

## Vaccines and DMTs

Regarding vaccines and MS, whether or not a person is taking a disease-modifying therapy (DMT) for MS is vitally important. In general, a DMT alters the immune system, with the goal of slowing or stopping the misdirected attacks on the myelin and nerves of the central nervous system. By doing so, the damage that causes the symptoms of MS may be greatly reduced.

However, when a vaccine is given, the goal is to stimulate the immune system so it develops antibodies against the specific illness for which the vaccine was designed. When the immune system is suppressed or modulated by a DMT, it may not be able to create sufficient antibodies. For this reason, treatment may need to be adjusted to give a vaccine adequate time to work before the DMT alters the immune system. An extra vaccine may also be needed. Please note that a vaccine should not be administered during an MS relapse. **Members of the MS community should always consult their healthcare professional for specific recommendations.**

Generally speaking, individuals taking a periodic DMT (given monthly or less often) may need to wait one or more months after the last treatment before receiving a vaccine. Following a vaccine, individuals may need to delay their DMT therapy one or more weeks; a four-week delay or longer is recommended with a live or live-attenuated vaccine. Restrictions are typically not as strict for DMTs taken on daily or weekly schedules, however, **healthcare professionals must consult a specific DMT's prescribing information (PI) for exact details.**

## About MSAA

The Multiple Sclerosis Association of America (MSAA) was founded in 1970 and is a leading resource for the entire MS community, improving lives today through vital services and support. As a national nonprofit 501(c)3 organization, MSAA has achieved Platinum Level status with GuideStar, which is the highest level of recognition of an organization's commitment to transparency.

MSAA's free services include a toll-free Helpline, equipment and cooling distribution programs, MRI funding, award-winning publications and videos, educational programs, My MS Manager mobile phone application, online peer community, and more.



Multiple Sclerosis  
Association of America

Toll-Free Helpline: (800) 532-7667

Website: [mymsaa.org](http://mymsaa.org)

Email Questions:

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# Vaccination Safety in MS



## Introduction

Individuals with multiple sclerosis (MS) may initially feel apprehensive about vaccinations, but learning the facts and consulting an MS specialist can greatly help to alleviate any fears. In most instances, particularly when looking at the seriousness of preventable illnesses such as polio, tetanus, measles, and many more, the risk of developing such an illness is far more dangerous than the risk of receiving the vaccine to prevent it. The same is true for seasonal flu, and starting in early 2020, the COVID-19 virus and its many variants.

Much of what we know comes from the American Academy of Neurology's guidelines regarding immunization and MS, which were originally published in 2002 and updated in 2019. The main points from these guidelines are provided later in this brochure. Although the update is from 2019, please know that additional studies continue to be conducted on immunization and MS, providing vital updates on vaccinations to the MS community.

In general, non-live, inactivated vaccines are considered safe for people with MS, while live vaccines should be avoided – although in some instances, the benefits may outweigh the risks. Experts agree that neither live nor inactive vaccines can cause MS. Epidemiological studies and pharmaceutical data continue to show that most vaccines are safe and have not shown any connection with the onset or worsening of MS. A live vaccine could possibly increase disease activity, but more studies are needed. To assist with the understanding of live vaccines versus non-live, inactivated vaccines, an overview of immunity and the different types of vaccines is provided later in this brochure.

## Immunity and Types of Vaccines

Vaccines work by activating antigen-presenting cells (APCs) within the immune system, which ultimately activate T-cells and develop the potential for an immune response when the body is exposed to this specific antigen (toxin or foreign substance) in the future. Live vaccines are “attenuated,” in the laboratory, making them too weak to cause disease (under normal conditions), but these live pathogens are still strong enough to cause an immune response.

With killed or inactivated vaccines, the virus or bacteria are killed in the lab through chemicals or heat, rendering them unable to cause disease. They are usually combined with adjuvants, such as aluminum salt adjuvants or oil emulsions, to help induce an immune response to the antigen. The type of adjuvant used is important and some may cause problems in autoimmune diseases, so side effects need to be closely monitored.

Other types of vaccines include toxoid (a bacterial toxin or protein from that toxin that has been made harmless but still invokes an immune response), recombinant (lab-generated antigens combining different genetic material), conjugate vaccine (combines a weak antigen with a strong protein antigen for a stronger immune response), and polysaccharide vaccines (having long chains of sugar molecules on the surface of certain bacteria).

In recent years, some people have avoided vaccinations due to fears of developing neurological disease, but studies supporting this theory are often underpowered and poorly designed. “Vaccine hesitancy” not only endangers the health of the individual, but threatens the health of the community as well. For more information on types of vaccines, please visit [www.vaccines.gov/basics/types](http://www.vaccines.gov/basics/types).

