



Multiple Sclerosis  
Association of America

## **Disease-Modifying Therapies for MS and the Perception of the Hispanic American Community about Treatments**

Presented by:  
**Dr. Erica Rivas-Rodriguez**

### **Yahaira Rivera:**

Hello. Good evening. On behalf of the Multiple Sclerosis Association of America, I extend a warm welcome to all of you. Thank you for participating in our seminar, *Disease Modifying Therapies for Multiple Sclerosis and the Perception of the Hispanic American Community about the Treatments*, which will be presented by multiple sclerosis specialist, Dr. Erica Rivas-Rodríguez. My name is Yahaira Rivera and I am the Director of Mission and Program Development for the Multiple Sclerosis Association of America and I will be the moderator for this program. This seminar is part of our initiative: *Together Finding Resilience, Living with Multiple Sclerosis*, an initiative dedicated to our Hispanic and Latino community living with Multiple Sclerosis and their supportive caregivers and family members. And it's made possible through the generosity of our sponsors, Biogen, Genentech, and Sanofi Genzyme. Next slide.

Before we begin tonight's program, I want to give you some information about the services we offer. The Multiple Sclerosis Association of America is a national non-profit organization dedicated to improving the quality of life for the multiple sclerosis community through vital support services.

Our services include a nationwide toll-free hotline that provides service in English and Spanish Monday through Friday from 8:30 a.m. to 8:00 p.m. Eastern Time. We also have an equipment distribution program with products designed to improve safety, mobility and to help with heat sensitivity, especially as the summer months begin. We also have an MRI access program for individuals living with multiple sclerosis, if they qualify, to receive monetary assistance to cover the cost of the exam.

We also offer educational programs, like tonight's webinar, publications, and digital resources to keep you informed and to help you make decisions and monitor the progress of your multiple sclerosis. All of our programs are available to people living with multiple sclerosis across the

country. Many of our resources are available in Spanish. For more information, I invite you to visit our website - [mymsaa.org](http://mymsaa.org). You can also call us, send us an email, and follow us on social networks. Next slide.

During tonight's show, you will have the opportunity to participate, share your comments and ask us questions, writing them in the chat or using the Q&A icon. You are encouraged to submit questions and we will do our best to answer them during the Q&A section at the end of the seminar. I also want to let you know that this show is being recorded and will be available in our digital library over the next few weeks. At the end of the program, I ask you to complete a short survey. Your comments and suggestions are important to us and help us plan future programs. Next slide.

We want to remind you that this program is for informational and educational purposes only and does not constitute formal medical recommendations. If you have any questions specific to your diagnosis or treatment, we recommend that you contact your doctor or healthcare provider as soon as possible. Next slide.

During tonight's show, together with Dr. Rivas-Rodríguez, she will help us define what disease-modifying therapies are, understand why they are important in the treatment of multiple sclerosis, and also understand the relationship between the perception of multiple sclerosis treatments and beliefs in the Hispanic American community. Next slide.

Now, without further ado, I want to introduce our guest speaker. We have Dr. Erica Rivas-Rodríguez with us tonight. She is a Board-Certified Neurologist and is the Founder and Medical Director of the Austin Multiple Sclerosis and Neurology Institute in Austin, Texas. She completed her postdoctoral training in multiple sclerosis and neuroimmunology at the University of Southern California and fellowship training in neurology at the University of Texas Southwestern in Dallas, Texas. She is a graduate of the School of Medicine of the Universidad Central del Caribe in Bayamón, Puerto Rico, and completed her Bachelor of Science with a concentration in Biology at the University of Puerto Rico, Río Piedras campus.

Dr. Rivas has more than 11 years of experience as a neurologist, of which the last seven years has been dedicated to providing specialized care in the area of multiple sclerosis. She has had several scientific publications in the area of multiple sclerosis and is an active member of different organizations and associations at the national level and at the state level in Texas, and she is also an active member of the Hispanic and Latino Advisory Board of the Multiple Sclerosis Association of America. Welcome, Dr. Rivas-Rodríguez. Thank you very much for being here with us. The time is yours.

