

# THE ROAD TO HEALTH & WELLNESS



News and advice  
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**ELITE**  
PERSONAL TRAINING  
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SOLUTIONS

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### Inflammation in Your Brain

When you stub your toe or cut your finger, the resulting inflammation is both rapid and obvious. But deep inside your brain, inflammation is gradual. Thus, it's more difficult to detect. However, long-term inflammation in the brain is far more destructive than a visible toe or finger injury.

Research has linked brain inflammation to the development of neurodegenerative conditions like Alzheimer's and Parkinson's, as well as to mental health conditions like depression and schizophrenia. Researchers are exploring the connection in order to learn how combating inflammation can protect the brain.

### The Brain's Defense System

For protective purposes, the brain has a different set of defenses than the rest of the body. Because an all-out assault by the immune system against bacteria or toxins could prove devastating to sensitive brain and nerve tissues, brain immunity takes a decidedly gentler approach. Yet when the injury is extreme, such as in the case of sepsis or a stroke, the inflammatory response may be more severe and may resemble responses that occur elsewhere in the body.

## Inflammation Series

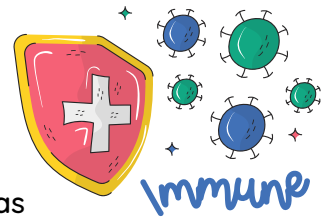
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SCAN ME

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The brain's immune system is termed the neuroimmune system. Its first line of defense is the blood-brain barrier, which separates the blood coursing through blood vessels of the brain from the surrounding cells and tissues. The blood-brain barrier is less permeable than other areas of the body. It allows in oxygen, glucose, and other nutrients the brain needs, but it bars entry to germs and toxins.



The next line of defense is a specialized team of cells called microglia. These scavenger cells constantly scan the brain for signs of injury or infection. When either is detected, microglia multiply and release inflammatory substances to engulf germs, damaged cells, and other debris.

The inflammatory response in the brain is called neuroinflammation. Microglia are the central players in this process. As we've learned in the inflammation series, this process in the body is meant to serve as protection. But when the activation of microglia is significant (such as after a traumatic brain injury or stroke) or when it becomes chronic (as in the case of an illness like Alzheimer's disease or multiple sclerosis), the inflammatory substances that are released can have detrimental effects that may ultimately lead to cognitive decline (dementia) and depression. Microglia have also been implicated in other neurodegenerative disorders such as Parkinson's disease, ischemic stroke, and traumatic brain injury.



### Infections and Brain Fog

If you come down with a nasty cold or a bout of the flu, you may experience the temporary "brain fog" that often accompanies such infections. It is surmised that inflammation during infection contributes to a swift and dramatic drop in cognition. Even low-grade inflammation, if ongoing, may contribute to the decline.



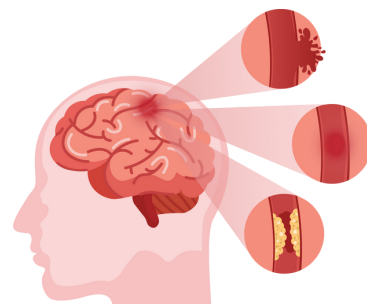
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## Stroke

A stroke can be both a result of inflammation and a cause of it. The same inflammatory processes that damage arteries and contribute to heart attacks can also harm the blood vessels that supply brain cells with oxygen and nutrient-rich blood.

Up to 85% of strokes are ischemic strokes. These strokes occur when a blood clot or clump of plaque blocks a blood vessel in the brain. Hemorrhagic strokes occur when a blood vessel in the brain bursts, causing bleeding into the brain.



Starved of blood and nutrients, brain cells (neurons) die very rapidly, at an estimated rate of 1.9 million cells per minute. As brain cells die, they release molecules called DAMPs (signals that activate and recruit inflammatory cells). These cells release their own signals to call in even more inflammatory reinforcements.

## Dementia, Including Alzheimer's Disease

Many Americans fear Alzheimer's disease. It is the most common form of dementia. The potential loss of your history, memory of loved ones, and ability to care for yourself makes Alzheimer's a truly fearsome adversary.

