



Unproven treatments and motor neurone disease

This information sheet presents the facts about alternative or 'unproven' treatments. It aims to provide people with the information they need in order to make an informed choice about whether or not to go ahead with a treatment.

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Conventional treatments

A conventional treatment is one which has been approved for use as a treatment for motor neurone disease (MND), based on reliable scientific evidence assessing its safety and benefit for people with MND.

A treatment needs to be licensed and approved before it can be prescribed or recommended for use to treat an illness or condition. In the UK the Medicines and Healthcare Products Regulatory Agency (MHRA) licenses treatments. In Europe this happens via the European Medicines Agency (EMA).

Current treatments for MND

At the present time, the only drug that has been proven to slow the progression of MND is riluzole. This treatment has been rigorously tested and there is reliable evidence that it is both safe and beneficial for people with MND.

More information:

Care Information Sheet 5A: Riluzole

In the absence of a conventional treatment that can cure MND or stop it from progressing, it is understandable that people living with MND may wish to explore other avenues.

Complementary therapies

A complementary therapy is one that may help somebody cope with living with MND and might make day-to-day life more comfortable. However, while complementary therapy may help relieve symptoms such as anxiety or pain, the therapist will not claim that the therapy can cure or even slow the progression of the disease. Complementary therapies can be used alongside conventional treatment such as riluzole; examples include massage, aromatherapy, acupuncture and meditation.

More information:

Care information sheet 6B: Complementary therapies

Alternative treatments

Alternative treatments, also known as unproven treatments, may appear to offer some hope and an opportunity to take a proactive approach to tackling the disease.

Drugs which are not licensed to treat MND fall into the 'alternative treatments' category. Stem cell therapies and supplements or diets specifically claiming to cure or treat MND would fall into this category also. The people or organisations offering these treatments may suggest that they will work better than conventional treatments.

However, these remarkable claims are usually not supported by any reliable scientific evidence.

How do you prove a treatment works?

All potential treatments for MND need to go through clinical trials, to test their safety and effectiveness.

Those offering unproven treatments often refer to anecdotal evidence and personal testimonies to support their claims a treatment works. However, clinical trials take measurements and information to give them evidence as to if a treatment works. This could be ALS functional rating scale (ALSFRRS-R) scores or measures assessing respiratory function or muscle strength.

More information on clinical trials is in the next section of this information sheet (page 4).

Should I take unlicensed or unproven treatments outside of a clinical trial setting?

Some MND treatments currently being tested as part of clinical trials might be available to purchase on the internet, or be offered by clinics. Caution should be taken when considering treatments that have not been approved or licensed for MND.

Stem cells are an example of a treatment still undergoing testing though clinical trials. These trials are establishing if stem cells are a safe and effective treatment for MND.

More information:

Research Information Sheet F: Stem cells and motor neurone disease

Are there risks in taking treatments being used for, or undergoing trials in other illnesses and neurodegenerative conditions?

Even if a drug or treatment has shown no serious side effects in humans as part of clinical trials for other illnesses, it still needs to undergo clinical trials in MND before it can be licensed specifically for treating this disease. This is to establish in people with MND:

- whether there are any serious side effects associated with the drug
- if the drug interacts with other medications (such as riluzole)
- if the drug shows a beneficial effect, and if so what the correct dose should be

Proving a treatment through clinical trials

The gold standard process to establish both the safety and effectiveness of a new treatment is a series of tests in humans, known as clinical trials.

A treatment without published clinical trial results:

- Lacks reliable evidence to support its effectiveness
- May have unacceptably serious side effects
- Has not been independently examined
- Could be without scientific rationale

To get as far as starting the clinical trials process, a new treatment must have sound scientific reasoning behind it and show promise in laboratory tests. Once the treatment makes it to the clinical trials stage, researchers will carefully monitor a large number of people with MND who are receiving the trial treatment and compare their progress with that of a similar-sized group of people with MND who are receiving a placebo, or 'dummy' treatment.

People with MND who take part in properly conducted clinical trials are never expected to pay for the experimental treatment. Participation in any trial, however rigorously conducted, involves an element of risk.

There are various ways in which researchers ensure that the results of clinical trials are reliable:

- **By involving large numbers of people in the trial**, researchers can account for the fact that there are individual variations in the way that MND affects people and reduce the possibility that any apparent effects of the trial drug are just down to chance.
- **The placebo group** allows researchers to get a true picture of the effects of the trial treatment and ensures that any apparent beneficial effects are not due to the power of positive thinking, the extra attention from medical staff that comes with participating in a trial, or any other factor.
- **Neither the people with MND nor the doctors carrying out the clinical trial will know who is receiving the placebo** and who is receiving the trial treatment. This eliminates the possibility of bias in the way that the participants or doctors report the effects of the treatment.

In addition to establishing whether a treatment is effective, clinical trials answer other important questions:

- Is the treatment safe and what are the risks associated with taking it? For example, does the treatment actually make the disease worse, or are the side effects of the treatment worse than the disease itself?
- What is the best dose for a new drug? How is the drug processed by the body?

