Mayo Clinic Q&A: Understanding multiple sclerosis

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Dear Mayo Clinic: What causes multiple sclerosis, or MS, in people who don't have it in their family?

A: The exact cause of MS isn't known. But it's clear that a variety of factors can increase a person's risk of developing this disease. Along with genetics, those risk factors include age, sex, a medical history of certain infections or diseases, race, and the climate where you live.

MS is a potentially disabling disease of the central nervous system, which includes the optic nerves; the white matter of the brain and back of the brain, called the cerebellum; the brainstem, which is the lowest part of the brain; and the spinal cord. The nerves that travel from the spinal cord out to the muscles are the peripheral nervous system. MS does not affect those nerves.

MS is an autoimmune disease, where the body's immune system mistakenly attacks and damages the protective sheath called myelin that covers and protects the central nervous system's nerve fibers. That damage leads to communication problems between the brain and the rest of the body. Eventually, the disease can cause the nerves to deteriorate and become permanently disabled.

Signs and symptoms of MS vary widely and depend on the amount of nerve damage and which nerves are affected. Some people with severe MS may lose the ability to walk independently, or to walk at all, while

others may experience long periods of remission without any new symptoms.

According to the Multiple Sclerosis Association of America, more than 400,000 Americans are living with MS. About 20 percent of them have a parent, child or sibling who also is affected by the disease.

For the other 80 percent who do not have a family history of MS, a number of factors seem to play a role in increasing their susceptibility to the disease. For example, although it can happen at any age, MS most commonly affects people between 15 and 60. Women are at least two to three times as likely as men to develop MS. Caucasians—particularly those of Northern European descent—are at high risk of MS. People of Native American, African or Asian descent have low risk.

Medical history plays a role, too. A variety of viruses have been linked to MS. In particular, people who have been infected during late adolescence or young adulthood with the Epstein-Barr virus that causes mononucleosis (often called the kissing disease) are at increased risk for MS. If you have thyroid disease or inflammatory bowel disease, that also can raise your risk slightly.

MS is much more common in people who live in temperate climates, such as in Canada, the northern portion of the U.S., Europe, New Zealand and southeastern Australia. Researchers suspect this may be due, in part, to the fact that people in these areas have lower levels of vitamin D in their blood, and that raises the risk for MS.

Vitamin D is taken in through diet but also in large measure through exposure to sunshine. Those who live in temperate regions have less sun exposure than people who live in locations closer to the equator, where sunshine is more plentiful year-round.

If you have family members affected by MS, or if you are concerned about your risk for the disease based on other factors, talk to your health care provider. He or she can review your possible MS risk with you and discuss any evaluation or screening that might be appropriate.