**Dr. Erica Rivas-Rodriguez:**

Thank you very much Yahaira, for the invitation to be here tonight and thank you very much to all the participants who have linked, or joined, to participate in this event that we have prepared for you.

Well, this afternoon I'm going to talk about disease-modifying therapies for multiple sclerosis and the perception of the Hispanic American community about the treatments. You will see that the slides are in Spanish and English, but mainly I will be speaking in Spanish. But, all the information is available on the slides in English and Spanish for those of you who prefer English.

So, I'll talk a little bit about the history of multiple sclerosis for those who don't know what multiple sclerosis is and those who are new to this condition. Multiple sclerosis is an

autoimmune and inflammatory condition that causes damage to the central nervous system, and leads to neurological deterioration or neurological symptoms that can be characterized by relapse and remission or progression.

Knowing that, I want to talk to you a little bit about the history of multiple sclerosis, which has been known since the 1300s, when there had been reports of people with a subjective medical condition of multiple sclerosis. And in the year 1868, the father of neurology, Jean-Martin Charcot... Sorry French speakers... gave a speech to the medical profession on the characteristics of a condition we know today as multiple sclerosis. And throughout the 1800s and 1900s, various remedies for multiple sclerosis were tried, but these included therapies that were ineffective and many that were dangerous, such as arsenic or mercury. In 1951, cortisone, which is a steroid, was first used for the treatment of an acute attack or acute relapse of multiple sclerosis. And 30 years ago, in 1993, interferon beta-1b was the first medication or drug for multiple sclerosis. Next slide.

Now, disease-modifying therapies or DMTs, have an objective that is to reduce clinical activity or what the patient manifests and the subclinical activity to which the patient is subjected. And this will contribute to preventing long-term disability in those people who have multiple sclerosis. And disease-modifying therapy can be divided into two categories, those therapies that have low or moderate effectiveness, or efficacy, and those that have high efficacy. Knowing that, we can give a treatment in two ways. One is a step approach where you start with a low or moderate therapy drug and move up to the next most effective drug in a stepwise fashion. And the other is rapid escalation or induction treatment that uses more effective treatments from the beginning or from the first time. Next slide.

These therapeutic drugs today are divided into two, those of low or moderate efficacy - therapies that are known as interferons, and glatiramer acetate, teriflunomide, and fumarates. And in the category of highly efficient therapeutic drugs we can see natalizumab, monoclonal antibodies against CD20, alemtuzumab, and S1P receptor modulators, and cladribine. Next slide.

Newsflash! We know as time goes on, we've seen that treating the patient or the person with highly effective drugs early on can prevent long-term neurological disability. And this is something that is up for debate as to whether some specialists want to go with this staggered step and others may want to start a more efficient treatment. So, this is something that we are "shifting" or moving that paradigm to see if we start... some will see that there is another to start the most effective treatments. That is breaking news. Next slide.

The American Academy of Neurology published in 2018 a practical guide and gave recommendations to neurologists on how to manage disease-modifying therapies in patients with multiple sclerosis. And they gave 30 recommendations, that broke down into 17 recommendations as to how we start those modifier therapies, 10 recommendations as to how we switch from one therapy to another or one drug to another, and 3 as to how we cease or stop modifier therapies from being necessary. And you will see what in the next slides, I only select two or three examples, but they are quite a lot, as you can see, 30 recommendations. And these recommendations are, one, for... let's go back one. These recommendations were made on the basis of evidence... based on concrete evidence and on generally accepted principles within the multiple sclerosis specialist community, or on evidence-based accounts that we see of conditions very similar to multiple sclerosis, or on deductive inference that we see from other premises. Next slide.

So this is one of the recommendations that we see and an example of a recommendation to begin the use of disease-modifying therapy for multiple sclerosis. And the authors of this guide gave a rationale and that reason was followed by a statement which is what we're going to look at here in this first example. The fundamental reason they tell us is that receiving a diagnosis of multiple sclerosis is an event that is very stressful. And then immediately talking to a person who has received a diagnosis about the treatments that are available is a lot of information. And it can be very emotional or they can no longer register that information. What is recommended is that the doctor should guide these people recently diagnosed with multiple sclerosis about those treatment options in an upcoming appointment, to which they should be separated, a first appointment to discuss the diagnosis and a future appointment to discuss these disease-modifying therapies. Next slide.