Once a clinical trial has been completed, the methods and results will be scrutinised by others in the scientific community before being published in medical journals.

More information:

Research information sheet D: Clinical trials: What are they and how are they organised?

What about testimonials from people with MND as evidence?

Publications that promote unproven treatments often include testimonials from a handful of people for whom the treatment has apparently been very successful. Such stories may also occasionally appear in the press or on the internet.

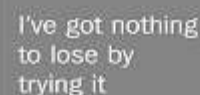
When considering these testimonials, it is important to remember that:

- A person's belief that a treatment will help them can bring about apparent beneficial effects. This 'placebo effect' is a normal response and can produce some improvement immediately after treatment. However, this is short-lived, perhaps lasting a few weeks, and is followed by deterioration.
- People sometimes feel that they *should* feel better after they have tried a new treatment, particularly if they have invested a great deal of effort and / or money in getting that treatment, or if others have contributed towards the cost. This can affect the way they report how they feel.
- Everyone's experience with MND is different. The disease naturally progresses more slowly in some people than in others. The fact that one or two people appear to live longer or have slower disease progression cannot be attributed to the treatment alone.
- The people reporting the beneficial effects of the treatment may not actually have MND. There are various diseases besides MND that affect motor neurones and cause symptoms very similar to those seen in MND. However, these diseases have different underlying mechanisms and may progress in a totally different way to MND.
- People react differently to treatments/drugs, and effects of the treatment may not necessarily be the same for each person who takes it.
- People may have been taking several unproven treatments at a time. This makes it hard to tell which may have been causing the observed change or beneficial effect (if any). In clinical trials, the other drugs or treatments a participant can take while taking the study drug/treatment is usually monitored.

Finding out the facts about unproven treatments

Sense about Science:

Sense about Science is a charitable trust that equips people to make sense of science and evidence on issues that matter to society. From news stories to online testimonies, they encourage the public to challenge scientific and medical claims and ask 'does the evidence support the conclusions being made'?



I've got nothing to lose by trying it

The MND Association worked with Sense about Science to help produce their 'I've got nothing to lose by trying it' information booklet so that people living with MND can make up their own minds about unproven treatments.

For further information on Sense about Science, and to download the information booklet, see the Sense about Science resource at the end of the information sheet.

ALSUntangled:

ALSUntangled was started in 2009 by a group of neurologists and researchers to scientifically review off-label and unproven treatments, to allow people with MND to make more informed decisions about these treatments.



ALS
untangled

These researchers give their opinions and firsthand knowledge of unproven treatments to look at exactly what is on offer, the cost, the science behind the claims, and the risks and benefits. ALSUntangled have created a video to help explain how they do this. You can watch it on YouTube at https://www.youtube.com/watch?v=NKQSa_DaBHg.

Once sufficient information has been collected ALSUntangled publically release a summary in the journal *ALS FD* so that people with MND and their families can make their own decisions regarding that particular treatment. This summary includes a table of evidence, which you can see in full on page 7.

If you hear of an off-label or unproven treatment, and ALSUntangled have not previously investigated it, you can submit the suggestion to them via their 'Twitter' account (@ALSUntangled) or by voting for it on their website www.alsuntangled.com.

The following treatments have already been investigated by ALSUntangled: Genervon GM604, Endotherapia, Goat serum (Aimspro), Lunasin, Spirulina (blue green algae), Bee venom, Coconut oil and Cannabis to name a few. All of these treatments have been identified as not having enough evidence to suggest their effectiveness at treating MND.

For further information on ALSUntangled, and to view their current lists of investigations and completed reports, see the ALSUntangled resource at the end of the information sheet

ALSUntangled Table of Evidence (replicated from *ALS and Frontotemporal Degeneration*, 2015, 16, 142-145)

Evidence category	Grade of evidence					
	None available (U), Very poor (F) →				Good evidence (A)	
	U	F	D	C	B	A
Mechanistic plausibility	Unknown	Implausible	Acts on biological mechanism, may not be relevant to MND	In theory, acts on MND/ALS relevant mechanism	Shown in peer-reviewed paper to act on relevant mechanism	
Pre-clinical animal or cell models	None	Studies show no benefit	One or more peer-reviewed (flawed studies)	studies report benefits	Peer-reviewed publication(s) in a well-designed study	
Patient case reports	None	No benefit	Reported benefit, but no validated diagnosis of MND	Unpublished report(s) of benefit with validated diagnosis and benefits		Peer reviewed publication(s) reporting benefits (with validated diagnosis)
Patient trials	None	Trials show no benefit	Reported results but trial is flawed*	Peer reviewed publication(s) (Phase 1 or 2 trial)	Peer reviewed publication(s) (Phase 3 trial)	
Risks	Unknown	Patients experienced death or hospitalisation/ serious side effects		Patients experienced side effects (but not serious)	No patients appear to have experienced harm	

*Flawed trials means those that have 'high or unclear risk of bias' according to published criteria. Well-designed trials are those that have 'low risk of bias'.

