



**National
Multiple Sclerosis
Society**

**MS Learn Online
Feature Presentation
MS 101 – Part One
Jack Burks, MD**

Tom>> Hi, I'm Tom Kimball

Tracey>> And I'm Tracey Kimball, welcome to MS Learn Online. Whether you have or think you may have MS or care about someone who does, finding the right information is an important first step.

Tom>> Dr. Jack Burks is the director of program development at the Holy Name Hospital Multiple Sclerosis Comprehensive Care Center in Teaneck, New Jersey. In MS 101 – part one, Dr. Burks will discuss what MS is, how it's diagnosed, who gets it, and more.

>>Dr. Burks: Multiple sclerosis is a disease of young adults that affects the brain and the spinal cord. And what happens is that there's a short-circuiting in the brain and the spinal cord. Like, for example, what does that mean? Say, I want to move my right hand. I get the idea in the thinking cells of my brain called the neurons, but I've got to get the message down to my hand, and that's done by an electrical connection through a series of wires called axons, to the cells and the spinal cord. They go up to the nerves, to the muscles of the hand, and I move the hand.

In multiple sclerosis, there is a thinning of the insulation of the electrical wires. It's like an electrical system.

>> **Rick Sommers:** Okay.

>>**Dr. Burks:** And when that thinning occurs, if it gets severe, there's a short-circuiting of the message. So, I think about the idea I want to move my right hand, but the message doesn't get through as fast, or sometimes it gets short-circuited, doesn't get through at all, and I have trouble moving my right hand. So, it's an electrical problem with insulation.

>> **Rick Sommers:** And destruction of that insulation is the actual autoimmune reaction that becomes MS.

>>**Dr. Burks:** Yeah, Rick, that's correct. The basis of the damage is an immune system or autoimmune disease. And what happens is that -- I think of it like a fort. The immune system are the sentries of the body. They keep all the bad guys out. They shoot all the bad guys so they don't get into the body.

>> **Rick Sommers:** Okay.

>>**Dr. Burks:** Well, in multiple sclerosis, somehow they get confused and they sort of turn around and start shooting in the fort. And when they shoot in the fort, they shoot at the myelin. And so the myelin gets damaged by the immune system that is made to protect us.

>> **Rick Sommers:** Okay. Let's go back to the 101 portion of our MS and define myelin a little bit more in layman's terms.

>>**Dr. Burks:** Well, the best way to define myelin is everybody knows what an electrical wire is.

>> **Rick Sommers:** Right.

>>**Dr. Burks:** Everybody knows what insulation is. The electrical wires in the brain that connect the various cells are called axons. The wires are the axons. Every one of those in the brain has to have insulation or the message gets short-circuited. Electricity goes diffusely rather than the way we want it to go. Well, myelin is this white fatty substance that surrounds every wire in the brain and the spinal cord. So, that's what myelin is and it's an insulation problem.

>> **Rick Sommers:** So, I've been diagnosed, I've been told, yes, you have one or the other forms of MS. And one of my first questions is, "Am I going to die from MS?"

>>**Dr. Burks:** That's a frequently thought of question, not asked nearly enough. The answer to that is MS is not a fatal disease, per se. It's a disease that people have likely for the rest of their lives, but it comes and goes. People have an attack, the immune system will get angry and damage the insulation, then it will calm down and people will be stable for a while. And then another attack will come by. Then after several years, that's called the relapsing-remitting form of the disease. But after several years the attacks get less. That's the good news.

The bad news is that patients start progressing between attacks, and then pretty soon they stop having attacks altogether. It's just a progressive disease. We call that part of the disease secondary-progressive disease. That's the standard. That's 85% of the people start with relapsing-remitting disease. There are some other, less common forms of the disease. One of those is primary-progressive.

>> **Rick Sommers:** Okay.

>>**Dr. Burks:** And that's a progressive form of the disease that really never had an attack. They just started off progressive. So, relapsing-

remitting goes to secondary-progressive, and if you just start off progressing, they call it primary-progressive disease.

>> **Rick Sommers:** Is it possible that somebody could come into your office and be diagnosed with primary-progressive right off the bat, then?