Another recommendation within the parameters to begin the use of modifying therapies is that the patient's preferences must be respected. It is very important because there are a number of disease-modifying therapies that you have to see, what the patient and... to agree, because that can increase acceptance and adherence to treatment. To which the statement is that clinicians need to incorporate and review these preferences and also make sure that we know what path of administration to take into account their lifestyle, how safe these drugs are, how effective they are, and the cost of medicines. That is important to take into consideration and also have a continuous dialogue. It is important for doctors to have open communication or dialogue with people throughout the course of their condition. Next slide.

And this is another one talking about the recommendations to start the use of disease-modifying therapies, and the fundamental reason that they give us is that the therapies modify what the disease is and are not exclusively, or are not used for treat the symptoms of multiple sclerosis, rather they are therapies that are used to treat the condition. And this therapy helps us to significantly reduce the clinical activities or physical relapses that the patient experiences, and the changes that we see in the MRI, or those lesions that we call the focal areas of inflammation. And so the statement they give us is that doctors should advise people with multiple sclerosis that disease-modifying therapies are prescribed to reduce relapse and activity in MRIs, but are not used to treat symptoms. And also that doctors should advise people with multiple sclerosis to notify them if they have any symptoms or a worsening of their symptoms. Again, communication. Next slide.

One of the recommendations that I put here is to change the case. We have to start... to change the modified therapy now. We know that none of the modified therapies available at the moment work 100%, so they are not going to be 100% effective in preventing those relapses and the activity that we see from the MRI. When a patient or the doctor thinks that this drug is not effective for them and wants to change, several things must be taken into consideration, including the tolerability and the probability of adherence of that person to adhere to the new drug. To which the statement is that clinicians need to assess the degree of disease, adherence, side effects of this new drug that we are contemplating, and that it should be changed when we see a breakthrough or destructive rash disease of multiple sclerosis, as long as we have that communication. Next slide.

And this is a recommendation as to when we cease or stop a disease modifying therapy. A question that I am asked a lot by my patients is could I stop taking my medications? I've been stable for a whole year. Can we stop it? What the American Academy of Neurology recommends to us is that there has not been any randomized clinical trial, or research, and scientific research helps us answer that question. We don't know when or why we stop using these modifier therapies in an individual with multiple sclerosis. And this is a communication that

is done with the patient and the doctor. And that is the statement that we have to have a communication with the patients to see if it suits us or not, and it is something more personal. Next slide.

So, we have already been talking about disease-modifying therapies and we know that these therapies are effective in preventing multiple sclerosis relapse, in preventing multiple sclerosis progression. But how do these treatments influence the Hispanic population? Well, we don't know very well because the research or the randomized clinical trials include mostly Caucasian or white people, and very few Hispanic people or other ethnic minorities. So, we have very little information about that. And the information that we have at the moment is made from an analysis, and after we obtain all the information, we go back retrospectively to see what are the characteristics that we see of these treatments in Hispanics. What we need is a prospective study from the beginning going forward with the Hispanic population and seeing how those drugs directly affect the Hispanic population.

And we see that with all the analyzes and the information that we have at the moment, the Hispanic population does respond positively to the benefits of these disease-modifying therapies and the tolerance of the drugs is very similar to those Caucasian people, who are the majority of the people who are participating in the studies, but we also see that Hispanics and other minority groups may have a little more of a side effect, a little different. And this information must be taken, as we say, with a grain of salt, because the Hispanic population studied is very small and we have to be careful with that information. Next slide.

Now, what makes Hispanic Americans different from the white Caucasian population, which is the one that is being studied the most in these studies, is that Hispanics belong to a highly varied and complex ethnic group. And that we are a genetic mix and reaction to a genetic mix. And there is also a cultural mix, and that cultural mix stems primarily from the indigenous inhabitants of the Americas, the Spanish settlers, and to one degree or another, the Africans. And while these genetic differences exist within Hispanics, it is European ancestry that plays a larger role in the risk of developing multiple sclerosis. Next slide.

