

About MS

An Overview of Multiple Sclerosis (MS),
Including MS Facts, Treatments, and Symptoms



Third Edition

 **msaa** *Improving
Lives Today!®*

Multiple Sclerosis
Association of America

About MS

An Overview of Multiple Sclerosis (MS), Including MS Facts, Treatments, and Symptoms

Third Edition

Written by: Susan Wells Courtney

Reviewed by: Barry A. Hendin, MD

Edited by: Andrea L. Griffin

Table of Contents

| | |
|--|-------------|
| Introduction..... | Page 1 |
| The MS Process | Pages 2-3 |
| Who Gets MS?..... | Pages 4-5 |
| Types of MS..... | Pages 6-7 |
| Possible Causes of MS | Pages 8-9 |
| Diagnosing MS and Evaluating Disease Activity..... | Pages 10-11 |
| Relapse Management | Page 12 |
| The Importance of Long-Term Treatment..... | Page 13 |
| Disease-Modifying Therapies for the Treatment of MS..... | Pages 14-15 |
| The Symptoms of MS..... | Pages 16-17 |
| MSAA’s Programs and Services | Pages 18-20 |
| Supporting MSAA..... | Page 20 |
| Wellness Tips..... | Page 21 |

*The reprinting of this publication was made possible
through the generous support of Genentech and Novartis.*

MSAA strives to provide useful, up-to-date information on matters of concern to MS patients and their families. This material is intended for general informational purposes only, and it does not constitute medical advice. You should not use the information presented as a means of diagnosis or for determining treatment. For diagnosis and treatment options, you are urged to consult your physician.

Those affiliated with this booklet and MSAA cannot be held responsible for any unintentional errors in the writing of this booklet, or changes in information that may occur, possibly affecting certain details of an explanation, assumption, or treatment.

Copyright © Multiple Sclerosis Association of America, 2025. All rights reserved. This booklet is protected by copyright. No part of it may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission from MSAA.



Introduction

Multiple sclerosis (MS) is an unpredictable disorder that can cause a variety of symptoms, which for many, can flare-up and then subside over the course of days, months, or even years. Most individuals are initially diagnosed with one of the relapsing forms of MS, causing these flare-ups. A much smaller percentage of individuals begin with one of the progressive forms, exhibiting a more steady progression of symptoms.

MS is more frequently diagnosed in young adults, although individuals of any age may be diagnosed with this neurological condition. The causes of MS are not yet fully understood. Researchers are increasingly learning more about its etiology as they continue to investigate the potential causes and other factors involved in the development of MS.

The first medication proven to be effective in the long-term treatment of MS received approval by the United States Food and Drug Administration (FDA) in 1993. **Since that time, several types of disease-modifying therapies (DMTs)** have been FDA-approved for relapsing forms of MS. Some DMTs are also used for progressive forms of MS, which are more challenging to treat. More information on these types of MS and treatments is provided later in this booklet.

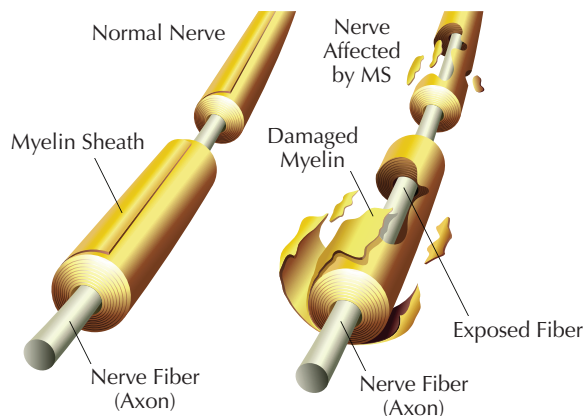
While these medications do not cure MS, they do work to slow disease activity as well as reduce the severity and frequency of flare-ups. These DMTs may also delay disease progression, delay disability, and increase longevity. In addition, many experimental treatments are currently under investigation for relapsing and progressive forms of MS. The entire MS community looks forward to the development and approval of these new therapies, ultimately providing more treatment choices and potentially moving closer to a cure.

The MS Process

Multiple sclerosis (MS) is a disease of the central nervous system (CNS). The CNS consists of the brain, optic nerves, and spinal cord. **With MS, areas of the CNS become inflamed, damaging the protective covering (known as “myelin”) that surrounds and insulates the nerves (known as “axons”).** In addition to the myelin, over time, the axons and nerve cells (neurons) within the CNS may also become damaged. MS is an **autoimmune disease**, where the body’s immune system becomes misdirected and attacks the body’s own myelin.

