

# NIH News in Health

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## Dealing with Dementia When Thinking and Behavior Decline

Forgetfulness, confusion, or having trouble remembering a name or word can be a normal part of life. But when thinking problems or unusual behavior starts to interfere with everyday activities—such as working, preparing meals, or handling finances—it's time to see a doctor. These could be signs of a condition known as dementia.

Dementia is a brain disorder that most often affects the elderly. It's caused by the failure or death of nerve cells in the brain. By some estimates, up to half of people ages 85 and older may have Alzheimer's disease, the most common cause of dementia. Although age is the greatest risk factor for dementia, it isn't a normal part of aging. Some people live into their 90s and beyond with no signs of dementia at all.

"Dementia really isn't a disease itself. Instead, dementia is a group of symptoms that can be caused by many different diseases," says Dr. Sanjay Asthana, who heads an NIH-supported Alzheimer's disease center at the University of Wisconsin. "Symptoms of dementia can include problems with memory, thinking, and language, along with impairments to social skills and some behavioral symptoms."



### Definitions

#### Stroke

When normal blood flow to the brain fails, often due to blocked or broken blood vessels.

Several factors can raise your risk for developing dementia. These include aging, smoking, uncontrolled diabetes, high blood pressure, and drinking too much alcohol. Risk also increases if your family members have had dementia.

Dementia can be reversed when it's caused by dehydration or other treatable conditions. But most forms of dementia worsen gradually over time and can't be corrected. Scientists are searching for ways to slow down this process or prevent it from starting in the first place.

The 2 most common causes of dementia in older people are Alzheimer's disease and vascular dementia, a condition that involves changes to the brain's blood supply. Vascular dementia often arises from **stroke** or arteriosclerosis (hardening of the arteries) in the brain. Other causes of dementia include Parkinson's disease, HIV infection, head injury, and Lewy body disease. (Lewy bodies are abnormal protein clumps in brain cells.)

Dementia in people under age 60 is often caused by a group of brain diseases called frontotemporal disorders. These conditions begin in the front or sides of the brain and gradually spread. A rare, inherited form of Alzheimer's disease can also occur in people in their 30s, 40s, and 50s.

The symptoms of dementia can vary, depending on which brain



regions are damaged. "In general, the left side of the brain is involved in language, and the right side is very involved in social behavior," says Dr. Bruce L. Miller, who directs an NIH-funded dementia center at the University of California, San Francisco.

In the case of a frontotemporal disorder, "if it begins in the left side of the brain, you tend to have worsening language problems; if it starts on the right, it affects behavior and might be mistaken for a psychiatric condition," Miller explains. Damage to particular left brain regions can cause people to become apathetic, lose their inhibitions, or show no consideration for the feelings of others.

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With Alzheimer's disease, memory-related areas in the lower and back parts of the brain tend to be affected first. Other types of dementia can affect regions that control movement.

"The treatment for all of these disorders is slightly different," Miller says. That's why it's important to get an accurate diagnosis.

Because different types of dementia can have overlapping symptoms, and some people have more than one underlying condition, it's best to see a clinician who has expertise in diagnosing dementia.



### Wise Choices Signs of Dementia

Dementia isn't a disease; it's a group of symptoms. See a doctor if these symptoms are interfering with everyday life:

- Repeating the same story or question over and over.
- Getting lost in familiar places.
- Delusions or agitated behavior.
- Problems with language, movements, or recognizing objects.
- Memory or concentration problems.
- Difficulty following directions.
- Getting disoriented about time, people, and places.
- Neglecting personal safety, hygiene, and nutrition.

"NIH has specialized centers across the country that have clinics that can diagnose and evaluate patients with Alzheimer's disease and dementia," Asthana says. (For information about these NIH centers, see [www.nia.nih.gov/alzheimers/alzheimers-disease-research-centers](http://www.nia.nih.gov/alzheimers/alzheimers-disease-research-centers).)

To make a diagnosis, physicians usually ask about a person's medical history and do a physical exam including blood tests. They also check for mental abilities and sometimes perform brain scans. These tests can determine if the symptoms are related to a treatable condition—such as depression, an infection, medication side effects, or vitamin B12 deficiency.