Now, how does multiple sclerosis differ in Hispanic Americans or how do genetic and cultural differences influence Hispanic Americans in relation to their multiple sclerosis disease? Hispanic Americans have an earlier age of onset, multiple sclerosis may affect Hispanics earlier than Caucasians. And the course of the disease can be a bit more severe compared to whites and African-Americans. And Hispanic Americans may have a greater degree of lesions or areas of sclerosis or scarring in the brain or central nervous system.

And it is important to know that the different genetic backgrounds among Hispanic Americans can influence the expression of the disease, but there are also sociocultural factors that are very strong in Hispanics. Hispanics can also present greater disability at an earlier age, meaning that multiple sclerosis can affect them physically and also with the salient symptoms, or "silent symptoms of MS," the silent symptoms, the physical symptoms of multiple sclerosis, Hispanics may present with greater disability at earlier ages. And another difference, there are studies that have been done between Hispanics born outside the United States and Hispanics born in the United States, those Hispanics who immigrated to the United States at a later age compared to those born here in the United States, may have a greater deficiency in its ambulatory capacity. Next slide.

A study that was done with people with multiple sclerosis in the United States, and particularly with those people who attended the university in southern California, and they were given a

questionnaire, they participated in this questionnaire with 105 participants where they were asked a question, "Is there a significant event that you would like to report that caused your multiple sclerosis?" And this is looking at perceptions, the perception of what causes multiple sclerosis in those Hispanic people. And there were three, or three, sorry, there were three perceptions that were seen: environmental perception, sociocultural perception, and biological. The environmental perception was the one that was seen the most, they represented 87%, followed by the sociocultural perception, 57%, and finally the biological perception, 18%. Within environmental perceptions, the most common thing that people with multiple sclerosis perceive as the possible cause of their multiple sclerosis was diet and stress, or their diet and stress. And within the sociocultural factors, mainly, a scare or an event of sadness. And within the biological factors, it was something hereditary, that my parents or my family passed on to me. And these are perceptions of the disease, not necessarily the causes of the disease, but rather what the Hispanic-American patient perceives about their multiple sclerosis. Next slide.

Why is it important? Number one, perceptions of illness have been shown to be important determinants of well-being in multiple sclerosis. Number two, these perceptions, if negative, can cause an increase in the person's disability or negative symptoms in the future. Number three, perceptions of the disease can influence self-care and when to know or ask for help regarding symptoms or if we give them any intervention. Next slide.

And now, what are the perceptions of the treatments? We talked about the perception of multiple sclerosis, and now about the treatments. Well, it's a little more difficult to predict because multiple sclerosis is a condition that has an unpredictable course and the symptoms vary from person to person. And this can affect adherence to treatments compared to conditions that are predictable, that you receive a treatment and predict that it will improve. It's hard, so at that point you would stay on the medication because you know you're going to get better. A bit difficult with conditions like multiple sclerosis because they are unpredictable. And we know that there are 30 to 50% of people with multiple sclerosis at one time or another who have adherence problems. They discontinue their medication, their treatment, for multiple sclerosis prematurely and do not benefit from receiving this treatment. And it is also important to know the patient's beliefs about the effectiveness of these treatments because that way we can maximize health. Next slide.

Perceptions do not develop in isolation, and come in these three: perceptions of treatment, perceptions of oneself, and perceptions of illness. When we talk about perceptions of the disease, it is different for each person, because MS in one person can be very different from MS in another person. And that perception that I have is different from the perception that another person has about multiple sclerosis. And that can also influence how we see the disease, how we react to the disease, how we accept the diagnosis, how we accept the treatment. The perception of oneself is important here to note that each one has their own self-esteem, and that self-esteem will help how individually we accept and face this condition. But we have to have self-esteem. And the perception of treatment is that we need to know that treatments are available to help us slow down the progression of MS and to slow down acute attacks of MS. Next slide.