The damage to the protective covering and also to the nerves disrupts the smooth flow of nerve impulses. As a result, messages from the brain and spinal cord going to other parts of the body may be delayed and have trouble reaching their destination – causing the symptoms of MS. Each person with MS may experience different types and severity of symptoms – and some may experience only one or two symptoms, while others may experience a combination of symptoms.

Demyelination



The symptoms of MS range from physical symptoms to emotional/psychological symptoms to “invisible” symptoms. Examples of physical symptoms include mobility issues, muscle stiffness, bladder problems, and tremor. Anxiety, cognitive changes, and depression are among the emotional/psychological symptoms seen with MS. And the so-called “invisible” symptoms refer to problems such as fatigue, numbness, pain, and visual disorders. Please see pages 16-17 for a full listing of common symptoms.

Areas of inflammation and damage in the CNS are known as “lesions.” The changes in size, number, and location of these lesions may determine the type and severity of symptoms. Disease activity may also be evaluated from these changes in the size or number of lesions. Frequently, MS may be “clinically silent,” showing no increase in symptoms, yet continuing to show signs of disease activity within the CNS, as seen on magnetic resonance imaging (MRI) – an important evaluative tool.



For individuals with relapsing forms of MS, and for some with progressive forms, early and continued treatment with a disease-modifying therapy (DMT) can often slow the “clinically silent” disease activity in the brain, reducing the size and number of active lesions. This is one reason why most neurologists recommend beginning treatment as soon as possible after an MS diagnosis is established – not only for those with relapsing forms of MS, but often for those with progressive forms of MS as well.

Treatment is also typically recommended for individuals with **clinically isolated syndrome (CIS)**, which is the first appearance of an MS-like symptom or event and a common precursor to more MS-like activity and a confirmed diagnosis. When someone has CIS, starting treatment at this potential first sign of MS can reduce the risk of being diagnosed with MS.

Anyone starting a DMT should note that these types of treatments cannot be effective unless taken exactly as prescribed and without missing doses, so **adherence is critical**. For more information on types of MS, please see pages 6-7. Details on disease-modifying therapies begin on page 13.

In addition to the lesions, areas of scar tissue may eventually form along the areas of permanently damaged myelin. **These areas of scar tissue are referred to as “plaques.”** The term “multiple sclerosis” originates from the discovery of these hardened plaques. “Multiple” refers to “many”; “sclerosis” refers to “scars.”

As noted earlier, **lesions and plaques are viewed on a magnetic resonance imaging (MRI) scanner.** This technology is used to help diagnose MS and to evaluate disease progression at various intervals. The MRI and other tools are described in the section titled, “Diagnosing MS and Evaluating Disease Activity,” beginning on page 10 of this booklet.

Who Gets MS?

Estimating the number of people with MS, both in the United States and around the world, has posed many challenges. However, as international groups work together to provide data, reports such as those from the “Atlas of MS” have provided reliable figures, which are critical to the continued research into the etiology and treatment of MS. Many of the figures noted in this section are from this report, which may be accessed by visiting www.atlasofms.org, published by the MS International Federation.

Current estimates bring the worldwide MS population to nearly three million and the United States MS population to nearly one million. In addition, according to the figure of roughly eight newly diagnosed individuals per 100K citizens in the United States each year, the average number of newly diagnosed people per year is approximately 25,000.

Most people with MS experience their first symptoms and are **diagnosed between the ages of 20 and 50**, although individuals of any age may be diagnosed with MS. **MS in childhood and adolescence is now being diagnosed more frequently**, due in part to an increased awareness that children can be diagnosed with MS. Known as **pediatric MS**, diagnosis in children has its own challenges, as experts have identified more than 40 common diseases that may initially behave similarly to early MS.

The most recent information available estimates that at least 30,000 individuals under the age of 18 have been diagnosed with MS worldwide. In the United States, most estimates range from **5,000 to 10,000 children and teens** with MS. Additional studies are needed to determine a more precise number of children with pediatric MS living in the United States.

The distribution of this disease is not totally random. **On average, women are three times more likely than men to develop relapsing forms of MS.** However, with the primary-progressive form, genders are more equally divided. More information is provided on the different types of MS in the next section of this booklet.

Geographically, people who live farther from the equator (in more temperate climates) **have a higher risk of developing MS** than people living in hotter areas near the equator, or in very cold areas near the north or south poles. Individuals living beyond the 40-degree mark north or south of the equator are far more likely to develop MS, and this is especially true for people in North America, Europe, and Southern Australia.

MS is very rare in Inuit populations living in the far north. Asia continues to have a lower incidence of MS. More prevalent among those of northern European or Scandinavian ancestry, **Caucasians have a higher incidence than those of African heritage to develop MS.**

African Americans and Asians tend to have more symptoms at the time of diagnosis, which are usually limited to the optic nerves and spinal cord, and this is termed “opticospinal MS.” This means that African Americans and Asians may experience more problems with vision and mobility, versus other common MS symptoms.