With some types of dementia, a clear diagnosis can't be made until the brain is examined after death. "There's no single blood test or brain scan that can diagnose Alzheimer's disease or some other types of dementia with certainty," Asthana says. "In these cases, a definite diagnosis can be made only at autopsy."

Many researchers are working to change that. More than a decade ago, NIH-supported scientists found a way to detect signs of Alzheimer's disease in the brains of living people. Their sophisticated brain scans can spot abnormal protein clumps known as amyloid plaques. All people with Alzheimer's disease have amyloid plaques. But extensive plaque buildup can also be found in some people who have no signs of dementia. Because of this uncertainty, amyloid imaging isn't considered a defini-



### Web Links

For more information about dementia, click the "Links" tab at:  
<http://newsinhealth.nih.gov/issue/Jan2014/Feature1>

tive tool for diagnosing Alzheimer's disease. But it is being widely used in clinical research studies.

"Right now, a lot of research is focusing on the pre-symptomatic stages of the disease, where we can see evidence of amyloid protein before a person has any symptoms. We can test to see if medications can slow or prevent buildup of this amyloid protein," Asthana says. "So far, no studies have shown that clearing the brain of amyloid protein can actually translate into improved symptoms."

Different types of drugs are being used to treat Alzheimer's disease, Parkinson's dementia, and certain other forms of dementia. These medications may improve symptoms, but none can halt or reverse progressive damage to the brain.

"In contrast, if the dementia is due to vascular disease, there are many things we can do to prevent it from progressing. It's the same things we do to prevent cardiovascular disease," says Dr. Helena Chui, director of an NIH-funded Alzheimer's center at the University of Southern California. "Some patients are given anticlotting medications. Others are given medications to keep blood pressure, cholesterol, and diabetes under control."

Chui notes that a healthy lifestyle can help protect the aging brain. "Regular exercise, a heart-healthy diet, and avoiding smoking can reduce your risk for heart disease as well as dementia," she says. Engaging in social and intellectually stimulating activities might also help to protect brain function. "You can change your trajectory toward a healthier brain by making healthy choices," Chui says. ■

## NIH News in Health (ISSN 1556-3898)

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# Avoiding Anemia

## Boost Your Red Blood Cells

If you're feeling constantly exhausted and sluggish, you might have a condition called anemia. Anemia is a common blood disorder that many people develop at some point in their lives.

Many types of anemia are mild and short term. But the condition can become serious if left untreated for a long time. The good news is that anemia often can be prevented and easily corrected by getting enough iron.

Anemia arises when your body doesn't have enough healthy red blood cells. You may either have too few red blood cells, or they may be lacking in an iron-rich protein called hemoglobin. Red blood cells are responsible for delivering oxygen throughout your body, and hemoglobin is the protein that carries the oxygen.

When the number of red blood cells or your hemoglobin level is too low, your body doesn't get all of the oxygen it needs, and that can make you feel very tired. You may also have other symptoms, such as shortness of breath, dizziness, headaches, pale skin, or cold hands and feet.



### Wise Choices Preventing Anemia

To prevent or treat iron-deficiency anemia:

- Eat foods rich in iron and B vitamins.
- Eat fruits and vegetables high in vitamin C, which helps your body absorb iron.
- Ask your doctor about iron supplements if you don't get enough iron in your diet.
- Get checked every year or 2 if you're a woman of child-bearing age who has heavy menstrual periods or a previous diagnosis of anemia.

The most common type of anemia occurs when your body lacks iron. This condition is called iron-deficiency anemia, and it often arises if you don't have enough iron in your diet. Your body needs iron and other nutrients to make hemoglobin and healthy red blood cells. So it's important to get a regular supply of iron as well as vitamin B12, folate, and protein. You can get these nutrients by eating a balanced diet or taking dietary supplements.

Another common cause of iron-deficiency anemia is blood loss, which might arise from injury, childbirth, or surgery. Women of child-bearing age are at risk for iron-deficiency anemia due to blood loss from menstrual periods.

Women also need extra iron during pregnancy. Dr. Harvey Luksenburg, a specialist in blood diseases at NIH, says that if anemia isn't treated during pregnancy, women can give birth to iron-deficient children. This lack of iron can affect a child's growth rate and brain development.

"Women who feel symptoms of sluggishness and fatigue may be iron deficient," Luksenburg says. "Even if you've lived with it a long time, get it checked. I've seen startling changes when women were put on iron supplements. Some say they've never felt better."