And we see here a graph where the perception of the disease that is above is the mediator between the impact on multiple sclerosis and the beliefs about the treatments. And we see that it can affect positively or negatively. If we have, let's say, severe multiple sclerosis, that can negatively affect the perception of the disease. But if we have milder multiple sclerosis, it can positively affect that perception of the disease and, in turn, the treatment. If a person with multiple sclerosis has a lighter case, we can say that my disease is not bad, the treatments are

working, or the treatments are working. If a person with multiple sclerosis has a more severe condition and is more disabled, then we can perceive that perhaps the treatment is not helping. And that is also important because then it can influence symptoms, medication or not, and also the communication with the doctors, or the "primary....," the doctors... or the doctors' assistants. Next slide.

Now when we talk about the intervention, we see that patients who experience... this is pretty much what you've told a patient who experiences serious consequences of their condition, may have negative beliefs about the efficacy of their treatment. But we as specialists have to work to improve how these people see their self-efficacy. And self-efficacy is the ability of people to believe in themselves to be able to fight something, or contribute to what is happening to them. These interventions that promote self-efficacy affect beliefs of the effectiveness of the treatment, which can lead to better adherence to treatment. And at the same time, negative beliefs about the efficacy of treatment can be improved through these interventions aimed at correcting negative beliefs about the disease and about oneself. But this is something that is done in intervention with a specialist. Next slide.

Meet the Needs. How to satisfy the needs. I have talked about all of this, I have talked about the definition of multiple sclerosis, the history of multiple sclerosis, disease-modifying treatments, and how Hispanics are a little different, cultural genetics, how multiple sclerosis affects our beliefs and our genetics, and is influenced by treatments and how we respond to treatments. There is evidence to all this, but we need more studies that help us understand the perceptions of multiple sclerosis treatment in the Hispanic American population. We need more studies for this.

And with this, I want to ask you to participate in some questions, which I am going to ask you. And we'll open the poll... Yahaira? So, this first question... I don't know if you have it available, if you have it, you can answer me. The first question: My current treatment helps me reduce the frequency of relapses. Do you totally agree, partially agree, partially disagree, strongly disagree, or prefer not to comment? We'll give you 15 to 30 seconds to respond. Maybe 15 seconds. Let's see what... Good. Well, most of you agree 50/50 that the treatments you are receiving will help reduce relapse rates. Okay, thanks for participating. Next slide.

My current treatment helps me slow down the progression of the disease. Do you totally agree, partially agree, partially disagree, strongly disagree, or prefer not to comment? Okay, let's see. So we have... We're 50/50, one-third/one-third. Well, but most agree that it helps reduce progression, and 1/3 prefer not to comment on it. Next slide.

Since I started my treatment, I live better with multiple sclerosis. Totally agree, partially agree, partially disagree, totally disagree, or prefer not to comment. Let's see. 50/50, but 100% say they agree. OK thanks.

And the last little question that I am going to ask you about the perceptions of the treatment in the Hispanic American population: Since I started the treatment, I am more optimistic about my multiple sclerosis. I totally agree, I partially agree, I partially disagree, I totally disagree, or I prefer not to comment. Let's see, totally agree and partially agree are 50/50, but everyone agrees that they are optimistic. Okay. Well thank you very much.

And these are important questions, because with all this information that I have provided you here today, I couldn't find any information specifically on the perceptions of multiple sclerosis

treatments in the Hispanic American population. So we have this deficiency that we have to fill. And then I see, Yahaira, that we have a question here in the chat, we have two questions.

**Yahaira Rivera:**

Yes, now we have a little time. Thank you very much, Dr. Rivas, for this very important information, and not only for telling us about disease-modifying treatments, but also for bringing up the topic of culture, because we know that this is very important, it has a lot of influence on how we manage a chronic disease. We have a few questions, and one says: What is the most widely used treatment within the Hispanic community?

**Dr. Erica Rivas-Rodriguez:**

Well, this varies, a good question, but this varies and it is a personal decision, it is a decision that is made with the doctor who is treating you. And the different medications work differently, have different side effects, are handled differently, some labs have to be done for one and different labs for another. They are handled differently and it is, as I mentioned, something more personal, depending on what those side effects will be or what other factors are important for the patient. And we see that among all the medications, there are three types that we divide between pills, injectables or infusions, the liquid medicine that is injected through the vein. And well, there are times when people may be afraid of needles, who have no adherence to taking pills or medications. And you also have to take into consideration the side effects, which ones have more serious side effects than others, and depending on how aggressive your multiple sclerosis is, one must choose an appropriate treatment. But it is a very personal decision.

