

A close-up portrait of Michael J. Fox, smiling slightly, wearing a dark suit jacket, white shirt, and dark tie. The background is a plain, light color.

# NIH MedlinePlus®

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WINTER 2014

the magazine

*With his Parkinson's disease research foundation and a hit television comedy, Michael J. Fox is helping to educate the public about this challenging disease.*

**Managing**

## **Parkinson's Disease**

**Michael J. Fox leads the way**

### **Preventing Falls**

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# National Center for Biotechnology Information Celebrates 25th Anniversary



Photo: NLM

Photo: NLM

▲ NLM Director Donald A.B. Lindberg gave his recollections of the origins of the NCBI as part of the 25th anniversary celebration at NIH in November.

Tony Hey, Ph.D. (left), Vice President of Microsoft Research, presented NCBI Director David Lipman, M.D., with the Jim Gray eScience Award for outstanding contributions to the field of data-intensive computing in the pursuit of open, supportive, and collaborative research models.

The National Center for Biotechnology Information (NCBI), a component of NLM, celebrated its 25th anniversary with a program November 1, 2013 in Natcher Conference Center. NCBI is a national and international resource for molecular biology information. It creates public databases, conducts research in computational biology, develops software tools for analyzing genome data, and disseminates biomedical information—all for the better understanding of molecular processes affecting human health and disease.

NLM Director Dr. Donald A.B. Lindberg, who helped

lead the charge for the creation of NCBI in the mid-1980s, gave an overview of the planning process. Here, he is showing an image of the late Congressman Claude Pepper (D-FL), whose House Select Committee on Aging Subcommittee on Health and Long-Term Care held hearings on the need for a national biotechnology information center. Pictured with Pepper were Committee member Cong. Lindy Boggs (right) (D-LA), and Frances Humphrey Howard, sister of U.S. Vice President Hubert H. Humphrey and a driving force in NCBI's creation.

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Michael J. Fox and his wife, actress Tracy Pollan, work to end Parkinson's disease.

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The human papillomavirus (HPV) can be prevented among girls and boys with a simple, safe vaccination.

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The National Institutes of Health (NIH)—the Nation's Medical Research Agency—includes 27 Institutes and Centers and is a component of the U.S. Department of Health and Human Services. It is the primary federal agency for conducting and supporting basic, clinical, and translational medical research, and it investigates the causes, treatments, and cures for both common and rare diseases. For more information about NIH and its programs, visit [www.nih.gov](http://www.nih.gov).



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Photo: NIH

▲ Story C. Landis, Ph.D., is Director of the National Institute of Neurological Disorders and Stroke.

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**A major NINDS initiative is the Parkinson's Disease Biomarkers Program, aimed at discovering ways to identify individuals at risk for developing PD, track disease progression, and speed the development of new therapeutics for PD.**

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## Advances in Parkinson's Disease Research

Story Landis, Ph.D., has been Director of the National Institute for Neurological Disorders and Stroke (NINDS) since 2003. Throughout her research career, Dr. Landis has made fundamental contributions to the understanding of nervous system development.

Neurological disorders—such as Parkinson's disease (PD)—strike an estimated 50 million Americans each year, exacting an incalculable personal toll and an annual economic cost of hundreds of billions of dollars in medical expenses and lost productivity. Dr. Landis recently provided *NIH MedlinePlus* magazine with answers to the following questions about Parkinson's disease research.

### **Why is this such an exciting time in brain research?**

Mapping brain structures and functions is a vibrant field of science. The President's BRAIN Initiative (Brain Research through Advancing Innovative Neurotechnologies) announced earlier this year is an extraordinary opportunity for the federal government and the private sector to work together to develop a comprehensive understanding of how the human brain works. It will create new tools, technologies, and research strategies for studying the brain. Scientists might gain a better understanding of mechanisms underlying Parkinson's disease, which could lead to new therapies to treat and, perhaps, cure neurological disorders, including PD.

### **What does brain research today tell us about what causes Parkinson's disease?**

Scientists have known for nearly 50 years that specific brain cells die in PD, but we don't fully understand why this occurs. We know that certain genetic mutations increase a person's risk for developing PD, as can illness or environmental factors, such as exposure to certain toxins, pesticides, or chemicals. Other factors that may contribute to the disease process, or cause cell death, also are being investigated. We recently discovered a network of genes that may help dispose of damaged mitochondria—the cell's power plants—that could offer new targets for treating Parkinson's and other neurological diseases.

Our long-term research and planning strategy led to the NINDS-hosted January 2014 conference, “Parkinson’s Disease 2014: Advancing Research, Improving Lives,” at which neuroscientists, physicians, public and private organization representatives, and people with Parkinson’s disease discussed the highest research priorities, ranging from lab discoveries to developing new therapies for PD.

### **What drugs are presently used to treat PD?**

Levodopa is the most commonly used drug to treat PD. It increases the level of the chemical messenger dopamine in the brain, which helps reduce many symptoms but does not stop the progression of the disease. Other types of drugs include those that mimic dopamine or those that block or reduce the activity of enzymes that break down dopamine. Doctors also may prescribe medications to treat the non-motor symptoms of PD, such as depression and anxiety, or the motor complications of PD, such as involuntary twisting or writhing.