African Americans may be older at disease onset, and the disease course tends to be more aggressive, with more frequent relapses and higher lesion volume. Additionally, African Americans are thought to respond less to disease-modifying therapies, although studies are being conducted to see which medications are the most effective for this ethnic group.

Hispanic Americans are often diagnosed at an earlier age than Caucasian Americans, and a larger percentage are diagnosed with relapsing forms of MS versus the primary-progressive form of MS. This population is also more likely to present with opticospinal MS (largely involving visual and mobility symptoms), optic neuritis (inflammation along the optic nerve), and/or transverse myelitis (causing inflammation in one location across both sides of the spinal cord).

Hispanic Americans have a much lower risk of MS compared to Caucasian Americans and African Americans. However, clinical observation reveals greater spinal-cord involvement, which more significantly affects ambulation, but more studies are needed to confirm this observation.

In general, studies continue to evaluate all of these trends among the different ethnic groups as diagnostic techniques and evaluative measures become more advanced and data become more readily available.

While MS is not contagious or hereditary, MS susceptibility is increased if a family member (blood relative) has MS. The average risk of developing MS in the United States is approximately three in 1,000. For first-degree relatives (such as a child or sibling), the risk increases to 3% or 4%, which is three or four in 100 people. This is not true for adopted children or half siblings who do not share the same parent who has MS. Both of these latter groups have a risk that is the same as unrelated individuals.



Types of MS

Initially, most people with MS experience symptom flare-ups, which are also known as relapses, exacerbations, or attacks. When people experience a relapse, they may be having new symptoms or an increase in existing symptoms. These usually persist for a short period of time (from a few days to a few months) and afterward they may remain symptom-free for periods of months or years. This type of MS is referred to as **relapsing-remitting MS (RRMS)**. **Approximately 80% to 85% of people with MS are initially diagnosed with this form of the disease.**

Over time, RRMS may advance to secondary-progressive MS (SPMS). This form of MS does not have the dramatic variations in symptoms that RRMS does, but rather has a slow, steady progression – with or without relapses. If relapses do occur, they usually do not fully remit. Without treatment, approximately half of individuals with RRMS convert to SPMS within 10 years. **However, with the introduction of long-term disease-modifying therapies (DMTs), fewer individuals advance to this latter form of the disease.**

Multiple sclerosis (MS) affects each person differently. MS has long been divided into the following three main categories:

- **Relapsing-Remitting MS (RRMS)**
- **Secondary-Progressive MS (SPMS)**
- **Primary-Progressive MS (PPMS)**

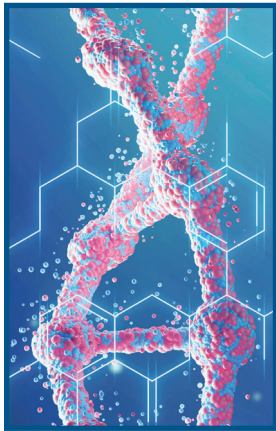
Individuals who are not initially diagnosed with RRMS may experience a more steady progression of the disease from the onset. **Approximately 10% of the MS population is diagnosed with primary-progressive MS (PPMS)**, where individuals experience a steady worsening of symptoms from the start, and do not have periodic relapses and remissions.

The remaining 5% of individuals are diagnosed with less-common forms of MS, such as progressive-relapsing MS, where an individual may experience a more steady progression of the disease, but may also experience symptom flare-ups. However, not all experts agree on this form of MS, and the term is not often used. As researchers and clinicians learn more about MS – including how the disease progresses differently between patients, how the effectiveness of different treatments varies between patients, and how the internal disease processes differ – the three main types of MS, as well as any other less-common type – will continue to be evaluated and possibly reclassified in the future.

In addition, prior to an MS diagnosis, individuals with “possible MS” may often fall under the parameters of one of two syndromes. The first is clinically isolated syndrome (CIS), where someone may have experienced symptoms of MS for the first time, and an MRI may show evidence of MS, but a diagnosis cannot be confirmed at that time. Disease-modifying therapies are often used to treat CIS in an effort to delay or prevent the eventual diagnosis of MS.

The second syndrome is radiologically isolated syndrome (RIS), which is the term used when someone has an MRI performed for an unrelated reason, and shows evidence of MS on the MRI scan, but does not have any signs of MS symptoms. Recent studies are defining which patients with RIS are at an increased risk of MS – and beginning to explore whether therapeutic intervention is warranted.

