

## Interferons (Avonex®, Betaferon®, Rebif®) for secondary progressive multiple sclerosis (SPMS)

### Review Question:

What happens when people with SPMS take interferons?

### The short answer:

This review found that interferons are not beneficial in preventing disability in people with SPMS. While interferons can slightly reduce the chance of people with SPMS experiencing relapses they do not have any effect on the chance of disability getting worse. The side effects of interferons most commonly include flu-like symptoms, headache and pain and redness at the injection site but can include a range of others.

This is the printable version of an online resource providing plain language summaries of high quality research about MS treatments. Visit the **Making Sense of MS Research** web site (or the back page of this document) to learn more [www.makingsenseofMSresearch.org.au](http://www.makingsenseofMSresearch.org.au)

### THE SHORT ANSWER

This is a summary of the research about the effect of interferons (Avonex®, Betaferon®, Rebif®) in people with secondary progressive MS (SPMS) written in plain language for people with MS and their family members. It is based on a report (known as a systematic review) that was produced by The Cochrane Collaboration.

In April 2011, the authors of the report searched for all the randomised controlled trials (RCTs) on this topic and combined the results. They aimed to provide an overall picture of whether interferons are effective in SPMS. They found five trials, including 3122 participants. As at August 2012, there were no new RCTs conducted in this area.



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## THE DETAILED ANSWER

### Relapses

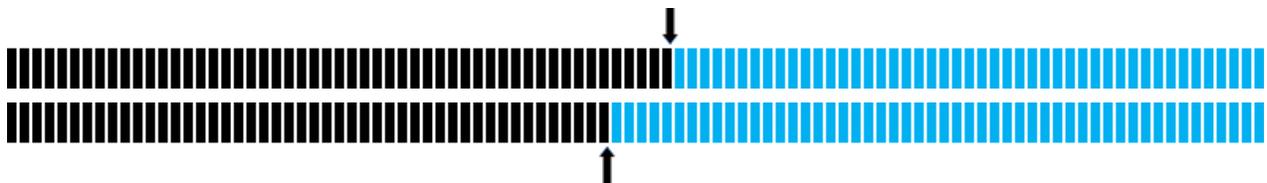
Taking interferons for 3 years slightly decreases the chance of experiencing one or more relapses

*In words*

- **Without** interferons, **53 per 100** people with SPMS would experience one or more relapses over three years and 47 would not.
- **With** interferons, **48 per 100** people with SPMS would experience one or more relapses over three years and 52 would not
- Therefore with interferons, **5 fewer** per 100 people would experience one or more relapses over three years compared to without interferons.

*In pictures*

**Without** interferons, **53 per 100** people with SPMS are estimated to have worsening disability



**With** interferons, **48 per 100** people with SPMS are estimated to have worsening disability

In technical terms, the result was just statistically significant, the confidence intervals touched 1 and the boundaries were narrow. This means the effect of interferons was unlikely to be due to chance alone.

#### Do these results look different from what you've read elsewhere?

See the back page of this treatment summary for an explanation. You can also discuss the results with your local MS Australia office.

## Disability

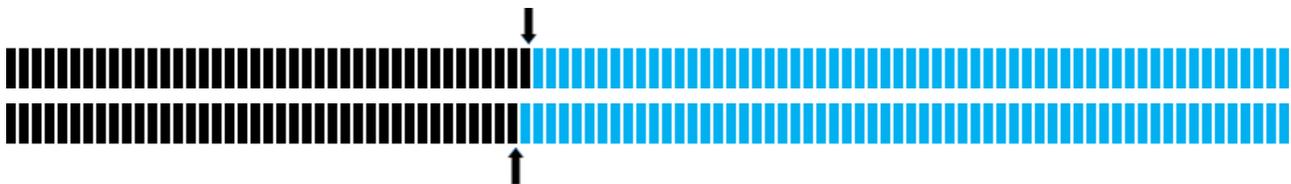
Taking interferons for three years **makes little or no difference** on the chance of disability getting worse

*In words*

- **Without** interferons, **41 per 100** people with SPMS would experience worsening disability over three years and 59 would not
- **With** interferons, **40 per 100** people with SPMS would experience worsening disability over three years and 60 would not
- Therefore with interferons, **1 fewer** person per 100 would experience worsening disability over 3 years compared to without interferon

*In pictures*

**Without** interferons, **41 per 100** people with SPMS are estimated to have worsening disability



**With** interferons, **40 per 100** people with SPMS are estimated to have worsening disability

In technical terms, the result was not statistically significant, the confidence intervals crossed 1 and the boundaries were wide. This means the effect of interferons could easily have occurred by chance alone and the effect in the broader MS population could be variable.