### **How are the movement symptoms caused by PD minimized today?**

In addition to drug therapy, deep brain stimulation—which uses an electrode that is surgically inserted into areas of the brain that are involved in Parkinson’s disease—can stimulate the brain in a way that blocks signals that are involved with many of the movement symptoms of PD.

### **What research is under way to treat PD?**

NINDS and other researchers hope to improve existing treatments and find new approaches to slowing disease progression. These efforts include better understanding the genetic risk factors involved in PD; studying the role mitochondria, oxidative stress, inflammation, and other cellular processes might play in disease progression or cause cell death in PD;

gaining insight as to how altered protein shapes may influence neurological diseases; and identifying new targets to treat disease symptoms and complications. Researchers are also trying to find new ways of getting drugs across the brain’s protective barrier.

### **What are some of the most promising research areas?**

A major NINDS initiative is the Parkinson’s Disease Biomarkers Program, aimed at discovering ways to identify individuals at risk for developing PD, track disease progression, and speed the development of new therapeutics for PD. Six projects are actively recruiting volunteers at sites across the U.S.

The NINDS also collaborates with the Michael J. Fox Foundation for Parkinson’s Research on BioFIND, a project collecting biological samples and clinical data from healthy volunteers and those with PD. And the NINDS Morris K. Udall Centers of Excellence for Parkinson’s Disease Research Program currently funds 10 centers across the country, where researchers are examining PD disease mechanisms, the genetic contributions to PD, and potential therapeutic targets and treatment strategies.

Also, scientists are using induced pluripotent stem cells—cells that can be made to turn into any cell type in the body—that have been taken from individuals with Parkinson’s disease and coaxed into becoming dopamine neurons to test potential therapies. Of course, clinical trials involving people with Parkinson’s disease are vital to the treatment and prevention of PD and make a difference in improving the quality of life for those with PD, now and in the future.

# Living Well with Parkinson's Disease

## Is an Art



Photo: Rob Cunningham

"... even when you have a challenge in life, you can still be yourself."

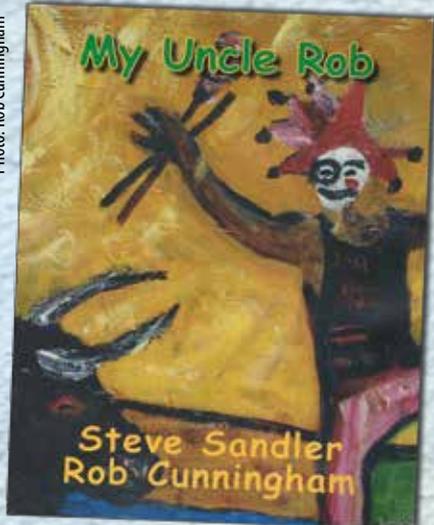


Photo: Rob Cunningham

▲ Rob Cunningham painted the cover to this children's book about Parkinson's.

▲ Cunningham learned to paint after being diagnosed with Parkinson's disease, in part to help him maintain his motor skills.

Rob Cunningham, 66, of Hattiesburg, Mississippi, has been managing Parkinson's disease for more than 24 years. When first diagnosed with early-onset Parkinson's, he was the father of three young children: ages 4 months, 2 years, and 5 years. A Vietnam-era Army veteran, Cunningham owned and operated a number of restaurants in Tallahassee, Florida. But Parkinson's forced him to retire from those very active endeavors.

### **When did you first get diagnosed with Parkinson's disease? What symptoms led you to go to the doctor? What were your first thoughts upon getting the diagnosis?**

Tuesday, September 12, 1989, 2:30 pm. It was memorable. I went to the doctor because of a tremor in my right hand and weakness in that arm. I had also noticed that my handwriting had become smaller and smaller. My first thought was, "AAAAIIIIIIIIII!" I was scared to death. My doctor gave me a brochure about Parkinson's. All I could think of was, "was I going to be able to swim laps any more?"

### **You were an early recipient of deep brain stimulation (DBS) treatment. How has that made an impact on your symptoms?**

The DBS was a godsend. It smoothed out all of my dyskinesia (involuntary movements) and face distortion. The dyskinesia was my worst symptom. It was hard on my muscles and joints. I also lost most of my tremors, too. It has made life a lot easier.

## **You took up painting after you were diagnosed. How did you decide to do that? Does your condition impact your ability to paint? Does painting help you?**

My sister gave me a book about Matisse, and I was so taken with his paintings, I figured I could do this. And here I am, 300 paintings later. Parkinson's does impact my painting. Early on, though, I used the tremors to make different effects with the paint. Nowadays, I have less energy to sit and paint for too long at a time. I think when I first started painting, that is 15 years ago now, and it was just after I had to retire from running my restaurant, it gave me something to do and a way to connect with other people. I took some painting classes and even had painting parties where every guest had to paint something.