Possible Causes of MS



Researchers have studied a variety of possible causes for multiple sclerosis (MS), and a combination of factors appears to be involved. A popular theory looks at commonly known **slow-acting viruses** (one that could remain dormant for many years), such as measles, herpes, human T-cell lymphoma, and Epstein-Barr. After being exposed to one of these viruses, some researchers theorize that MS may develop in **genetically susceptible people**. While research is ongoing, no specific genes for MS have been identified. Genes have some role in susceptibility to MS, but the exact mechanisms remain unclear.

Some scientists are looking for a connection between MS and nutritional factors, including fat intake, as well as **deficiencies in fish oil and Vitamin D**. The idea that a diet rich in **saturated fat** may increase one's risk of getting MS, as well as worsen their disease course, has been a popular theory for several decades. In addition to food and supplements, Vitamin D is also derived from sunlight. Reduced sunlight may be involved in the development of MS.

As noted earlier, **populations living closer to the equator have a lower incidence of MS**. A popular theory is that those living closer to the equator are exposed to more sunlight and therefore are less likely to experience a Vitamin D deficiency. **Studies suggest that low levels of Vitamin D may increase one's risk of MS.**



Recent studies with high levels of Vitamin D supplementation, however, have not seen any therapeutic effects on disease progression or relapses. But interestingly, some of these studies have seen a reduction in new lesions, as viewed on magnetic resonance imaging (MRI). Additionally, Vitamin D is also being studied with certain symptoms of MS, including fatigue.

Individuals looking to take Vitamin D supplements as part of their treatment regimen should consult their physician. Continued high-dose Vitamin D supplementation can lead to life-threatening conditions, including kidney failure and heart arrhythmias.



Parasites, which can modulate the immune system and dampen its responses, are a possible risk-reduction factor in the development of MS. The parasites in this instance are “helminths,” which refer to a wide variety of worms. People who have parasites are less likely to be diagnosed with MS, and since parasites are less common in the United States, the lack of parasites may contribute to the higher incidence of MS in this country. However, some types of worms could possibly make MS worse, so more research is needed.

In recent years, researchers have found that **interactions between a person’s microbiome and their immune cells** may contribute to the development and severity of many disease states – including MS. The microbiome refers to the many millions of bacteria that reside in a person’s body, with current research focusing mainly on the bacteria that live in the intestines (referred to as “gut microbiota”). Specifically, researchers have hypothesized that imbalances in the number or types of different strains of bacteria could potentially cause the immune system to be inappropriately activated to develop an autoimmune disease. Multiple groups are currently conducting research on the microbiome and its potential connection with MS.

Another factor linked to MS is cigarette smoking. One study shows that women who smoke are 1.6 times more likely to develop MS than women who are non-smokers. Individuals with MS who smoke also appear to be at a much greater risk of experiencing a more rapid progression of their disease.

Diagnosing MS and Evaluating Disease Activity

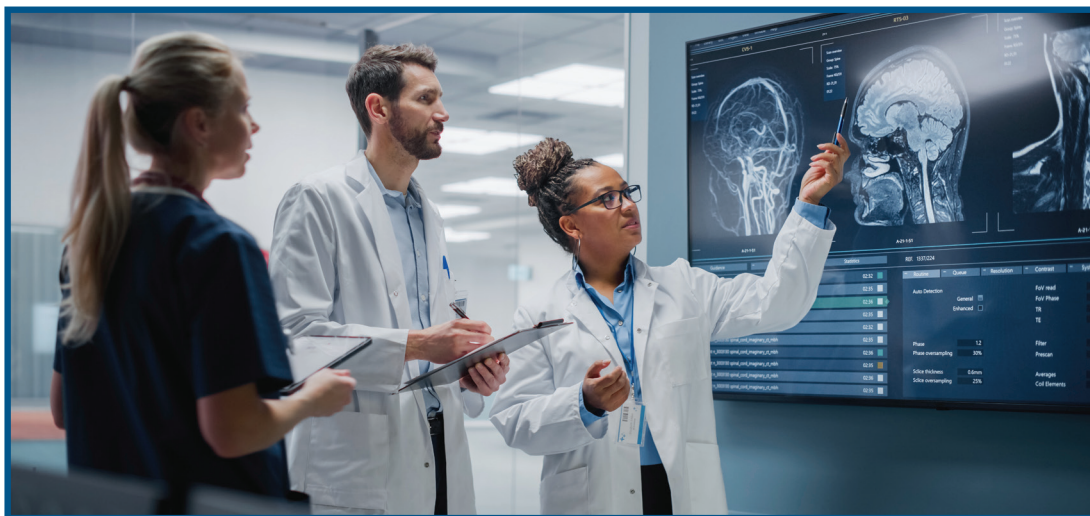
Diagnosing and evaluating MS disease activity is most reliably done by neurologists through a neurological history and examination. Tests that can indicate MS and rule out “MS mimickers” (other diseases that resemble MS but have other causes) are also performed.