## Common Approved Immunizations\* in the United States

<p style="text-align: center;"><b>Vaccines CONSIDERED SAFE for individuals with MS:</b></p>	<ul style="list-style-type: none"> <li>• COVID-19 vaccine and booster</li> <li>• Diphtheria, toxoid</li> <li>• Hepatitis A, inactivated vaccine</li> <li>• Hepatitis B, recombinant vaccine</li> <li>• <b>Influenza (flu), INACTIVATED vaccine</b></li> <li>• Poliomyelitis (polio), inactivated vaccine</li> <li>• Rabies, inactivated vaccine</li> <li>• Tetanus, toxoid</li> </ul>
<p style="text-align: center;"><b>Vaccines CONSIDERED PROBABLY SAFE for individuals with MS:</b></p>	<ul style="list-style-type: none"> <li>• Human papillomavirus (HPV), recombinant vaccine</li> <li>• Measles, mumps, and rubella; live attenuated vaccine</li> <li>• Meningococcal A, C, W, and Y (meningitides), inactivated vaccine</li> <li>• Meningococcal B (meningitides), recombinant vaccine</li> <li>• Pertussis (whooping cough), toxoid</li> <li>• Varicella (chicken pox), live attenuated vaccine</li> </ul>
<p style="text-align: center;"><b>Vaccines with INSUFFICIENT DATA for individuals with MS:</b></p>	<ul style="list-style-type: none"> <li>• Haemophilus influenzae type b (Hib), conjugate vaccine</li> <li>• Pneumococcus (pneumonia), polysaccharide vaccine</li> <li>• Zoster (shingles/herpes zoster), recombinant vaccine</li> <li>• Zoster (shingles/herpes zoster), live attenuated vaccine (recombinant preferred)</li> </ul>
<p style="text-align: center;"><b>Vaccines probably having an INCREASED RISK OR NOT RECOMMENDED for individuals with MS:</b></p>	<ul style="list-style-type: none"> <li>• <b>Influenza (flu), LIVE ATTENUATED vaccine</b></li> <li>• Yellow fever, live attenuated vaccine</li> </ul>

\*MSAA does not endorse any specific vaccinations; please consult your physician for specific recommendations.

*In a 2019 MSAA survey of 1,962 people with MS: 36% of the participants said that they did not feel well-informed about immunizations; 38% thought the vaccines could interfere with their treatments or worsen their MS; and 42% were concerned about adverse events. This study suggests the need for targeted education and improved communication between healthcare professionals and MS patients.*

### References:

Crispino A. Understanding gaps in knowledge surrounding flu shots & immunizations in the MS patient population. Abstract SEL01. Consortium of Multiple Sclerosis Centers (CMSC) 2020 Virtual Annual Meeting.

Farez MF, Correale J, Armstrong MJ, et al. Practice guideline update summary: Vaccine preventable infections and immunization in multiple sclerosis. *Neurology*. 2019; 93: 584-594.

Zrzavy T, Kollaritsch H, Rommer PS, et al. Vaccination in Multiple Sclerosis: Friend or Foe? *Frontiers in Immunology*. 2019; 10 (1883): 1-10.

## AAN’s 2019 Guidelines

In 2019, the American Academy of Neurology (AAN) updated their 2002 guidelines regarding immunization and MS. Below are some of the main points that physicians follow to provide the best care for their patients.

- Recommend that patients with MS follow all local vaccine standards, including an annual influenza vaccination, unless specific contraindications exist.
- Vaccinate patients as needed several weeks before initiating immunosuppressive and immunomodulating (ISIM) therapy, as specified in the PI. Discuss the advantage of vaccination with patients as soon as possible after MS diagnosis, regardless of initial therapeutic plans, to prevent future delays in initiation of ISIM therapies.
- Screen for infections according to PI before ISIM therapy – and treat patients testing positive for latent infections; screen for infections before ISIM therapy in high-risk populations, even if not specifically mentioned on PI.
- Recommend against using live-attenuated vaccines in people with MS receiving ISIM therapies or who have recently discontinued these therapies. When the risk of infection is high, may recommend using live-attenuated vaccines if killed vaccines are unavailable.
- Delay vaccinating people with MS who are experiencing a relapse until clinical resolution or until the relapse is no longer active.

In summary, MS disease activity worsens during an infection. Since immunizations can reduce this risk, the long-term benefits of receiving the recommended vaccinations should be considered. Individuals should always consult their physician.