**Yahaira Rivera:**

Thank you Dr. Rivas. Another question that we were asked, and I think it is very important, especially within our culture, to talk about home remedies. We know that our ancestors, our grandmothers, always took refuge in home and natural remedies. If a person has multiple sclerosis and is receiving disease-modifying treatment, is it okay if they also use home or natural remedies? What is your opinion on this?

**Dr. Erica Rivas-Rodriguez:**

Very important and culturally... and I know it because I have experienced it personally with my family and myself... if you have something, have a little tea, have this, those are remedies that we all grow up with. But, when talking about multiple sclerosis, what I recommend is treatments where we have scientific evidence, which is significant. And we know that we are going to respond positively to that treatment.

And the question of whether we can mix a medical treatment and a home treatment, it is a communication that you are going to have with your doctor, because not everything that's natural is beneficial. You have to see that some things natural or made in the laboratory will have their effect, whether positive or negative, that even if it is natural or it is a home remedy, it can have effects, to have chemical effects on our body, everything is very chemical. I tell my patients when they ask me this question, the smell of a flower is a chemical that has an effect on our body. How much cinnamon we add to our oats or what remedy we take will have a chemical effect on our body, and that can interact with other medications that we are taking and can influence our body.

So it's important that you're considering a home remedy, but talk to your doctor. But, if I recommend a treatment for multiple sclerosis, what I can recommend is a treatment that we know scientifically does help you, and then home remedies are a communication and a process,



to see if that can help you too. But I cannot say 100%, because that is something that we have not studied. So what we've studied are those therapy drugs that help immensely.

**Yahaira Rivera:**

Thank you very much. It's great advice for the whole community. Another question we received is in relation to a topic that you mentioned during the talk. If a person with multiple sclerosis improves his symptoms, does that mean that he can stop the modifying treatment?

**Dr. Erica Rivas-Rodriguez:**

Very good question. Multiple sclerosis is characterized in most patients as an unpredictable condition and we do not know when we are going to have the next symptom or the next relapse. And for this reason, we have to be careful, because we can have a relapse, and some people, months or years later, have another relapse or a second relapse, and so on.

I have seen people of any age, from the very young to the very old, who still have relapses. And you have to be careful, because despite having conversations about it, when I have conversations with my patients when they want to stop the medication, it has been seen that the medication has been stable for five years, ten years, we stop the medication and sometimes you can still have a relapse. So, just because we're not having relapse after relapse doesn't mean we don't have the condition anymore.

Unfortunately, multiple sclerosis is a chronic condition and that means it's going to be with you from the moment you're diagnosed, unfortunately. So it's important to have a doctor that you trust, who can have an open dialogue about these questions and concerns that you have. But, the fact that someone has recovered from a relapse and their body has repaired itself, and the area of inflammation that was in the central nervous system has repaired itself, and because of that, we begin to feel better. And we recovered from that relapse. But the goal of these medications is to prevent you from getting another relapse or another neurological symptom that can possibly lead to future disability. So recovering from a relapse is what we usually expect, but we should not stop receiving treatment because we have recovered from a relapse, because there is always a risk of having another relapse again. It is unpredictable. We should not stop treatment for that reason.

**Yahaira Rivera:**

Thank you so much. I have noticed that through all of your answers you always emphasize the importance of maintaining communication with the doctor, with the healthcare provider and making those decisions together. Thank you Dr. Rivas. Another question that came to us is: What is the reasonable time to see improvement after a person starts a disease-modifying treatment?

**Dr. Erica Rivas-Rodriguez:**

The goal of modified disease treatments is to prevent future relapses, prevent activity, and the MRI, which is where we see the lesions, as we call it, or the areas of sclerosis, which are the little white spots we see on the MRI. That is the objective of modifying therapies, improvements are not something that we should expect from these treatments. As I said earlier, the body itself is engaged in repair and we are investigating various drugs, various agents that help with recovery after a seizure or a relapse, and that help protect our central nervous system. But we still don't have any medicine to help us with that. But there is a lot of research that is being done with agents, medications, supplements that can help us recover after recovering from symptoms after a relapse.