Lesions (areas of inflammation and myelin damage in the brain and/or spine) **may be viewed on a magnetic resonance imaging (MRI) scan.** The MRI uses a computer, radiofrequency stimulator, and a large electromagnet to provide a picture of the brain and/or spine. While the picture looks a bit like an x-ray, it uses a different technology to show other details, and the MRI does not expose the patient to any radiation.



For people with multiple sclerosis, the MRI is used to evaluate the size and location of lesions. Inflammation can be better evaluated with **gadolinium (or contrast) enhancement** – a type of dye given to the patient via injection prior to the procedure. The MRI, particularly with gadolinium enhancement, allows doctors to measure disease activity within the central nervous system (brain, optic nerves, and spinal cord).

Test results can help determine the effectiveness of a disease-modifying therapy (DMT), or to get an “inside view” of a patient’s disease status.



Another tool that is sometimes used in the diagnosis of MS is a lumbar puncture (also known as a spinal tap). This is a procedure where a very thin needle is inserted at the base of the spine and a small amount of **cerebrospinal fluid (CSF)** is collected. CSF is the liquid that surrounds the brain and spinal cord. By collecting a small amount of this fluid, laboratory testing may be performed to evaluate cellular and chemical abnormalities. However, even if no evidence of MS is found in the CSF, this does not rule out MS as a possible diagnosis.

Evoked potential (EP) tests may also be used to help diagnose MS, if further support is needed. These measure the speed of the brain's response to visual, auditory (sound), or sensory (feeling) stimuli, using electrodes taped to the patient's head. Delayed responses can indicate possible damage to the nerve pathways.

Additional tools are available to measure disease activity. These are used mainly in clinical trials to help evaluate disease progression as well as changes in specific symptoms, such as fatigue, strength, mobility, vision, cognition, and others. **The most widely known scale among the MS community is the Kurtzke Expanded Disability Status Scale (EDSS)**. It uses whole and half numbers from one to 10 to measure degree of disability, largely in terms of mobility.

Another measurement system is the MS Functional Composite (MSFC) scale. This measures lower-extremity function with a Timed 25-Foot Walk (T25-FW), upper-extremity function through the 9-Hole Peg Test (9-HPT), and cognitive function, using the Paced Auditory Serial Additions Test (PASAT).

Relapse Management

Relapses, also referred to as exacerbations, attacks, flare-ups, episodes, or bouts, are initially experienced by most people diagnosed with multiple sclerosis (MS). Relapses occur with relapsing-remitting and sometimes secondary-progressive forms of MS. Relapses also occur with progressive-relapsing MS, although as mentioned earlier, this term is rarely used and some experts are reclassifying this form of MS into one of the other more common forms. Relapses do not occur with primary-progressive MS, even though people with PPMS may experience day-to-day fluctuations in how they feel.

During a relapse, inflammation is occurring along the nerves and the myelin, causing patients to have a temporary worsening or recurrence of existing symptoms and/or the appearance of new symptoms. This can range from a few days in duration to a few months, followed by a complete or partial recovery (remission). Acute physical symptoms and neurological signs must be present for at least 24 to 48 hours, without any signs of infection or fever, before the treating physician may consider this type of flare-up to be a true relapse.

A pseudoexacerbation is a temporary worsening of symptoms without actual myelin inflammation or damage, brought on by other influences. Examples include other illnesses or infection, exercise, a warm environment, depression, exhaustion, and stress. When symptoms flare, checking for a fever is important, since even a minor infection and slight increase in temperature can cause symptoms to appear.

Relapses are usually treated with a high-dose course of powerful corticosteroids (a type of steroid) over a period of three to five days. These are given by intravenous (IV) infusion, administering the drug directly into the bloodstream for a quicker response. Some doctors prescribe oral steroids after the high-dose treatment, to ease the patient off of the medication. These are usually tapered over one to two weeks.

Another FDA-approved option is Acthar[®] Gel, which contains a highly purified form of the hormone **adrenocorticotropin (ACTH)**. It is given once daily for two to three weeks and is injected either into the muscle or under the skin. Similar to Acthar Gel, Purified Corticotrophin[®] Gel (Repository Corticotropin Injection USP) is also a purified preparation of the hormone ACTH in gelatin.