Explanation of the table

- This table shows the five **evidence categories** the ALSUntangled investigators are looking at when determining if an unproven treatment is effective or not (**listed on the left hand side of the table**).
- The **evidence categories are graded** from U (no available evidence) through to A (good evidence) – **listed across the top of the table**.

If you want to pursue one of the off-label or unproven treatments that they have reviewed, you can make up your mind based on the most important factor to you. This could be if there is evidence of side effects, or if there is any scientific basis for the treatment working.

Questions to ask about unproven treatments

When deciding whether or not to undergo an unproven treatment, it may be helpful to consider the following:

What does your own doctor think?

It is always advisable to discuss any treatments you are considering with your neurologist or GP. Some treatments may interfere with other medications and your doctor will be able to provide you with expert medical advice. Beware of those offering unproven treatments who discourage you from talking to your doctor.

What evidence is there to support the claims made about the treatment?

Published results from clinical trials are the only reliable evidence of the effects of a treatment – you should never be expected to pay for a treatment that lacks this evidence. The Research Development team at the MND Association or your neurologist will be able to tell you if the results of research on a particular treatment have been published in medical journals. If the clinic tells you that their treatment is 'clinically proven', ask for the name of the journal in which the results have been published. A report on a web page is not acceptable.

What are the risks involved?

The possible side effects associated with a treatment should always be clearly stated, so that people can make an informed choice about whether or not to go ahead. Ask how the clinic follows its patients after the treatment and how side effects have been assessed and documented. Even those treatments described as 'all natural' are not necessarily safe.

Other important risks to consider are:

- If the treatment involves a long and tiring journey to reach the clinic, how will this affect your health?
- How will you and your family feel if the treatment fails?
- Is paying for the treatment going to put you and your family in a difficult position financially?

Where did you find out about the treatment?

Newspapers, magazines, social media sites and websites may have little regard for the presence or absence of good scientific evidence. The internet is also very difficult to police and so can be used to advertise and sell unproven treatments with relative ease. Safe and effective treatments will be endorsed by your doctor and the MND Association.

Do you have to travel to another country to receive the treatment? If so, why is it not available in the UK?

UK regulations surrounding medical practice and treatment exist to protect patients. Many countries have more lax regulations and policing, providing opportunities for those wishing to profit from the sale of unproven treatments. Bear in mind that some organizations offering unproven treatments (particularly stem cell treatments) will have a contact address or telephone number in a country like the USA, via which enquiries and arrangements are made. However, the clinic itself will be in a less well regulated country – ask where you will actually receive the treatment.

Are there claims that the treatment is effective for a wide variety of diseases?

Even when their symptoms are similar, different diseases involve different disease mechanisms and need to be tackled in different ways. It is unlikely that one treatment could be effective for a whole list of conditions. Most genuine treatments are of benefit in just one or two diseases.

Information and Support

If you would like to discuss a particular unproven treatment or if you have any questions you can contact our Research Development team on 01604 611880 or research@mndassociation.org.

You can also discuss unproven treatments, as well as other topics, on our online forum at www.forum.mndassociation.org/. To discuss any unproven treatment the Sense about Science and NHS Choices forum 'Healthy evidence' is also available: www.healthunlocked.com/healthyevidence.

The MND Association's policy statement on unproven treatments is given at the end of this information sheet.

Useful resources

ALSUntangled is an international group of researchers that give their opinions and firsthand knowledge to look at the science, risks and benefits behind unproven treatments. To view the completed reports, or to submit a suggestion, please visit their website for details.

Website: www.alsuntangled.com

Twitter: www.twitter.com/alsuntangled

Table of evidence (full version):

<http://www.tandfonline.com/doi/pdf/10.3109/21678421.2014.987476>

Sense about Science is a charitable trust that equips people to make sense of science and evidence. We worked with Sense about Science to produce the information booklet 'I've got nothing to lose by trying it' on unproven treatments. You can request a copy using the information below.

Tel: +44 (0)20 7490 9590

Email: enquiries@senseaboutscience.org

Website: <http://www.senseaboutscience.org/>

Download: <http://www.senseaboutscience.org/resources.php/11/ive-got-nothing-to-lose-by-trying-it>

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The MND Association's policy statement on unproven treatments for MND

There is currently no cure for motor neurone disease, which is why the MND Association is committed to funding and promoting scientific research into possible causes and treatments.

Only a drug called riluzole has been proved through clinical trials to be a successful treatment for people with MND. It extends life by up to three months.

Even so, there are many other unproven treatments marketed throughout the world for people with MND. However, their effectiveness has not been proved through clinical trials, and the science behind them is sometimes not well understood. The Association does not endorse these treatments.

In addition, we believe that allowing treatments to be made available which have not been through the established clinical trials process encourages unscrupulous individuals to market ineffective treatments for monetary gain.

We would encourage anyone with MND who is considering embarking on an unproven treatment to discuss all the implications with their neurologist before making a decision.