

INVESTMENT IN RESEARCH SAVES LIVES AND MONEY

Parkinson's Disease

Parkinson's is a progressive **neurodegenerative** disease caused by the death of **dopamine-producing cells** found in a motor pathway of the brain. People with Parkinson's may experience tremors, slowness of movement, and limb rigidity, as well as difficulty balancing and walking. Patients can also suffer from fatigue and pain. Parkinson's severely impacts day-to-day life, making tasks like cooking, dressing, and washing much more difficult; patients often must adjust to a life with less independence. Still, research has helped scientists create treatments for Parkinson's, and future research may be able to provide a cure for this debilitating disease.¹

TODAY

An estimated **1.07 million** Americans were living with Parkinson's in 2017.²

Between **50% and 80%** of people with Parkinson's develop dementia over the course of the disease.³

COST

Parkinson's direct and indirect costs, including treatment and lost productivity, totaled approximately

\$52 billion

in 2017.²

The out-of-pocket costs alone for a person with Parkinson's disease can exceed

\$2,500

a year.²

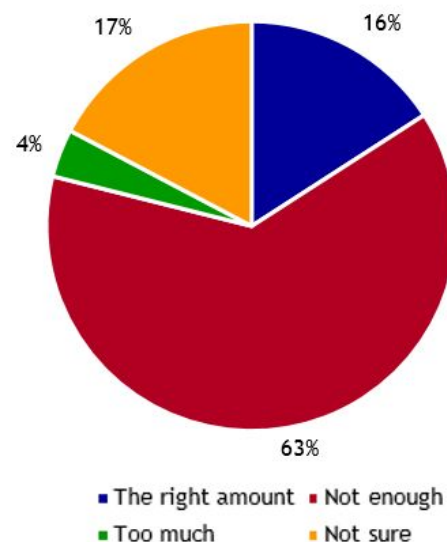
The U.S. spends about 5 cents of each health dollar on research to prevent, cure and treat disease and disability. Do you think that this is too much, the right amount, or not enough?

Research Delivers Solutions

Knowing that Parkinson's symptoms are caused by the death of dopamine producing brain cells, scientists have developed drugs that can increase the amount of dopamine in the brain. One such drug is **levodopa**, which the brain can convert into dopamine. New research has shown that certain **microbes** in the gut prevent levodopa from reaching the brain, making the drug less effective. This research may guide future drug regimens and consideration of microbes in Parkinson's treatment.⁴

Stem cells offer scientists new ways to both model and potentially treat Parkinson's. Stem cells can develop into any other type of cell. Recent studies have demonstrated that dopamine-producing cells can be made from stem cells, and researchers hope to implement these findings to inform future therapeutic clinical trials.⁵

Deep Brain Stimulation (DBS) is a type of surgery that can help alleviate some symptoms of Parkinson's. The surgery involves the placement of **electrodes** into the brain which deliver electric pulses to a targeted area. DBS can help alleviate stiffness, slowness, and tremor. A new clinical trial is examining whether physical therapy can help patients who recently underwent DBS surgery to improve their balance and gait symptoms.⁶



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

Parkinson's Disease

Then. Now. Imagine.

THEN

The accuracy rate for a Parkinson's diagnosis ranged from 74-84% between 1998 and 2014.⁷

NOW

Advances in genetics and neurobiology have led to the discovery that there are several possible distinct gene mutations that can lead to Parkinson's, opening windows for new diagnostic methods and treatments.⁸

IMAGINE

A cure.