The Importance of Long-Term Treatment

Treatment with a long-term disease-modifying therapy (DMT) is crucial for most people with MS, since disease activity and damage usually continue within the CNS even when no new symptoms are present. When a patient begins a treatment regimen early in their disease course, disease activity is slowed for most individuals. This not only reduces the number and severity of symptom flare-ups, but also reduces the number of active lesions that appear on an MRI, as well as delays the progression of the disease and potentially delays any related disability.

An ongoing study with more than 20 years of data demonstrates that individuals with relapsing-remitting MS (RRMS) who began therapy early in the disease found that they experienced a longer lifespan than those who did not begin treatment as early. This study was conducted with a specific DMT; more studies are needed to see if the same is true for all DMTs.

Getting early treatment and staying on a DMT for MS may also delay the rate of conversion from RRMS to secondary-progressive MS (SPMS). This latter form of MS that follows RRMS exhibits a steady worsening, with or without relapses. If flare-ups do occur, they usually do not remit fully. As mentioned earlier, without treatment, about half of individuals with RRMS convert to SPMS within 10 years. However, since the introduction of the first treatment in 1993, those taking a DMT may experience either a reduced risk of conversion to SPMS or a delayed conversion to SPMS.

Beginning in the mid-1990s, nearly all of the FDA-approved disease-modifying therapies (DMTs) were only available for individuals with RRMS. However, in more recent years, medications have been approved for both relapsing and progressive forms of MS – and this is very exciting news for the MS community. Research continues at a rigorous pace to find additional treatments aimed at treating all forms of MS. In addition, symptom-management strategies and comprehensive care plans with teams of doctors, nurses, and therapists, help to greatly improve the quality of life for all individuals with MS – both with relapsing and progressive forms of MS.



Disease-Modifying Therapies for the Treatment of MS

Disease-modifying therapies (DMTs) were originally developed for relapsing-remitting MS (RRMS), as this type of MS responded more readily to treatments and study results were easier to measure compared to secondary-progressive MS (SPMS) and primary-progressive MS (PPMS). As researchers learned more about treating these latter forms of the disease, individuals with SPMS and PPMS were able to participate more frequently in clinical trials. As a result, **some treatments are now approved to treat these progressive forms of MS.**

The first DMT was approved by the United States Food and Drug Administration (FDA) in 1993. Since that time, more than two dozen DMT types and brands have been approved – and the number continues to grow. Following the initial DMTs given via self-injection, the next DMTs to be approved were those given by intravenous (IV) infusion, and eventually, oral medications became available.

Although differences exist in study design and specific findings, **trials generally show these common results:**

- Reduced the number of relapses
- Reduced the severity of relapses
- Reduced the development of new areas of inflammation as seen on magnetic resonance imaging (MRI) scans
- Showed some evidence of delaying disease progression and/or disability
- Some may prevent or delay a second clinical attack (relapse) for individuals with clinically isolated syndrome (CIS). CIS refers to individuals who do not meet the criteria to be diagnosed with MS, but have experienced symptoms.

The documented effectiveness of each of these medications varies to some extent, and differences can be attributed to the type of drug, dose and administration, as well as variations in study design. Stronger medications may offer greater effectiveness, but may also pose greater health risks.

Additionally, the effectiveness and side effects of each medication may vary from one patient to another, so individuals need to work closely with their physician to determine which treatment might be the best option. Once taking a DMT, the patient will continue to be evaluated to determine how well the treatment is working and if the side effects are reasonable. If needed, patients may try a different DMT with the goal of achieving an optimal response while experiencing the fewest side effects.

As noted earlier, MS is an autoimmune disease, where one's immune system becomes misdirected and attacks the body's myelin (the protective covering of the nerves) and eventually the axons (nerves of the central nervous system, or CNS). **This misdirection of the immune system involves a cascade of events leading to the damage caused by MS, and each of the approved DMTs are designed to interfere in some way with this cascade of events – with the goal of slowing the damage to the CNS.**

For complete information on all of the approved DMTs for MS, how they are administered, how they work, and what side effects may occur, **please visit MSAA's Ultimate MS Treatment Guide at MStreatmentguide.org** Featuring videos of experts and advocates discussing treatment information and experiences, as well as charts to easily compare the different DMTs, this unique online tool can help individuals with MS and their care partners make an informed choice on treatment in conjunction with their physician.

The Symptoms of MS



MS has the potential to cause several different symptoms and the specific symptoms each person experiences vary greatly. When experiencing one or more of these symptoms, individuals should consult their physician. Medications are available to treat many MS symptoms. These may include over-the-counter drugs as well as prescribed medications. Diet, exercise, counseling, and lifestyle/

wellness therapies, may also be helpful with managing certain symptoms. All treatments are best accomplished through the guidance of a qualified healthcare professional.