### Do these results look different from what you've read elsewhere?

See the back page of this treatment summary for an explanation. You can also discuss the results with your local MS Australia office.

## WHAT IS THIS TREATMENT?

Interferons are considered a 'first line' treatment of multiple sclerosis and are commonly prescribed for people with RRMS. In Australia, the Therapeutic Goods Administration (TGA) has approved interferons in the treatment of RRMS. They are also covered under the Pharmaceutical Benefits Scheme (PBS). For more information about how to take interferons you can contact MS Australia and ask to speak with an MS Nurse.

Up to date as at August 2012

## Side effects

Interferons are generally well tolerated. Most interferon side effects are mild and can often be relieved with symptomatic treatments, without the need to stop taking them.

- Very common (10-100 per 100 people)
- Common (1-9 per 100 people)
- Uncommon (less than 1 per 100 people)
- ? There is no information about the side-effect

### Symptoms

	Avonex®	Betaferon®	Rebif®
Flu like symptoms (fever, chills, cough, sore throat, flu-like symptoms)	●●●	●●●	●●●
Headache	●●●	●●●	●●●
Pain and redness at the injection site	●●	●●●	●●●
Muscle weakness	●●	●●●	●●
Itching, rash	●●	●	●●
Nausea, vomiting and diarrhoea	●●	●	●●
Depressed mood, insomnia	●●	●	●●
Joint pain	●●	?	●●
Skin break down at the injection site	?	●●	●
Weight loss	●●	?	?
Hair loss	●	●	●
High blood pressure	?	●	?

### Blood test values

	Avonex®	Betaferon®	Rebif®
Low white blood cell counts	●●	●	●●●
Low red blood cell counts	●●	●	●●●
Low blood platelet counts	●	●	●●●
Abnormal liver enzyme levels	?	●	●●●
Abnormal thyroid hormones	?	?	●

**Sources:** This side effect data has been collated by the IN-DEEP project team using publicly available data from the European Medicines Agency, Micromedex and the studies included in Cochrane reviews on Interferons.

Up to date as at August 2012

## What we don't know from the results of this review

Based on the studies included in the Cochrane review, we are uncertain about the effect of interferons on cognitive function (i.e. brain function). The way each original studies measured cognitive function was different, meaning the authors could not put the results together to see the overall effect.

## What about the quality of the included studies?

Overall the quality of the studies was high. The studies were randomised controlled trials, which are considered the most rigorous study design that minimises the risk of misleading results.

## The really detailed answer

For more information, or to read about the individual studies included in this review, you can access the Cochrane review on which this treatment summary is based:

- La Mantia L, Vacchi L, Di Pietrantonj C, Ebers G, Rovaris M, Fredrikson S, Filippini G. Interferon beta for secondary progressive multiple sclerosis. Cochrane Database of Systematic Reviews 2012, Issue 1

## DOES THIS APPLY TO ME?

When deciding if this information applies to you it's helpful to think about how similar you are to the people that were included in the studies.

## What we know about the people included in the Interferons studies:

- They had secondary progressive MS

## If I am similar to the people in the studies, can I expect the same results?

It is important to remember that studies deal with averages and statistics. Even if you are a person with secondary progressive MS, we can't know for sure that you will respond in the same way.

What we can say, is that, on average, people who have secondary progressive MS do not appear to benefit from taking interferons in terms of preventing worsening disability. However, people with SPMS, who still get relapses, may experience a reduction in relapses.

If you have other kinds of MS, please see our other summaries on the effects of interferons in people with clinically isolated syndrome (CIS) (coming soon), relapsing remitting MS (RRMS) and primary progressive MS (PPMS).