Most people are diagnosed around

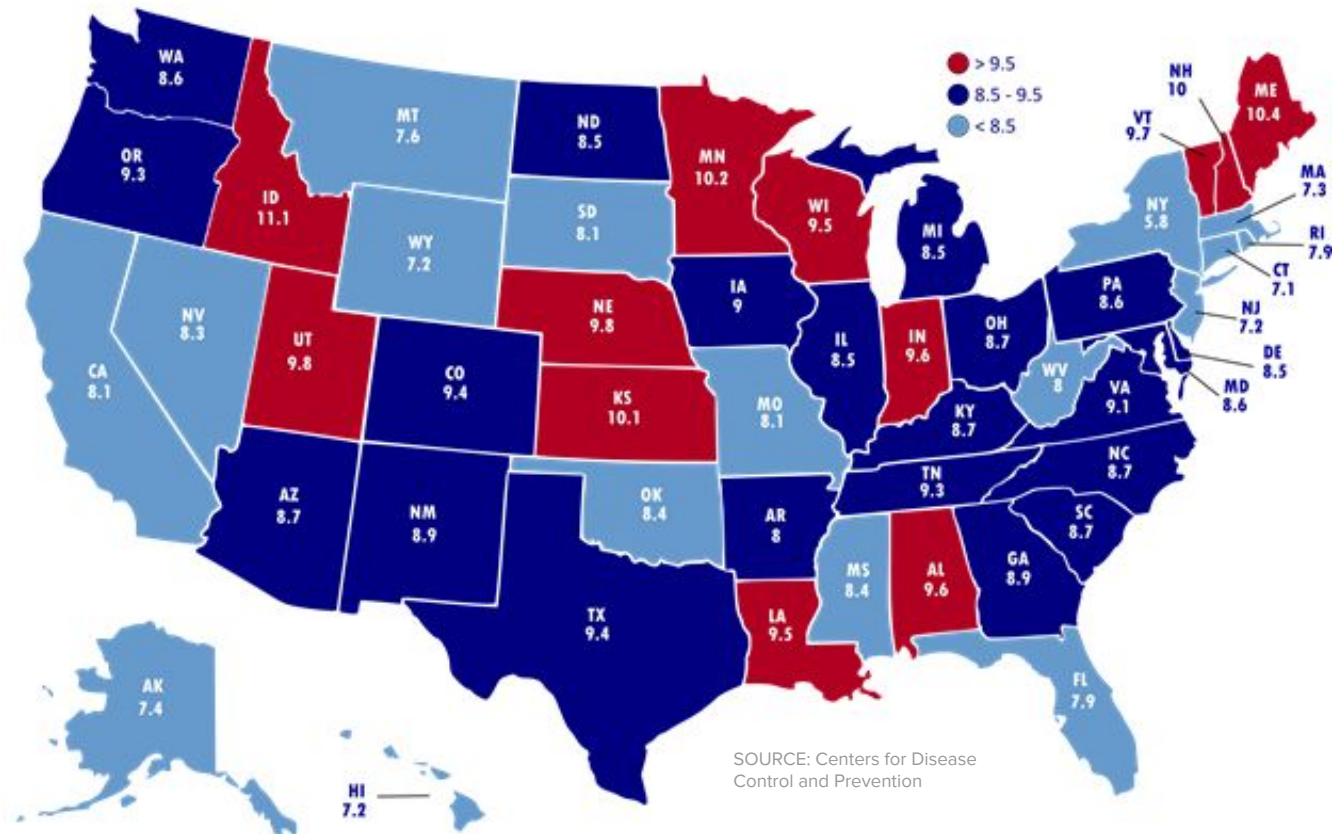
age 60

and have no history of Parkinson's in their family, but about

5-10%

of patients have early onset Parkinson's, which may have a genetic link.⁹

2017 Parkinson's Disease Mortality (per 100,000 people)



SOURCE: Centers for Disease Control and Prevention

1. "What is Parkinson's?", Parkinson's Foundation, 2019.
2. "Economic Burden and Future Impact of Parkinson's Final Report", Michael J. Fox Foundation, Parkinson's Foundation, Lewin Group, 2019.
3. "Parkinson's Disease Dementia", Alzheimer's Association, 2019.
4. Van Kessel et al. "Gut bacterial tyrosine decarboxylases restrict levels of levodopa in the treatment of Parkinson's disease". *Nature*, 2019.
5. Barker et al. "Human trials of Stem Cell derived dopamine neurons for Parkinson's Disease". *Cell Stem Cell*, 2017.
6. Duncan et al. "Physical therapy and deep brain stimulation in Parkinson's Disease". *Pilot and Feasibility Studies*, 2018.
7. Rizzo et al. "Accuracy of clinical diagnosis of Parkinson disease". *Neurology*, 2016.
8. Deuschlander et al. "Genetic risk variants for Parkinson's disease and cognitive impairment in four clinical PD subtypes". *Neurology*, 2018.
9. "Parkinson's Disease", National Institute on Aging, 2017.

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