**Yahaira Rivera:**

Thank you. Another question is about when a person passes 60 years of age, will it be an appropriate time to stop treatment?

**Dr. Erica Rivas-Rodriguez:**

This is an area of debate and there is no objective answer that can tell you yes or no. We know that naturally the immune system, which is the system that causes multiple sclerosis, is deregulated and decreases in power as we get older. And we also see that represented in multiple sclerosis, where pediatric patients have more severe inflammation than adult patients. And as we get older, the immune system also withdraws. "Wow, he's already retiring." It's not just me saying it, it's not as active, so having relapses when you're 60, 70, it's less common than when you're 18, 20, 30 years old, that's why, because the immune system is going to go away, decay, become silent.

But we have no way that we can predict who is going to be that person over 60 who is not going to have a relapse. It is difficult, we do not yet have a marker that tells us I can discontinue the medication because I know that you will not have a relapse, no risk, but it is a risk that you will decide whether or not to take with your doctor. And then again, something very personal together with your doctor. We are working on biological markers that can tell us the damage activity of multiple sclerosis.

And today there's a biological marker called [neurofilament light chain], or NfL, which is a marker that we've seen that can tell us in multiple sclerosis when we're at risk of a relapse or a neurological event, but it's not specific for multiple sclerosis, and can also be used for other chronic or degenerative conditions, such as Alzheimer's, for example, or brain trauma. That level is going to go up because it's a marker of damage to the central nervous system, not a specific one. But there is still a lot of debate about whether or not it's used to help us predict who is going to be that person who may relapse. And I hope that helps you with your answer, with your question.

**Yahaira Rivera:**

Thank you, Dr. Rivas. And one last question before finishing our talk, what advice can you give a person who is afraid of starting a modifying treatment?

**Dr. Erica Rivas-Rodriguez:**

That happens very often, very often. Each person has their own journey with multiple sclerosis, each person is different from each other and has their fears or questions about the disease and about the treatments. No treatment is 100% effective, but we do know that treatments are better at controlling disease than no treatment at all. The problem we see is that the longer we take to start treatment, the greater the risk that that person may have a relapse producing new neurological symptoms and possibly having partial or no recovery from those symptoms. The problem is also that these symptoms, if you do not recover, accumulate over time, if you start examinations at 20 years of age, at 30 years of age you are still not on medication, and then wait until age 50 to start a medication, we cannot take back the damage that you suffered during those 10-20 years, and then at the age of 50, you will possibly have these disabilities that accumulated over time. So we know, the earlier we start treatment, the earlier good treatment, the more brain, spinal cord and central nervous system we can preserve. That means a better quality of life after starting the drug.

But you have to take into consideration the side effects that these drugs can cause, you need to be monitoring these drugs, the labs, the MRIs, whether someone is allergic to a drug, and other lifestyle considerations, if you have an infection, or you have to put it in the fridge and you travel a lot, so maybe that is not the treatment for you. So, you have to see what your environment is and what your concerns are, and discuss the reasons why, which are the best. And together, I think that this is going to be the best medicine and that, to be hand in hand with your doctor, making sure that you are tolerating the medicine well, that it is not going to go down badly, that this is how your monitoring is being given, because it is important that we have that communication and that we have the opportunity to discuss that with our doctor and our family as well.

**Yahaira Rivera:**

Thank you very much Dr. Rivas for your wise advice, for sharing with us answers for our audience and such important information. Next slide, please.

And so, we've come to the end of our seminar. On behalf of the Multiple Sclerosis Association of America, again Dr. Rivas-Rodríguez, thank you very much for sharing with us, for your time, your dedication and for providing such important information to our Hispanic community. To our audience, thank you so much for participating. Thank you for your patience, for staying with us and learning. I remind you that this program was recorded and will be available in the coming weeks on our website. I invite you to visit our website to continue learning about the resources we have available to help, educate and inform you as you continue to navigate this multiple sclerosis journey. I also remind you to take a few minutes to answer the survey and we thank you for your participation. Have a nice night everyone and we'll see you next time. Bye-bye.