MS symptoms are often compounded by fatigue, sometimes relating to a rise in body temperature. Some symptoms may be temporarily increased by heat intolerance – a classic MS tendency – where a rise in temperature (internally or externally) causes a person to feel much worse. Keeping cool through air-conditioning or various cooling devices, such as those offered by MSAA's Cooling Distribution Program, may be helpful for people with heat-sensitive MS. Please visit mymsaa.org/cooling for details.

When recovering from a symptom flare-up or learning to cope with a change in mobility, **rehabilitation through physical therapy, occupational therapy, or speech therapy can be of great value.** Speech therapy, therapeutic exercise, and certain medical devices may also be useful in dealing with the symptoms of MS. Some of those who have a physically demanding or highly stressful job may choose to make a career change, in which case vocational training is helpful.

When a family member is diagnosed with MS, **participating in some type of counseling program is often of benefit to everyone involved.** Individuals may be affected in different ways, both physically and emotionally. Seeking professional assistance for the entire family can help with understanding the symptoms of MS and the ways in which family life may be affected, along with positive coping strategies.

A wide variety of symptoms can occur with MS, and everyone is affected by MS differently. To help categorize the effects of MS, MSAA has listed the commonly experienced symptoms alphabetically in three groups, as follows:

Common Physical Symptoms of MS

- balance problems
- bladder dysfunction
- bowel problems
- mobility and walking issues
- sexual dysfunction
- spasticity (stiffness)
- speech difficulties
- swallowing disorders
- tremor

Common Emotional and Psychological Symptoms of MS

- anxiety
- cognitive changes
- depression
- Pseudobulbar Affect (PBA – a neurologic effect characterized by sudden, uncontrollable expressions of laughter or crying without an apparent trigger)

Common “Invisible” Symptoms of MS

- dizziness/vertigo
- fatigue
- heat sensitivity (also known as “Uhthoff’s syndrome”)
- MS hug (a strong and sometimes painful temporary squeezing around the torso)
- numbness
- pain
- sleep issues
- visual disorders
- weakness

For more information on symptom management and handling the challenges of MS, please visit mymsaa.org/symptoms. MSAA offers several helpful publications and videos, which may all be found on MSAA’s website at mymsaa.org. Additionally, MSAA’s Client Services Specialists are available to provide resources and support. To speak with a Specialist, please call **(800) 532-7667, extension 154** or email MSquestions@mymsaa.org

MSAA's Programs and Services

MSAA's Website at mymsaa.org

MSAA's comprehensive website provides a wealth of detailed information addressing all aspects of multiple sclerosis, including treatments, symptom-management strategies, and helpful resources, including several resources in Spanish. Visitors to mymsaa.org may access a number of specialized sections as well as educational videos and webinars, publications, podcasts, and research updates, plus details on MSAA's vital programs, fundraising events, and ways to support MSAA.



Helpline



Our Helpline allows individuals with MS, family members, care partners, and friends to connect directly with one of MSAA's experienced Client Services Specialists to receive valuable information and resources, as well as guidance and support. Our Specialists may be contacted via phone at **(800) 532-7667, ext. 154**; email at MSquestions@mymsaa.org; or our online Chat feature at mymsaa.org/chat

Cooling Distribution Program



MSAA offers cooling vests and accessories at no charge to those who qualify and ships them directly to individuals diagnosed with MS. Cooling products may help lessen the negative effects of heat and humidity for a person with MS, which can include severe fatigue and other symptoms. Please visit mymsaa.org/cooling for more information.

Equipment Distribution Program

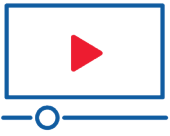


MSAA provides safety and mobility equipment at no charge to those who qualify and ships directly to the client. Items distributed through the program range from grab bars, shower chairs, and walkers, to wide-grip utensil sets and yoga mats. Please visit mymsaa.org/equipment for more information.

MRI Access Program



MSAA's magnetic resonance imaging (MRI) Access Program assists individuals who are uninsured, under-insured, or financially unable to pay for this important exam. MRI scans are crucial to the diagnosis of MS, as well as the follow-up evaluation to track disease activity. Please visit mymsaa.org/mri for more information.



MSi Videos

Updating viewers on the latest advances in MS research, disease and symptom management, wellness strategies, and more, this growing library of on-demand video programming and archived webinars serves as a vital resource for the entire MS community. Please visit mymsaa.org/videos for more information.



Ultimate MS Treatment Guide

This unique online tool helps individuals with MS and their care partners make an informed choice on treatment in conjunction with their physician. The guide compares FDA-approved MS treatments and includes videos of experts and advocates. Please visit MStreatmentguide.org for details.



