

**National Multiple Sclerosis Society  
MS Learn Online Internet Program  
Managing MS with Disease Modifying Agents – Part One**

>> Welcome and thank you for joining the National Multiple Sclerosis Society's MS Learn Online internet program. I am Rick Turner, your host and medical correspondent. The management of multiple sclerosis has been substantially advanced by the availability of the disease modifying agents. Today, in our first of four web casts, these agents will be discussed so you can better understand what is available and the options you have. To help us better understand these treatment agents is Dr. Fred D. Lublin. Dr. Lublin is a Saunders Family Professor of Neurology at Corrine Goldsmith Dickinson Center for Multiple Sclerosis at Mt. Sinai Medical Center in New York. Welcome to the program Dr. Lublin.

>>**Dr. Lublin:** Nice to be here.

>>**Rick Turner:** Dr. Lublin, begin by giving us a broad overview of the current disease modifying agents available today.

>>**Dr. Lublin:** Okay. We have had disease modifying agents, that is, agents that alter the course of multiple sclerosis for the past dozen years and prior to that we had no therapies. So, the current therapies that we have include interferon beta of which there is three different marketed varieties, glatiramer acetate, and mitoxantrone. We have different uses for them at different times in the course of multiple sclerosis. Each of them has been a major breakthrough in our ability to better treat patients and certainly has made us the envy of much of the area of neurology where most diseases do not have disease modifying therapies.

>>**Rick Turner:** Now, of course, missing from that list you just gave us is Tysabri, a drug that was approved for MS in November of 2004 and taken off the market in less than three months. Many of our listeners have been wondering if there has been any recent development at all regarding Tysabri.

>>**Dr. Lublin:** No recent developments. The analysis of what happened with Tysabri that led to it producing in a small number of patients a very serious complication known as progressive multifocal leukoencephalopathy or PML, work is underway to try and better understand that.

>>**Rick Turner:** Let's go back now to the agents you spoke of earlier. Four of them, Avonex, Rebif, Betaseron, and Copaxone are classified as

immunomodulators. Novantrone is classified as an immunosuppressant. Explain to us the difference between these classifications.

>>**Dr. Lublin:** An immunosuppressive agent such as Novantrone or mitoxantrone is typified by what we usually call chemotherapy. It broadly suppresses almost all aspects of the immune system in a nonselective way. Immunomodulators are more specific in their actions on the immune system from affecting many different pathways but not all to be highly targeted. For example, Tysabri was a highly targeted immunomodulator. Interferon beta and glatiramer acetate are a little less targeted but still modulate the immune system rather than suppressing it. It is of some importance because the potential side effects with immunosuppressant agent are greater than with an immunomodulator.

>>**Rick Turner:** So is it fair to say that these different types of drugs are trying to come at multiple sclerosis from a different angle?

>>**Dr. Lublin:** Yes. That is the logic of immunomodulation is to try and target it to several critical pathways involved in induction of the disease without knocking out the rest of the immune system.

>>**Rick Turner:** Another classification is that three of the treatments you have mentioned are interferons. What are interferons, Dr. Lublin?

>>**Dr. Lublin:** Interferons are natural products our bodies make them as part of our defense against viral infection and also as part of our system of immunomodulating. They are proteins and they have multiple actions within the body.

>>**Rick Turner:** We have heard about them for years with regard to cancers and other sorts of illnesses. Do they hold as much promise as when they were originally discovered?

>>**Dr. Lublin:** Yes they do. Interferon beta, one of them, Betaseron, was the first drug available for treatment of multiple sclerosis and followed not too long afterward by two other interferon beta's which are Avonex and Rebif and we have been using them for the last 10-12 years and I think quite successfully.

>>**Rick Turner:** Let's talk about that 10-12 year history. Many years of experience with these interferons, have we learned anything new compared to the

original clinical trials and have the benefits from the original trials held true over time?

>>**Dr. Lublin:** That is a little difficult to answer because the best clinical information that we get comes from control of the clinical trials such as those that were employed to provide the data that led to licensing and availability of the three interferons that we have today. After a drug is licensed, approved, and available for prescribing, it is harder to collect controlled data. So, we are left with our own experience to gage it. However, our experience has been that in fact patients do quite well on these agents and they do just as well as we would have expected to have done based on the clinical trial data.

>>**Rick Turner:** How do the interferons actually work?

>>**Dr. Lublin:** Interferons have several mechanisms of action within the body. The most important, we think, are their effects at the blood-brain barrier, that is, shoring up the blood-brain barrier so there is less trafficking of immune active cells into the brain and spinal cord which should cut down on the amount of disease activity that occurs. Interferons also slow down the immune response, inhibit it to a degree, and alter the immune response in a way that turns off the attack on the central nervous system such that individuals would have fewer and less severe exacerbations.

>>**Rick Turner:** We know that there are several different types of multiple sclerosis, Dr. Lublin. For which patients are interferons most likely to be prescribed?

>>**Dr. Lublin:** There are three groups of patients interferons are likely to be prescribed for. They were originally licensed for treating relapsing-remitting or relapsing forms of multiple sclerosis. They have also been shown to be useful for individuals who have had but a single attack of multiple sclerosis even though one cannot diagnoses multiple sclerosis after a single attack. All relapsing multiple sclerosis starts with a first attack and those individuals may be appropriate for treatment. There is also evidence that interferon may be useful in secondary-progressive multiple sclerosis.

>>**Rick Turner:** I am afraid that is all the time we have for today. Please join us for our continued interview with Dr. Fred Lublin when we will be discussing Copaxone and Novantrone and begin to answer some of your questions.

>>**Rick Turner:** The National MS Society is proud to be a source of information for you about multiple sclerosis. Our comments are based on professional advice, published experience, and expert opinion, but do not represent individual therapeutic recommendation or prescription. For specific information and advice consult a qualified physician. If you have a question that was not addressed, please email us at [mslearnonline@nmss.org](mailto:mslearnonline@nmss.org). If you would like more information on multiple sclerosis, click on the resources link on your screen or call the chapter nearest you for an answer to your question. You can reach your chapter by calling 1-800-FIGHTMS. That is 1-800-344-4867. You may also want to check the National MS Society's web site where you will find more information about today's topic and a menu of other web casts available to participate in.

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For the National Multiple Sclerosis Society I am Rick Turner wishing you health and happiness.