Many people living with anemia may not realize they have it. They might have mild symptoms or none at all. A doctor can determine whether you have anemia by a simple blood test.

Common types of anemia can be prevented and treated by eating iron-rich foods. The best sources are red meat (especially beef and liver), poultry, fish, and shellfish. Other foods high in iron include peas, lentils, beans, tofu, dark green leafy vegetables such as spinach, dried



fruits such as prunes and raisins, and iron-fortified cereals and breads.

NIH researchers are studying how to treat rarer, more severe forms of anemia. Some types can be treated with medicines. Severe cases may require blood transfusions or surgery.

If you don't get enough iron from your food, ask your doctor about taking iron dietary supplements. The body absorbs iron from meat and fish better than that from vegetables. If you're a vegetarian, consult a health care provider to make sure you're getting enough iron.

Making healthy lifestyle choices, including a nutritious, iron-rich diet, can help prevent common types of anemia so you can have more energy and feel your best. ■



### Web Links

For more information about anemia, click the "Links" tab at:

<http://newsinhealth.nih.gov/issue/Jan2014/Feature2>

# Health Capsules

For links to more information, see these stories online:  
<http://newsinhealth.nih.gov/issue/Jan2014/Capsule1>

## Insights into Brain Injury

Scientists have uncovered new details about what happens in the brain after a concussion. The findings point to possible ways to reduce the harmful effects of these injuries.

Concussions are a mild type of brain injury. They can arise after a swift blow to the head. Concussions are rarely life-threatening, but they can have serious and lasting effects.

NIH researchers have been studying people who suffered a concussion but had “normal” CT scans that showed no signs of brain damage. The scientists used a special type of MRI and found that fluid was leaking into the thick outer covering of the brain in nearly half of 142 patients with concussions.

To take a closer look, the research-

ers developed a way to visualize the effects of mild brain injuries in mice. The scientists initially saw cell death in the brain’s outer covering and in a thin layer at the brain’s surface. Cell death in the underlying brain tissue began 9-12 hours after injury.

When the thin surface layer breaks down, harmful molecules can get into the brain. Within an hour after head injury, the researchers saw specific cells acting to repair the damage. These reactions, never before seen in living brains, help to secure the brain’s protective barrier.

Immediately after brain injury, high levels of cell-damaging molecules appeared at the trauma site. Certain compounds can reduce levels of these molecules. When the research-

ers applied one such compound directly to the skull bone 15 minutes after brain injury, cell death dropped by 67%. When it was applied 3 hours after injury, cell death fell by 51%.

“This idea that we have a time window within which to work, potentially up to 3 hours, is exciting and may be clinically important,” says study leader Dr. Dorian McGavern of NIH. However, “humans have a thicker skull bone, and so we would need to evaluate whether the same technique could apply to the human skull bone.” ■

## Who Needs a Knee Replacement?

If you or someone you know is considering knee replacement, a new resource can help you understand how it works, how to prepare for surgery, and what to expect in recovery.

Knee replacement involves removing parts of your natural knee joint and replacing them with artificial parts. Knee replacement is the most common type of joint replacement surgery.

Several forms of arthritis can damage knees and cause so much pain and disability that knees need to be replaced. Certain knee deformities—such as bowed legs or knock knees—can wear down cartilage and create difficulties. Knee damage

can also result from a problem called avascular necrosis, or osteonecrosis, in which the bones lose their blood supply, die, and eventually collapse.

If other treatments haven’t helped, your doctor may suggest knee replacement when pain and stiffness begin to interfere with your everyday activities.

If you’d like to consider knee replacement, ask your doctor to refer you to an orthopedic surgeon, a doctor specially trained to treat problems of the bones and joints.

For more information, visit the NIH Senior Health Knee Replacement page at <http://nihseniorhealth.gov/kneereplacement>. ■



### Featured Website 2014 Multicultural Health Planners

[www.niams.nih.gov/Multicultural/](http://www.niams.nih.gov/Multicultural/)

Let NIH help you get healthier in 2014. These free multicultural planners, called *A Year of Health*, provide information about staying healthy and managing conditions of the bones, joints, muscles, and skin. Planners are targeted to African American, Hispanic, Asian American, and Native American populations.



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