

INVESTMENT IN RESEARCH SAVES LIVES AND MONEY

Multiple Sclerosis

Multiple sclerosis (MS) is a chronic and often debilitating disease, resulting in damage to the brain, spinal cord, and optic nerves. MS symptoms may be mild, such as numbness in limbs, or severe, such as loss of movement or vision. While the cause of MS is largely unknown, researchers believe that a combination of genetic and environmental factors lead the immune system to attack layers of fat cells called myelin that surround the central nervous system. During MS, the breakdown of myelin, or demyelination, reduces the quality of signals between nerve cells.¹

TODAY

MS affects nearly

1 million
adults in the U.S.²

Americans have a

1 in 750

chance of developing MS.³

MS is

2 to 3 times more common in females

compared to males.³

Delaying treatment, even for only

1 to 2 years,

can lead to increased, irreversible disability.⁴

COST

MS costs the U.S.

\$25 billion per year, and this figure is expected to increase as the elderly population doubles between 2011 and 2050.⁵

Individuals with MS have annual direct health care costs that are

\$24,327 higher than the general population.⁶

Those with MS have **4 times** greater costs related to disability- and medically-related absence from work than employees without MS.⁷

Research Delivers Solutions

Although there are currently no cures available for MS, the U.S. Food and Drug Administration (FDA) has approved **disease-modifying therapies**, including monoclonal antibodies and chemically modified proteins, that delay the progression of disability and limit the severity and frequency of clinical relapses. Medications also manage MS symptoms, including fatigue, pain, and tremors.⁸

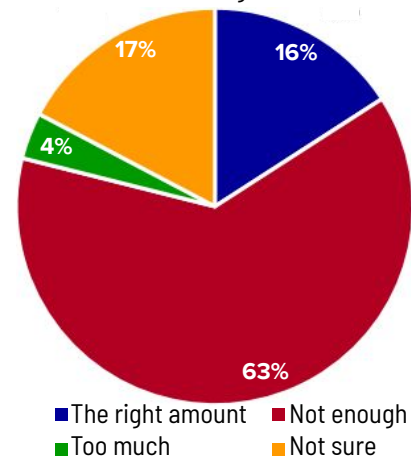
Clinicians previously dissuaded people with new MS diagnoses from engaging in physical activity. Research studies have since shown that **exercise promotes fitness, functional capacity, and quality of life** for persons with MS.⁹

People with MS have traditionally been physically evaluated based on self-reported outcomes and physical tests; however, this cannot assess how everyday physical activity is affected by the disease. Thanks to technological advancements in wearable devices, a clinician can evaluate a patient and **recommend personalized treatment** based on steps taken throughout the day, number of falls, quality of sleep, and other metrics.¹⁰

The exact causes of MS are unknown as the condition is linked to both genetics and environment. Researchers have uncovered **risk factors for MS**, including the recent finding that the internal microbiome and dietary habits play a role in the onset and progression of MS.¹¹

Majority Say Current Spending on Research to Prevent, Cure and Treat Disease is not Enough

The U.S. spends about 5 cents of each health dollar on research to prevent, cure, and treat disease and disability. Do you think that this is too much, the right amount, or not enough?



Source: A Research!America poll of U.S. adults conducted in partnership with Zogby Analytics in January 2019

Multiple Sclerosis

Then. Now. Imagine.

THEN

Prior to the 1990s, there were no treatments for MS.