The statistics only add to the anxiety. Nearly six million Americans currently live with Alzheimer's. By the year 2050, that number is expected to surge to nearly 14 million. The rising number of dementia patients underscores the need to better understand its underlying mechanisms.



The hallmarks of Alzheimer's disease are the sticky amyloid plaques and twisted tangles of abnormal proteins (called tau proteins) that are found in the brains of people with the disease. Inflammation is deeply connected to the formation of these damaging plaques and proteins. Inflammation is also involved in vascular dementia, the second most common type of dementia after Alzheimer's disease. Unlike Alzheimer's disease, symptoms of vascular dementia tend to involve speed of thinking and problem-solving rather than memory loss.

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## Depression

Like all medical knowledge, the understanding of depression has undergone a seismic shift over time. One significant development is the discovery that depression shares many of the same characteristics, risk factors, and symptoms as immune-based inflammatory responses. We know that low mood, appetite loss, sleep disturbance, trouble concentrating, and a lack of energy are clear hallmarks of depression. However, these are also signs of inflammation! Many of the same risk factors that make people more vulnerable to depression-like stress, obesity, and eating a highly processed diet - also put them at risk for heart disease and other inflammatory conditions.

Chronic inflammatory diseases like rheumatoid arthritis, inflammatory bowel disease, atherosclerotic heart disease, and diabetes have all been linked to an increased risk for depression. Doctors once believed that depression was the natural result of living with one of these chronic and painful diseases, but they now recognize that the relationship is more complex.

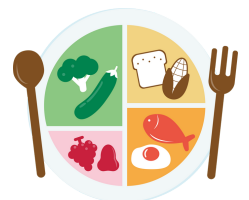


People who have been diagnosed with depression have higher levels of pro-inflammatory cytokines and other markers of inflammation in their blood. Studies suggest that when individuals without any signs of depression have elevated inflammatory markers, they may be at higher risk of developing depression.

## Fighting Inflammation To Protect The Brain

The pharmaceutical industry has made a huge effort to find drugs that calm inflammation in the brain, but the results have been disappointing. What can be done?

A brain-healthy diet is of enormous importance! A 2016 study found that implementing healthy dietary strategies helped reduce the risk of developing Alzheimer's during a 4 1/2 year period. A 2018 study found that diet was associated with a substantially slower rate of cognitive decline.



Timing is everything when it comes to stemming the inflammation that leads to cognitive dysfunction. Anti-inflammatory strategies are most helpful when they are preventative. Don't wait until dementia develops. Start preventative measures now.

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## Health Tip of the Month

Almost 80% of Americans are deficient in vitamin D. The amount of vitamin D that can be converted from the sunlight is far less than most of us think. Typically, only 10% of the total required amount of vitamin D is gained from sunlight. This decreases with age. Furthermore, the amount of sun exposure required for vitamin D production presents its own health concerns. Make sure you get this important vitamin and hormone through proper nutrition and supplementation.



## Did You Know...

On September 28, 2022, The Biden Administration hosted a Conference on hunger, nutrition, and health and unveiled its Food Compass plan.

You might not want to listen in.

Apparently, M&Ms are healthier than eggs and frosted mini wheats are better food choices than ground beef. Hmmm, sounds political not scientific.



To Be Continued On The Next Page...

## Research Shows

A PubMed review of 30 studies found that each cup of coffee people consumed per day was linked to a 6% lower risk of developing type 2 diabetes.

Another PubMed review of 11 observational studies in more than 29,000 people found that the more coffee people consumed, the lower their risk of Alzheimer's disease.

However, these are association or observational studies which are different than establishing scientific cause and effect relationships. There is also substantial conflicting research regarding the amount, benefits and drawbacks to coffee consumption.



## Food Facts

### Liquid Salt

A cup of Campbell's regular condensed soup has roughly 800 mg of sodium. However, most of us eat the whole can, which contains around 2000 mg. That is nearly an entire day's worth!



Look for Campbell's Healthy Request soups with 410 mg of sodium per cup. This is still high if you eat the whole can. Better yet, try low-sodium soups by Amy's, Doctor McDougall's, Imagine and Pacific.

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