Up to date as at August 2012

## QUESTIONS FOR MY HEALTH PROFESSIONAL

You might like to ask your health professional to help you answer the following questions:

- Should I be taking interferons if I have SPMS?
- What other options do I have for managing my MS?
- What options are available to manage any side effects?
- Can I take other medication when I am taking interferons?

## FIND OUT MORE

For more information about treatment options for SPMS you can contact:

- Your health professional
- Your local MS Australia office

Or, you can Google the following web-based resources:

- What we know about Secondary Progressive MS (National MS Society)
- How Secondary Progressive MS is treated (National MS Society)

### Would you like to talk to someone about this?

Information can be unsettling or overwhelming, particularly when it relates to making a decision that requires weighing up difficult choices. Finding out about possible side effects can be scary. Inconclusive or negative findings can be frustrating or confusing.

If you would like to talk to someone about the information that is presented here, please contact your local MS Australia office on the details below

#### **MS Australia – ACT/NSW/VIC**

Free call: 1800 042 138 (from all three states)

E: [msconnect@msaustralia.org.au](mailto:msconnect@msaustralia.org.au)

#### **MS Australia – Queensland**

P: (07) 3840 0888

Freecall: 1800 287 367

E: [info@msqld.org.au](mailto:info@msqld.org.au)

#### **MS Australia – SA & NT**

P: (08) 7002 6500

E: [info@ms.asn.au](mailto:info@ms.asn.au)

#### **MS Australia – Tasmania**

P: (03) 6220 111

E: [aboutus@mstas.org.au](mailto:aboutus@mstas.org.au)

#### **Multiple Sclerosis Society of WA**

P: (08) 9365 4888

Country callers: 1800 287 367

E: [enquiries@mswa.org.au](mailto:enquiries@mswa.org.au)



These summaries have been derived from Cochrane reviews published in the Cochrane Database of Systematic Reviews in The Cochrane Library. Their content has, as far as possible, been checked with the authors of the original reviews, but the summaries should not be regarded as an official product of the Cochrane Collaboration.

Up to date as at August 2012

## ABOUT THIS MS TREATMENT SUMMARY

The results presented here are only one piece of the information jigsaw you might need to make a decision

### Where does the treatment summary information come from?

We have based our treatment summaries on systematic reviews, produced by the Cochrane Collaboration. The Cochrane Collaboration is recognised as a world leader in the production of independent, high-quality research about health care.

A systematic review is a report that sums up the best available research on a particular topic. This allows the results from a number of studies to be pooled together. The authors follow careful procedures and look at the strength of the evidence to make informed conclusions about the overall findings. Systematic reviews help us to decide if treatments work and whether any more research needs to be done. Systematic reviews of multiple studies are generally considered more convincing than just looking at the results of single studies alone.

### This information is only one piece of the information jigsaw

We present how well this treatment works *on average* because that is the way the research is conducted. How an individual responds might be different. Each summary is only one piece of the information jigsaw. If you are making a decision, the complete jigsaw would include other pieces, such as your preferences, your health professional's clinical experience, and other pieces of information, such as how treatments work over a long time span. Please talk to your health professional or local MS Australia staff for more information.

### Why might these results look different from what I've seen elsewhere?

There can be a number of different reasons for this, including:

- Cochrane Collaboration researchers may analyse the results of the studies in different ways from the original study authors. They do this if they think this will provide a more accurate estimate of how well the treatment works. This may lead to more conservative findings.
- Usually, Cochrane reviews only include the highest quality research. High-quality research tends to provide more conservative estimates of how well a treatment works. Less rigorously designed studies can overestimate the effectiveness of treatments.
- There are ways of presenting statistics that look more or less convincing. We have tried to present the results in an understandable and accurate way that does not overstate their effect
- It is also important to note that health professionals and MS Australia rely on a range of research on which to base their advice about MS treatments. Cochrane reviews rely on information collected in clinical studies, often randomised controlled trials. This doesn't always give a complete picture about treatments. For example, long term follow up studies are needed to suggest how well MS treatments work over 10 or 20 years, or to learn about side-effects.

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