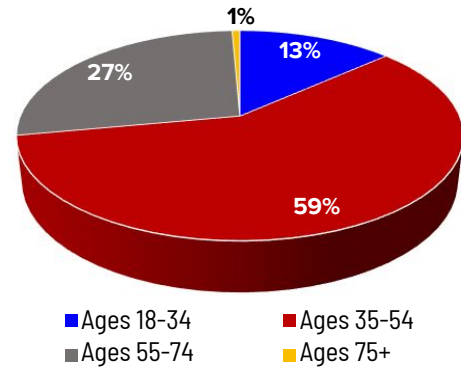
NOW

There are several therapies that effectively slow the progression of MS.¹²

IMAGINE

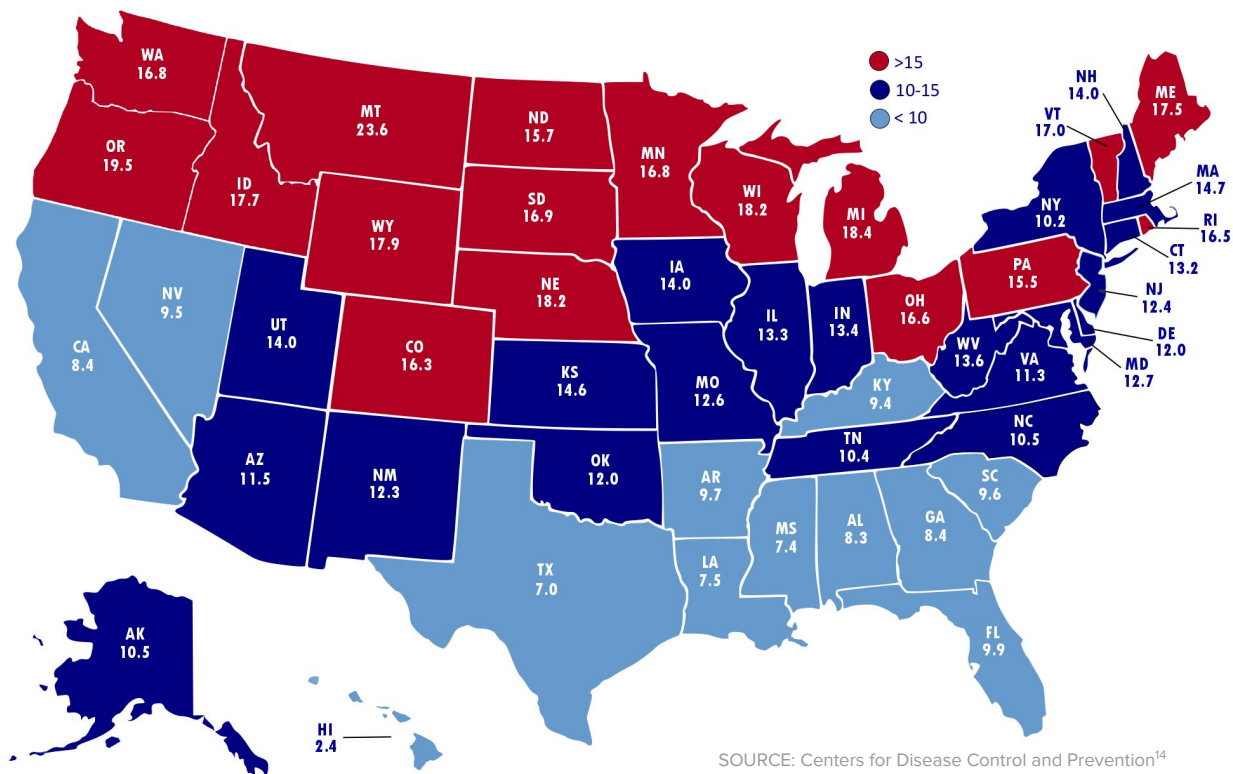
A cure.

Prevalence of Multiple Sclerosis in the U.S. by Age Group



SOURCE: *Neurology*⁴³

Rate of Death due to Multiple Sclerosis (per 10,000 individuals)



SOURCE: Centers for Disease Control and Prevention¹⁴

1. National Multiple Sclerosis Society [accessed 9/17/19]
2. National Multiple Sclerosis Society [accessed 9/17/19]
3. National Multiple Sclerosis Society [accessed 9/17/19]
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5. Gooch *et al.*, *Ann Neurol* (2017)
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7. Ivanova *et al.*, *Pharmacoeconomics* (2009)
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9. Halabchi *et al.*, *BMC Neurol* (2017)
10. Sparaco *et al.*, *Mult Scler Int* (2018)
11. Fan and Zhang, *Front Microbiol* (2019)
12. National Multiple Sclerosis Society [accessed 9/17/19]
13. Nelson *et al.*, *Neurology* (2019) *Prevalence data from Optum dataset*
14. Centers for Disease Control and Prevention *G35-coded crude rate in years 1997-2017*

Research!America 241 18th St S, Arlington, VA 22202 | 703.739.2577
www.researchamerica.org | info@researchamerica.org

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