

## Viruses

Many people with MS ask if their disease was caused by a virus or other infectious agent. Much research has focused on trying to answer to this question.

It is tempting to speculate on a viral cause for MS because viruses are known to cause demyelinating disease in animals and humans. Demyelination (destruction of myelin, the fatty sheath that surrounds and insulates nerve fibers in the central nervous system) causes nerve impulses to be slowed or halted and produces the symptoms of MS.

Data from epidemiological studies—those that analyze variations in geographical, socioeconomic, genetic, and other factors—suggest that exposure to an infectious agent may be involved in causing MS. Some viruses are known to have a long latency period between time of infection and appearance of clinical symptoms, as is thought to be the case in multiple sclerosis.

### **No Definitive to Link Any One Virus to MS**

Although many different viruses have been implicated in causing MS, there has not yet been definitive proof to link any one virus to the autoimmune reaction that is believed to be the process responsible for the demyelination seen in MS. At one time or another, canine distemper virus, measles virus, herpes virus (HHV-6), rubella (or German measles) virus, HTLV-1 virus, and others have been reported to be associated with MS. With the exception of HHV-6, later studies have not substantiated these reports, and there is no proof that any of them causes MS.

### **Looking at the Epstein-Barr Virus (EBV)**

In 2003, a study suggested that increased levels of immune antibodies that fight Epstein-Barr Virus (EBV)—the very common virus that causes infectious mononucleosis and other disorders—may be associated with an increased risk of developing MS (Ascherio A et al., *Journal of the American Medical Association*, March 26, 2003). Although no causal relationship was established between EBV and multiple sclerosis, the researchers found that in spite of the fact that virtually all of the study participants, with and without MS, had early exposure to this virus, the antibodies to EBV were consistently higher in those individuals who subsequently developed MS than in the control group that did not develop MS. Furthermore, the risk of developing MS increased with increasing levels of antibodies, which were subsequently found to increase with age.

Increased antibodies to many different viruses have been found in the sera and cerebrospinal fluid of people with MS. This may not necessarily represent disease-causing infection by these viruses. It is more likely to be the result of non-specific immune activation. The role of a virus as a causative or triggering agent of MS remains speculative.

## MS is Not Contagious

Currently, there is no evidence at all to suggest that MS is infectious or contagious. The role of a virus or viruses, if there is one, affects only people with a genetic predisposition to develop MS.

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### See also...

#### Sourcebook

- Autoimmune Disease
- Epidemiology
- Etiology (Cause of MS)
- Genetics
- Research
- Viruses

#### Society Web Resources

- What Causes MS?  
[www.nationalmssociety.org/Causes](http://www.nationalmssociety.org/Causes)
- Who Gets MS?  
[www.nationalmssociety.org/Who](http://www.nationalmssociety.org/Who)

### Books

Kalb R. (ed.) *Multiple Sclerosis: The Questions You Have; The Answers You Need* (3<sup>rd</sup> ed.). New York: Demos Medical Publishing, 2004.  
—Ch. 2 Neurology

Murray TJ. *Multiple Sclerosis: The History of a Disease*. New York: Demos Medical Publishing, 2005.  
—Ch. 11 Searching for the Cause of MS

The National Multiple Sclerosis Society is proud to be a source of information about multiple sclerosis. Our comments are based on professional advice, published experience, and expert opinion, but do not represent individual therapeutic recommendations or prescription. For specific information and advice, consult your personal physician.

To contact your chapter, call **1-800-FIGHT-MS** (1-800-344-4867) or visit the National MS Society web site: [www.nationalmssociety.org](http://www.nationalmssociety.org).

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