documents/msdoc.pdf)

Natalizumab for the treatment of adults with highly active relapsing - remitting multiple sclerosis(www.nice.org.uk/nicemedia/pdf/TA127Nicedguidance.pdf)

The United Kingdom multiple sclerosis clinical management manual (2006) (<http://www.ukmssna.org.uk>)

3.4 Definitive Treatments (Tx) 3.3 Risk Sharing Scheme for DMTs should be considered from a commissioning / PCT perspective. (ref: HSC 2002/004 Cost effective provision of disease modifying therapies for people with Multiple Sclerosis)

3.4.1 MS Specialists provide courses on getting to grips with MS, Newly

diagnosed with MS, Managing symptoms, Managing fatigue. Vocational support and advice about access to, and remaining in employment should be provided. :

- MS Society - Just diagnosed (available in other languages)
www.mssociety.org.uk/support_and_services/free_publications/just_diagnosed.html
- MS Trust - MS: What does it mean for me?
www.mstrust.org.uk/shop/product.jsp?prodid=82
- Information about MS charities
- National & local expert patient programme may be suitable for some patients

3.4.4 Treatment of relapse, symptoms and / or DMTs will need baseline blood tests (FBC, LFTs, Serum electrophoresis, TFTs). MRI before starting natalizumab should not be older than 3-months, ie., the MRI could be done one day before starting treatment or 89-days. There is no requirement for a washout period from interferon-beta or glatiramer acetate before starting natalizumab.

3.4.6 Relapse management pathway on NHS Scotland CCI website -
<http://www.pathways.scot.nhs.uk/Neurology/Neurol MS 23Sep05.htm>

3.5 Rehabilitation, Review & QOL measurement

patients on DMTs' require annual review by consultant neurologist, ongoing support from MS Specialist nurse/therapist and additional input from MDT/neurologist when need identified.

Also consider:

- Orthotics clinics
- Manual handling assessment and provision of equipment through collaboration between community teams and the Social Services OTs
- Wheelchair clinic provision of specialist equipment for postural support, independence and pressure relief
- Botulinum toxin through spasticity clinic with links to gait lab, orthotics and upper limb splinting
- FES for walking with access to a gait lab and FES service
- SLT and video fluoroscopy clinics and then close work with community dieticians
- Complex case managers and then close links to social services and community neuro teams
- Specialist vocational training courses including driving (inc. specialist driving assessment centres)

Also consider MS therapy centres, carers support centres, respite care

QoL measures MS Specific

- MSIS-29 a self reported questionnaire which takes approx 5-10 minutes. Score with a range of 29-145. Lower the score; the less the impact. Good consistency and validity and across disease spectrum. Ref -
<http://brain.oxfordjournals.org/cgi/reprint/124/5/962> (this is the original paper describing the scale)

- MSQOL-54 combines generic and MS specific items into single instrument. Self reported 10-20 minutes. No single overall score but 2

summary scores. Uses 36 core items from the SGF-36. Useful for comparative work.

Ref - <http://www.nationalmssociety.org/professionals/researchers/clinical-study-measures/msqol-54/index.aspx>

- MFIS measures fatigue impact. Self reported and takes 10 minutes for full version 2-3 for abbreviated.

Ref - <http://www.nationalmssociety.org/professionals/researchers/clinical-study-measures/mfis/index.aspx>

3.6 Escalation thresholds & decision aids

Refer patients to MS Specialist team if:

- Diagnostic uncertainty
- Consideration for disease-modifying therapies (if applicable)
- Difficult symptom control
- Aggressive disease
- Clinical Trials

4.0 MS Specialist Team (outreaches and includes the whole therapy and social care team)

Assessment of previous medication & pharmacological history & effect may inc neutralising antibodies analysis (NAbs) where relevant

4.2 Diagnostics (Dx)

4.2.2 MRI - follow up MRI brain, as previously defined. Gadolinium enhanced imaging may be appropriate at this stage. MRI may also be requested to act as baseline prior to treatment with natalizumab

4.2.3 Path - Alemtuzumab. Alemtuzumab is not licensed at present.
NAb = Neutralising Antibodies

4.4 Definitive Treatments (Tx)

4.4.2 Review regularly - usually 6 - 12 monthly MS Ologist (an MS Ologist is a neurologist specialising in the treatment of MS patients) 3-6 monthly MS specialist nurse - local variations will apply

4.4.3 Physical and psychological therapy usually performed at a local rather than regional specialist level

4.4.4 Medication approaches may include;

- Symptomatic Treatment (some MS Specialist nurses are prescribers)
- Eligibility for Interferon beta 1a, Interferon beta 1b, Glatirimer acetate or Natalizumab (ABN and NICE Guidelines)

- Commencement of natalizumab (ABN and NICE Guidelines)
- Alemtuzumab (not licensed)
- Immunosuppressant therapies (not licensed)
- Combination therapies
- Other clinical trials

NABs guidelines European: Sorensen PS et al., Eur J Neurol 2005;12:817-27 American: Goodin DS et al., Neurology 2007;68:977-984
NAB guidelines (European & American) (ABN Guidelines, 2007)
4.4.6 FES - functional electrical stimulation. DBS - deep brain stimulation for MS tremor. Bladder management -suprapubic catheter. Swallowing dysfunction - PEG feeding. Spasticity management - botulinum toxin therapy, baclofen pumps, phenol injections

4.5 Rehabilitation, Review & QOL measurement

The reference made for the stopping criteria for DMT is as per the ABN guidelines for the treatment of MS with beta-interferon and glatiramer acetate (2007) (www.theabn.org/downloads/ABN-MS-Guidelines-2007.pdf)

Also consider :

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Ref - <http://tinyurl.com/5o7qdz>

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Ref - <http://tinyurl.com/64tmu2>