



Multiple Sclerosis Society

September 2011

## MS Essentials Factsheet

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# Neuromyelitis optica (NMO)

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### What is NMO?

Neuromyelitis optica (NMO), sometimes known as 'Devic's disease', is a condition mainly affecting the spinal cord and optic nerve (the nerve connecting the eye to the brain). Like MS, it is a 'demyelinating' condition - it damages the protective myelin sheath around the nerve fibres. And like MS, too, it is an auto-immune condition.

The symptoms of NMO can be similar to those of MS, which means they can be easily mistaken. However, test results should show which condition you have.

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### What are the symptoms?

Although the symptoms of NMO vary from person to person, they usually fall into two distinct types:

- optic neuritis: inflammation of the optic nerve
- transverse myelitis: inflammation of the spinal cord

#### **Optic neuritis**

This can cause blurring or reduced vision. It typically affects only one eye, but can affect both. It can be painful, particularly when you move your eye. You may also find your colour vision is affected too, with colours appearing 'washed out' or less vivid than usual. Symptoms are usually temporary, but they can become permanent.<sup>1</sup>

#### **Transverse myelitis**

This can cause a range of symptoms, including pain in your neck or back; altered sensations such as numbness, tingling, coldness, or burning below the affected area of your spinal cord; weakness in your arms or legs; bladder and bowel problems; and muscle spasms.

## How is NMO diagnosed?

A diagnosis of NMO, as with MS, requires a number of steps. A neurologist will carry out an examination and take a full medical history, including details of any previous symptoms you've had. Although they may suspect NMO at this stage, it would need to be confirmed using one of a number of tests - including MRI (magnetic resonance imaging), lumbar puncture and evoked potentials or a blood test.

### **MRI (magnetic resonance imaging)**

MRI is one of the main tools in the diagnosis of NMO. It will show where there has been inflammation in your brain or spinal cord - these appear as white areas on an MRI scan.

Generally, if you have NMO, the MRI of your spine will often show inflammation over three or more segments of your spinal cord - and the lesions will usually be longer than would be the case with MS.<sup>2</sup> An MRI of your brain will usually appear normal with NMO - although sometimes it can show signs of some inflammation.

### **Lumbar puncture**

A lumbar puncture is used to collect a small amount of cerebrospinal fluid (CSF), the clear liquid which surrounds your brain and spinal cord. If this is done during an acute attack of transverse myelitis, there may be increased white blood cells and raised proteins. They would also check for a particular antibody, known as 'oligoclonal bands' which is usually found in the CSF of people with MS but not typically with NMO.

### **Blood test**

Unlike MS, there is a blood test that can be carried out for NMO. This checks for an antibody known as 'aquaporin-4 antibody'. Although this antibody is specific to NMO, it's not a conclusive test - around 80% of people with NMO have it, so you may still have NMO even if you don't have the antibody.

The NMO clinic at the John Radcliffe Hospital, Oxford, is the only place in the UK where this blood test can be carried out. You don't need to visit the clinic yourself - if your neurologist suspects NMO they will send blood samples to the hospital for testing.

### **Evoked potentials**

This involves testing the time it takes for your brain to receive messages. Your neurologist will place small electrodes on your head to monitor your brain waves responding to what you see or feel. This is a painless procedure. If myelin damage has occurred, messages to and from your brain will be slower.<sup>1</sup>

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## **How is NMO treated?**

### **Steroids**

A course of methylprednisolone, a type of corticosteroid, is usually given to manage acute attacks of NMO - either through a drip ('intravenously') or in tablet form. This can help reduce the inflammation caused by the attack.

### **Plasma exchange**

If a course of corticosteroids hasn't helped your attack, or if your attacks have progressed, you may be offered plasma exchange. This procedure involves removing some blood and mechanically separating the blood cells from the fluid (plasma). The blood cells are then mixed with a replacement solution, typically albumin or a synthetic fluid with properties like plasma. The solution with the blood is then returned to your body.<sup>3</sup>

### **Long-term treatment**

There is currently no cure for NMO. However, you may be prescribed an 'immunosuppressant' - which dampens down the activity of the immune system - to prevent further attacks.

Azathioprine is most commonly prescribed - either alone, or in combination with prednisone (another steroid) - although there are other drugs that you may be prescribed, including rituximab.

Disease modifying drugs used to manage MS, such as beta interferon and glatiramer acetate, would not usually be prescribed for NMO. Studies looking at the effect of beta interferon on NMO have found, at best, that it is of no benefit, and, at worst, that it can make NMO worse.<sup>4,5</sup>

## Further information

There are two national centres specialising in NMO and related conditions. Your doctor can refer you or you can self-refer. Contact the individual centre for more information.

**The Walton Centre for Neurology and Neurosurgery**  
[www.thewaltoncentre.nhs.uk](http://www.thewaltoncentre.nhs.uk) - search 'neuromyelitis optica'

Telephone 0151 529 8357

Email [ms.advice@thewaltoncentre.nhs.uk](mailto:ms.advice@thewaltoncentre.nhs.uk)

**John Radcliffe Hospital, Oxford**

<http://www.oxfordradcliffe.nhs.uk/forclinicians/referrals/neurosciences/nmoclinic/nmoclinic.aspx>

Telephone 01865 231 905

Email [nmo.advice@orh.nhs.uk](mailto:nmo.advice@orh.nhs.uk)

### Other useful sources of information

#### **NMO UK**

<http://www.nmouk.nhs.uk/>

#### **The Transverse Myelitis Association**

[www.myelitis.org.uk](http://www.myelitis.org.uk)

Information for people with the spectrum of disorders of acute disseminated encephalomyelitis, neuromyelitis optica, optic neuritis and transverse myelitis.

#### **The Guthy Jackson Foundation**

[www.guthyjacksonfoundation.org](http://www.guthyjacksonfoundation.org)

Charitable foundation which funds research into NMO. Also has an online community for people to connect to others with NMO, or working within the NMO field.

## References

- 1 Wingerchuk, D. M. et al. (2007) The spectrum of neuromyelitis optica. *Lancet Neurology*, 6, 805-15.
- 2 Weinshenker, B. G. (2007) Neuromyelitis optica is distinct from multiple sclerosis. *Arch Neurology*, 64, 901-3.
- 3 Wingerchuk, D. M. (2007) Diagnosis and treatment of neuromyelitis optica. *Neurologist*, 13, 2-11.
4. Sellner, J. et al. (2010) EFNS guidelines on diagnosis and management of neuromyelitis optica. *European Journal of Neurology*, 17, 1019-1032.
- 5 Palace J. et al. (2010) Interferon beta treatment in neuromyelitis optica increase in relapses and aquaporin 4 antibody titers. *Arch Neurology*, 67, 1016-1017.

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### **MS Helpline**

The MS Helpline offers confidential emotional support and information to anyone affected by MS, including family, friends, carers, newly diagnosed or those who have lived with the condition for many years. Calls can be made in over 150 different languages, via an interpreter. Call freephone 0808 800 8000 (weekdays 9am-9pm, except bank holidays) or email [helpline@mssociety.org.uk](mailto:helpline@mssociety.org.uk)

## Authors and contributors

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With thanks to Tony Murphy, Kerry Mutch, Jon Revis and all the people affected by MS who contributed to this publication.

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First edition, August 2009  
Second edition, September 2011

This title will be reviewed within two years of publication.

Multiple Sclerosis Society.  
Registered charity nos. 1139257 / SC041990.  
Registered as a limited company in England and Wales 07451571.

FS15/0911