Podcasts

MSAA offers several informative podcasts on a wide variety of MS-related topics. These may be accessed on MSAA's website at mymsaa.org/podcasts or through any of the major podcast distributors.



Publications

Our publications include: a national magazine, *The Motivator*, *My MSAA Today eNewsletter*, and other publications covering topics such as relapse management, wellness, and more. Additionally, MSAA's "What's New in MS Research" online article series features the latest findings in MS treatments, symptom management, and other vital topics. Please visit mymsaa.org/publications for our full listing of MSAA's publications.



Programs Dedicated to Communities of Color

MSAA has long been committed to addressing health inequities for MS communities of color. MSAA's African American Advisory Board and Hispanic/Latinx Advisory Board are comprised of leading healthcare professionals, individuals with MS, and care partners from across the country. The Advisory Boards were formed to identify challenges and unmet needs, while helping MSAA develop comprehensive and innovative programmatic and educational initiatives to address those needs.



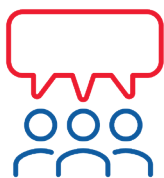
Multiple Sclerosis Implementation Network™ (MSIN™)

The Multiple Sclerosis Association of America (MSAA) and Novartis Pharmaceuticals Corporation have collaborated to develop the Multiple Sclerosis Implementation Network™ (MSIN™). This patient-centric initiative includes the development of a practice-based research network for medical professionals to share data and experiences to improve health outcomes for people with MS. To learn more, please visit MSINresearch.org



MS Conversations Blog

MSAA's blog features timely, interactive discussions on topics important to the entire MS community, from symptom management to the impact of MS on everyday life. Please visit blog.mymsaa.org for more information!



My MSAA Community

This peer-to-peer online forum welcomes individuals with MS, their families, and their care partners to share information and their experiences with multiple sclerosis. Please visit healthunlocked.com/msaa for more information.



My MS Manager™

MSAA's mobile phone application, My MS Manager, is provided free of charge to individuals with MS or their care partner to use on their Apple iOS or Android mobile device. The app allows people to track disease activity, store information, generate reports, and securely share information with their healthcare team. Please visit mymsaa.org/mobile for details.



Art Showcase

The MSAA Art Showcase features annual online collections of inspiring artwork created by individuals with MS, along with personal biographies from each artist to tell about their artistic expression. For more information and to view MSAA's Art Showcase collections, please visit mymsaa.org/artshowcase

Supporting MSAA

MSAA's programs and services are provided free of charge to members of the MS community. These programs are made possible through the support of our generous donors.

Please visit mymsaa.org/donate to support MSAA's vital programs and services. Donations can also be made in honor or in memory of someone special.

Several options are available to participate in MSAA's fundraising initiatives and special events. Individuals are also encouraged to create their own event through MSAA's DIY (Do-It-Yourself) fundraising platform. Learn more and access MSAA's DIY toolkit and tips at mymsaa.org/diy

Wellness Tips

Exercise

Exercise is key to maintaining function in people with MS. In addition to showing positive effects on walking speed, endurance, and aerobic capacity in MS, exercise can also lower stress and improve mood, energy, physical health, and overall wellbeing. **Aquatic exercise, yoga, and tai chi** are among the many great exercise options that may provide positive effects for individuals with MS and may also be customized to suit one's preferences and ability levels.



Diet

Although no specific “MS diet” has been universally accepted by the medical community, food choices can make a difference in important issues such as energy level, bladder and bowel function, and overall health. MS specialists often recommend a **low-fat, high-fiber diet**, such as that recommended by the American Heart Association. Healthcare professionals agree that eating a healthy diet to promote general wellness and prevent certain other medical conditions could potentially have a positive impact on MS and its symptoms.

Mind-Body Strategies

Mindfulness has enormous potential for people with MS. The goal of mindfulness is to teach individuals to stay fully in the present, without added judgment or assumptions about their present or future situations. This technique has been shown to significantly decrease anxiety, depression, and stress in many conditions. Requiring a state of deep relaxation, **guided imagery** brings about benefits that range from improved mood and lowered anxiety, to reductions in blood pressure and blood sugar, improved immune functions, and less pain.

Individuals should consult their physician prior to making any changes to their exercise routine or diet.

MSAA's Mission:

The Multiple Sclerosis Association of America (MSAA) is a leading resource for the entire MS community, Improving Lives Today through vital services and support.

To help support MSAA's vital programs and services, please visit mymsaa.org/donate or call (800) 532-7667.



Multiple Sclerosis
Association of America

Toll-Free Helpline: (800) 532-7667

Website: mymsaa.org

Email Questions:

MSquestions@mymsaa.org

Stay Connected with MSAA:

