

# Researchers Make a Major Breakthrough in Predicting Neurodegenerative Diseases

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## STORY AT-A-GLANCE

- › Acting out dreams during sleep is an early warning sign of Parkinson's or dementia with Lewy bodies, offering a window for early detection and prevention
- › Advanced MRI scans now reveal that your brain's waste-clearing system slows down years before symptoms like tremors, stiffness, or memory loss appear
- › One study found that people with impaired brain waste clearance were more likely to develop Parkinson's, while another discovered that excess fluid between brain cells predicted future dementia
- › These findings show that subtle changes in brain fluid balance — not just loss of dopamine or brain shrinkage — predict who develops neurodegenerative disease and how fast it progresses
- › Supporting your brain's "cleaning system" through deep sleep, regular movement, hydration, and toxin avoidance helps protect memory, balance, and mental clarity for life

Each night while you dream, your brain performs one of its most important tasks — cleaning itself. As you enter deep sleep, a hidden network flushes away waste that builds up during the day. But when this system slows down, toxic proteins begin to linger, quietly damaging brain cells years before symptoms ever appear.

One of the earliest clues something's wrong is a strange sleep disorder that causes people to move, shout, or strike out while dreaming. This condition, known as isolated REM sleep behavior disorder, isn't just restless sleep — it's often the first visible sign of a much deeper neurological problem. Research now shows that nearly everyone diagnosed with it eventually develops Parkinson's disease or dementia with Lewy bodies, both linked to how well your brain clears waste.

Advances in brain imaging are uncovering what happens long before tremors, stiffness, or memory loss set in. Scientists are now able to detect subtle changes in brain fluid balance and waste-removal efficiency — signals that your brain's internal "plumbing" is beginning to fail. These findings are rewriting how we understand the earliest stages of neurodegeneration and opening a new path toward prevention: keeping your brain's cleaning system working for life.

## **Brain Scans Reveal Hidden Waste Build-Up Years Before Parkinson's Symptoms Appear**

A study published in *Neurology* investigated whether brain imaging could detect early warning signs of neurodegeneration in people with isolated REM sleep behavior disorder (iRBD) — a condition known to precede [Parkinson's](#) and related diseases.<sup>1</sup>

Using a specialized MRI method, the researchers measured how efficiently the brain's glymphatic system — the waste-clearing network that flushes toxins during sleep — was working. They wanted to know whether problems in this system could predict who would later develop Parkinson's or dementia with Lewy bodies.

- **The study involved hundreds of participants across five countries** — The research included 250 patients with iRBD and 178 healthy controls recruited from centers in Canada, the U.K., France, and Czechia.

All participants underwent advanced MRI scans and were followed for an average of six years. Among those with iRBD, 65 individuals eventually developed a neurodegenerative disease, most commonly Parkinson's. Those who converted had

distinct MRI patterns showing reduced activity in the brain's waste-clearing channels – especially on the left side.

- **Patients with the lowest glymphatic function were twice as likely to develop Parkinson's** – People with the sleep disorder who later developed Parkinson's showed weaker brain waste clearance, meaning their brains were less effective at washing out toxins during sleep.

This specific pattern did not appear in those who developed dementia with Lewy bodies. In practical terms, this suggests that glymphatic slowdown is more strongly linked to Parkinson's-type degeneration, giving doctors a measurable way to differentiate between disease pathways years before symptoms emerge.

- **The left side of the brain appeared more affected than the right, offering clues about early disease progression** – Interestingly, the reduction in glymphatic function occurred mainly in the left hemisphere, which mirrors how Parkinson's often begins asymmetrically – typically affecting one side of the body before the other.

This lateral difference could explain why some people notice tremors or stiffness in only one hand or leg at first. It also shows that early Parkinson's-related brain changes follow a predictable biological pattern.

- **Standard MRI scans didn't catch what this test did** – When researchers compared the imaging results to regular MRI measures, they saw no clear differences between groups. This means conventional scans weren't sensitive enough to spot the early waste-clearance problems linked to brain decline. The newer method, however, picked up a clear pattern that signaled disease progression.

## **The Brain's 'Cleaning System' Could Act as a Diagnostic Frontier**

Your glymphatic system, powered by glial cells and cerebrospinal fluid flow, removes toxic proteins that build up in your brain during wakefulness. When this flow is disrupted – especially during sleep – waste products accumulate and trigger inflammation and neuronal death. The study supports the theory that Parkinson's begins not with dopamine loss alone but with years of poor waste clearance.<sup>2</sup>

- **Your brain depends on sleep to take out the trash – and when that process slows, damage begins** – Think of your glymphatic system as your brain's plumbing. During deep sleep, cerebrospinal fluid flows through channels surrounding blood vessels, washing out debris.

When those channels get clogged or slow down, toxins linger, setting the stage for neurodegeneration. According to the researchers, this dysfunction precedes visible symptoms by several years, suggesting that tracking glymphatic health could give people time to intervene before irreversible damage occurs.

- **This discovery could change how neurodegenerative diseases are detected and treated** – By using noninvasive MRI to measure glymphatic function, doctors could one day identify high-risk individuals – especially those with sleep disorders like iRBD – and monitor them for early intervention.

Lifestyle changes that support deep sleep, reduce inflammation, and improve cerebrospinal flow could help protect glymphatic health. For anyone concerned about memory loss or movement problems later in life, this research offers a powerful reason to take [sleep quality](#) and nighttime brain repair seriously.

## **Extra Fluid on Brain Scans Predicts Who Will Develop Lewy Body Dementia**

In a complementary study published in *Alzheimer's & Dementia*, researchers also found that people with iRBD are very likely to later develop either Parkinson's disease or Lewy body dementia.<sup>3</sup> Using MRI, the team looked for "free water," which means extra fluid between brain cells. More fluid usually means brain tissue is irritated or breaking down.

- **The study followed hundreds of people over time** — Researchers studied 261 people with this sleep disorder and 177 healthy people across five countries. Over about eight years, 64 of the patients developed a brain disease — 16 developed Lewy body dementia and 38 developed Parkinson's. Those who showed more fluid in brain areas linked to memory and thinking were far more likely to develop Lewy body dementia.
- **More fluid in the brain meant higher dementia risk** — People with extra fluid between brain cells were far more likely to develop Lewy body dementia instead of staying healthy. Each step up in fluid level roughly doubled the overall risk of disease and sharply increased the chance of dementia compared with Parkinson's.
- **People with more brain fluid declined faster** — Those with higher fluid levels developed disease sooner — within a few years — while those with lower levels stayed healthy longer. This shows the test could help doctors identify high-risk patients early enough to start brain-protective strategies.
- **Thinking scores dropped as brain fluid rose** — People with higher fluid in memory-related areas scored lower on cognitive tests that measure focus and recall. In other words, when these brain areas look "wetter," thinking and memory already start to slip.

Typical MRI looks for brain shrinkage, but this study found that measuring fluid between cells gave better early warnings of [dementia](#). It picked up problems even before tissue loss was visible.

- **Too much fluid in brain tissue is an early red flag for Lewy body dementia** — This simple MRI method could help doctors — and you — spot early brain changes years before memory problems begin, giving more time to protect brain health.

## **How to Keep Your Brain's Cleaning System Working for Life**

If your goal is to protect your memory, movement, and clarity as you age, it starts with how well your brain removes waste while you sleep. The study in Neurology shows that your brain's cleaning network slows down long before diseases like Parkinson's or Lewy body dementia appear.<sup>4</sup>

The research in Alzheimer's & Dementia adds another piece to the puzzle, revealing that fluid buildup between brain cells predicts who will later develop memory loss or movement problems.<sup>5</sup> Together, these findings show that one key to lifelong brain health is keeping your internal "plumbing" clear and flowing.

You don't need fancy scans or medical treatments to do that. Simple, daily habits that support deep sleep, circulation, and hydration make a powerful difference in how your brain detoxifies and repairs itself each night.

- 1. Prioritize deep, restorative sleep every night** – Your brain clears out waste almost entirely during deep sleep. If you struggle with [insomnia](#) or [wake up often](#), your brain's plumbing doesn't have enough time to drain toxins. Make your bedroom dark and cool, avoid screens at least an hour before bed, and aim for uninterrupted rest. Even going to bed 30 minutes earlier improves your brain's waste flow and helps prevent buildup that harms memory and movement.
- 2. Sleep on your side to boost your brain's waste removal** – Research shows your brain's cleaning system works best when you [sleep on your side](#) rather than on your back or stomach.<sup>6</sup> Use a body pillow if needed to stay comfortable. This position helps fluid move more easily through the same left-side brain areas that showed early signs of dysfunction in Parkinson's and Lewy body dementia risk studies.
- 3. Move your body to move your brain fluid** – Gentle aerobic activity – like walking, swimming, or cycling – acts like a pump for your brain's detox system. Movement increases blood flow and oxygen, helping flush waste and protect the nerve cells that control memory and movement. Start small – just 15 minutes a day – and build up over time. The better you move, the better your brain drains.

**4. Keep your circulation strong and your fluids balanced** – Your brain depends on steady circulation to deliver oxygen and carry waste away. Start your morning with a glass of pure water and continue sipping throughout the day, using thirst as your guide.

Choose water-rich fruits and vegetables – like cucumbers, celery, berries, and watermelon – to keep fluids moving smoothly. Add a sprinkle of sea salt or a squeeze of lemon to your water if you tend to lose minerals easily, since electrolytes help your brain's fluid system flow efficiently.

**5. Protect your sleep from inflammation and toxins** – Alcohol, **vegetable oils**, processed foods, and eating late at night disrupt deep sleep and overload your body's detox systems. Give yourself three hours to digest before lying down. Avoid exposure to heavy metals and pesticides whenever possible – they contribute to the protein buildup seen in neurodegenerative diseases.

By caring for your sleep, hydration, and daily movement, you create the right conditions for your brain to clean itself every night. Think of each night's rest as a tune-up for your neurons – one that protects your memory, mood, and independence for years to come.

## **FAQs About Predicting and Preventing Neurodegenerative Diseases**

**Q: What is iRBD, and why does it matter?**

**A:** iRBD is a sleep disorder that causes people to move, shout, or act out dreams while asleep. It's not just a sleep problem – it's one of the earliest warning signs of neurodegenerative diseases such as Parkinson's and dementia with Lewy bodies. Studies show that most people diagnosed with iRBD develop one of these conditions within about 15 years.

**Q: How do newer brain imaging methods help detect disease earlier?**

**A:** Researchers developed advanced MRI techniques that detect subtle changes in how your brain clears waste and manages fluid balance. These scans reveal early signs of dysfunction years before movement problems or memory loss appear, offering doctors a way to identify high-risk individuals sooner.

**Q: What do the studies show about early warning signs in the brain?**

**A:** The Neurology study found that people with weaker brain waste clearance were more likely to develop Parkinson's.<sup>7</sup> The Alzheimer's & Dementia study showed that people with extra fluid between brain cells were more likely to develop Lewy body dementia and experience faster cognitive decline.<sup>8</sup> Together, they reveal that brain "plumbing" problems begin long before symptoms surface.

**Q: Can lifestyle habits really protect my brain's cleaning system?**

**A:** Yes. Deep, high-quality sleep, regular movement, hydration, and a nutrient-rich diet all support healthy cerebrospinal fluid flow – the foundation of your brain's waste-removal system. These habits reduce buildup of toxic proteins linked to diseases like Parkinson's and dementia.

**Q: What's the main takeaway from this research?**

**A:** Early detection of waste-clearance problems could transform how doctors prevent and treat neurodegenerative diseases. But even without scans, you can take action now: prioritize sleep, stay hydrated, move daily, and minimize toxin exposure. Each of these habits keeps your brain's cleaning system working – protecting your memory, balance, and long-term vitality.

## Sources and References

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- <sup>1, 2, 4, 7</sup> [Neurology September 16, 2025](#)
- <sup>3, 5, 8</sup> [Alzheimer's & Dementia September 19, 2025](#)
- <sup>6</sup> [The Journal of Neuroscience August 5, 2015](#)