>>**Dr. Burks:** Yes, that's usually the way it is.

>> **Rick Sommers:** Really?

>>**Dr. Burks:** Yeah. We look for a year-long progression of the disease with no exacerbations and no other obvious cause for that. And so therefore that's how primary-progressive patients present. The symptoms are primarily in the spinal cord for primary-progressive.

And the other thing about primary-progressive, it affects older aged people, in their forties and fifties. In trying to think about the differences, primary-progressive starts in the forties and fifties, where relapsing-remitting disease starts in the twenties and thirties. Although we do see relapsing-remitting patients in children sometimes, and sometimes in older adults, but usually it's eighteen to forties when it starts.

>> **Rick Sommers:** Okay. The youngest you've seen?

>>**Dr. Burks:** Two years old.

>> **Rick Sommers:** Really?

>>**Dr. Burks:** Yes.

>> **Rick Sommers:** Who gets MS and why do they get MS?

>>**Dr. Burks:** Well, we talked about young adults, we've talked about starting at the age of 20 and 40, and if it's primary-progressive it's a little bit

older. Women get it more than men, and we don't know quite -- we're not quite sure why that happens. But there may be a hormonal influence within the immune system that may trigger this, because other autoimmune diseases are more common in women as well.

Where your ancestors are from. There's a genetic component to this. And so people who have Northern European ancestry have a greater risk than, say, African blacks or native South American people. So, there's a genetic component to this. It's not a hereditary disease. Half of your kids won't get multiple sclerosis, but there is an increased risk for multiple sclerosis in family members.

>>**Rick Sommers:** Okay.

>>**Dr. Burks:** Where you live has something to do with your risk of multiple sclerosis. If you live in temperate climates, your risk of multiple sclerosis is very high, especially if you've lived there during your childhood years than, say, somebody who lives near the equator. But you have to have the right genes and the right climate, and some people think that -- and there is some data that would support this -- that sunshine is important. The more sunshine you have the less likely you are to get multiple sclerosis. So, therefore, people who live in warm climates with lots of sunshine have less MS than people who live in temperate climates, for example. And possibly the underlying issue there is not sunshine but the result of sunshine, which is vitamin D.

>> **Rick Sommers:** Right.

>>**Dr. Burks:** Other people, like, we haven't seen much MS in Asian countries or in South American countries, for example, until recently. So, why are we seeing all this new MS? Another risk factor came up. It's freedom from parasites. It turns out that parasites have an immunomodulating effect, meaning, it can actually dampen the immune system. The people who have parasites are less likely to get MS. When

they have MS, their disease is less if they have parasites. And now that we're cleaning up parasites in the world, we're seeing more MS in these other countries.

So, there are a number of risk factors. There is probably a toxic component to this at someplace. We haven't identified that yet. But I've listed six or seven risk factors for why people might be at higher risk of getting MS, and there are probably many more we don't understand.

>> **Rick Sommers:** When I was diagnosed, my doctors told me that predominantly, as you mentioned before, MS is a women's disease. More women are diagnosed than men. But it seems to me in the last few years I've been stumbling across, literally and figuratively, more men, men my age and younger, who seem to be diagnosed.

>>**Dr. Burks:** Well, Rick, we're seeing just the opposite, actually. When you were diagnosed with MS, we were telling our medical students that for every man with MS there were two women. Now we're saying for every man with MS there are actually three or four women. So, we're seeing an increase in women, and it's probably real. Some people would say, well, you're just diagnosing it better, whatever. But I think it's probably real. And that if you look at primary-progressive disease, it's about the same -- equal numbers of men, equal numbers of women. But relapsing-remitting, the predominant type of MS, is much more common in women. So, the assumption is there is some sort of hormonal basis to risk.

Tracey>> There is so much to learn about MS. Fortunately, there are great resources to get good information such as the National MS Society. We want to thank Dr. Jack Burks with starting us out with some basic facts about MS.

Tom>> And there is much more to learn. Please join us for part two or MS 101 when Dr. Burks will talk about what symptoms MS can cause, and he'll talk about treatment options.

Tracey>> See you then.