Modafinil for fatigue in multiple sclerosis

Information for the public
Published: 2 April 2013
nice.org.uk

About this information

This information explains the evidence summary about the off-label use of modafinil for treating fatigue in multiple sclerosis. The evidence summary is an overview of the available information about this medicine. It aims to help prescribers and patients when they are considering whether or not to use an unlicensed or off-label treatment. The summary does not contain recommendations from NICE on whether the medicine should be used.

Licensing medicines

In the UK, medicines need to have a licence before they can be marketed. To get a licence, the manufacturer of the medicine has to provide evidence that shows that the medicine works well enough and is safe enough to be used for a specific condition and for a specific group of patients, and that they can manufacture the medicine to the required quality. Medicines can be prescribed without a licence (an 'unlicensed medicine') if there is no suitable licensed alternative and it is likely to benefit the patient.

A medicine can also be prescribed 'off-label'. This means the prescriber wants to use it in a different way than is set out in the terms of its licence. This could mean using the medicine for a different condition or a different group of patients, or it could mean a change in the dose or that the medicine is taken in a different way. There is more information about licensing medicines on NHS Choices.
What is multiple sclerosis?

Multiple sclerosis (or MS for short) is a disease of the central nervous system (brain and spinal cord). In MS, the coating around the nerves of the brain and spinal cord becomes inflamed and damaged by the person's own immune system. The cause of MS is not known. It is a condition that lasts for life, usually starting in early adulthood, and there is no cure.

MS can affect people in different ways. Some people may have a few mild symptoms with periods of recovery in between, especially in the early stages of MS, whereas other people have symptoms that progressively worsen over time. The disease can cause various symptoms in different parts of the body depending on which nerves are damaged. Fatigue (extreme tiredness) is one of the most common symptoms of MS.

About modafinil

Modafinil is a drug that helps people feel and remain awake. It comes in the form of tablets, which may be taken once or twice a day. Modafinil is licensed in the UK to treat excessive sleepiness (when a person finds it difficult to stay awake, and may fall asleep in inappropriate situations) caused by a condition called narcolepsy.

There are no drugs licensed in the UK to treat fatigue in a person with MS. Because modafinil does not have a licence for treating fatigue in MS, using modafinil in this way is known as 'off-label'. Additionally, other drugs licensed for use in other conditions may also be prescribed 'off-label' to treat fatigue in MS, such as amantadine.

There are other ways to treat fatigue that do not involve taking drugs. These include exercising and learning ways to conserve energy, such as taking regular rest and prioritising which things to do during the day. Health professionals may also discuss with the person with MS whether other conditions, such as feeling depressed, could be making the fatigue worse.

Summary of possible benefits and harms

How well does modafinil work?

There has not been a lot of research into the use of modafinil to treat fatigue in MS.

Two studies compared modafinil with a 'dummy' tablet in 236 people with MS who were experiencing fatigue. A dummy tablet is a tablet that doesn't contain any active ingredient; this is
also called a placebo. These studies did not find that modafinil worked any better than a dummy tablet in reducing fatigue over a period of 1 to 2 months. No studies have looked at how well modafinil works when used for longer than 2 months.

**What are the possible harms or side effects?**

Modafinil has been found to sometimes cause serious side effects, which could be life-threatening. These include:

- a serious rash or allergic reaction, with swelling of the face, eyes, lips, tongue and throat causing problems breathing or swallowing
- mental health symptoms including feeling depressed or anxious, thinking about suicide, extreme increase in activity or talking (mania), hearing, seeing or sensing things that aren't really there (hallucinations), or being aggressive
- heart problems, including abnormal heart beats or changes in blood pressure.

Because of the possibility of someone having these serious side effects while using modafinil, the medicines regulator that gives licences to drugs in Europe has advised that the benefits of using modafinil only outweigh the possible harms that using it may cause when it is used for treating excessive sleepiness in a person with narcolepsy. The medicines regulator in the UK has issued a similar safety warning.

No one who was taking modafinil in the studies looked at here experienced these severe side effects, but some people did have some more common side effects, including stomach problems, such as nausea (feeling sick) and diarrhoea, feeling restless or anxious, or having trouble sleeping.

Please note that the results of the research studies only indicate the benefits and harms for the population in the studies. It is not possible to predict what the benefits and harms will be for an individual person being treated with modafinil.

**Prescribing modafinil**

If a prescriber wants to use an unlicensed or off-label medicine, they must follow their professional guide, for example for doctors the General Medical Council's good practice guidelines. These include giving information about the treatment and discussing the possible benefits and harms so that the patient has enough information to decide whether or not to have the treatment. This is called giving informed consent.
A full version of the summary aimed at healthcare professionals is available on the NICE website. The summary for healthcare professionals does not contain recommendations from NICE on whether the medicine should be used.

If your doctor is suggesting that you might try modafinil for fatigue in MS, you might like to ask some of the questions below:

**Questions to ask**

- Why am I being offered an off-label medicine?
- What does the treatment involve?
- What are the benefits I might get?
- How good are my chances of getting those benefits?
- Could having the treatment make me feel worse?
- Are there alternative treatments?
- What are the risks of the treatment?
- Are the risks minor or serious? How likely are they to happen?
- What is the plan for managing those risks if they occur?
- What may happen if I don't have the treatment?

**More information**

The evidence summary and this information for the public were produced for NICE by Bazian Ltd.

NICE has published information about how evidence summaries for unlicensed and off-label medicines are developed.

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