## **You illustrated a children's book, *My Uncle Rob*. What is it about? What messages are you trying to send with it?**

The book is about me really. In it, a boy is close to his uncle, and when the uncle is diagnosed with Parkinson's, he reacts to it. I think my paintings in it show that even when you have a challenge in life you can still be yourself. You don't become Parkinson's; you are still you.

## **You have lived with Parkinson's for a long time. What advice do you have for others who have the condition, and their loved ones?**

Number one is to keep exercising. Also, find a doctor who listens and who specializes in Parkinson's. There are Movement Disorders clinics at many university medical centers and those tend to be good. The clinic at the University of Florida and the new one at the University of South Alabama have been good for me. Having faith in your medical team is really valuable. One way to meet the experts is to volunteer for clinical trials. I was part of a trial at Emory University for a new drug therapy. And while I still have Parkinson's I met some great doctors through that program.

## **What Causes the Disease?**

Parkinson's occurs when nerve cells, or neurons, in the brain become impaired or die. Normally, neurons produce dopamine, a chemical messenger that governs smooth, purposeful body movement.

Studies have shown that most people with Parkinson's have lost as many as 80 percent or more of their neurons by the time symptoms appear. They also may have decreased capacity to produce norepinephrine. This chemical messenger controls pulse, blood pressure, and many automatic functions of the body. Its loss might explain the fatigue and blood pressure abnormalities seen in Parkinson's.

Some research suggests that a harmful build-up of proteins that causes brain cells to die may cause Parkinson's. Other studies show that clumps of protein found inside brain cells may contribute to neuron death.

However, Parkinson's actual trigger remains unknown.





# What are the Symptoms?

Parkinson's disease is a degenerative disorder of the central nervous system. It persists over a long time, and its symptoms grow progressively worse. At least 500,000 people in the United States currently have Parkinson's at a total annual cost of more than \$6 billion.

Symptoms begin gradually and worsen over time. Patients may have difficulty walking, talking, or completing other simple tasks. Not everyone with these symptoms has Parkinson's; they can appear in other disorders.

Parkinson's symptoms do not affect everyone the same way. Their rate and severity differ among individuals. Early signs may be subtle and occur gradually. People may have mild shaking or difficulty rising from a chair. Activities may take longer than normal to complete, and there may be some stiffness and slowness. People may speak too softly or have slow, cramped handwriting. In time, however, the more obvious motor symptoms appear.

Friends or family members may notice changes first. The person's face may lack expression and animation; he or she may move more slowly. As the disease progresses, the symptoms may begin to interfere with daily activities.

People with Parkinson's often tend to walk leaning forward, in small quick steps as if hurrying, and with reduced swinging of the arms. They also may have trouble starting to walk (hesitation) and stop suddenly (freezing).

Symptoms typically begin on one side of the body. Eventually both sides are affected. Even after both sides are involved, symptoms are often less severe on one side than the other.

Numerous other symptoms may accompany Parkinson's, including depression, anxiety, loss of motivation, and dependency; difficulty chewing and swallowing; speech difficulties; skin problems; urinary problems or constipation; sleep problems; dementia or other cognitive issues; sudden drops in blood pressure resulting in dizziness; muscle cramps, especially in the legs and toes; twisted, frozen postures; fatigue and loss of energy; sexual dysfunction; and pain, especially aching muscles and joints.

Parkinson's disease has four main symptoms:

**Tremor.** Shaking that often begins in a hand, although sometimes a foot or the jaw is affected first. Characteristically, it is a rhythmic back-and-forth "pill rolling" motion of the thumb and forefinger. It is most obvious when the hand is at rest or when a person is under stress. Tremor usually disappears during sleep or improves with intentional movement.

**Rigidity.** The muscles remain tensed and contracted; the person aches or feels stiff. The arm moves in short, jerky measures, like a cogwheel.

**Bradykinesia.** Bradykinesia is the slowing of spontaneous and automatic movement. For example, washing, dressing, and other daily activities become difficult and take longer than normal.

**Postural instability.** This impairs balance and causes affected individuals to fall more easily.

# Michael J. Fox: Spurring Research on Parkinson's

“What I had in mind was an organization built for speed, eschewing bureaucracy and taking an entrepreneurial approach toward helping researchers find a cure for Parkinson’s,” says Michael J. Fox about the Michael J. Fox Foundation for Parkinson’s Research, which he founded in 2000. That was just two years after he went public with his news about having Parkinson’s.

“I can play anybody,” Fox has said several times. “As long as the character has Parkinson’s disease.”

Almost 14 years later, Fox has become the most famous face of Parkinson’s disease, and his foundation has raised millions for research into a cure. In 2013, he returned to television full time, with a situation comedy on which he plays a man living successfully with Parkinson’s.

Part of the reason he has been able to return to full-time acting is because he and his doctors have found a drug cocktail that helps him control his symptoms to a large degree.

“I turned myself around,” Fox has written. “In fact, Parkinson’s has made me a better person. A better husband, father, and overall human being. Life delivered me a catastrophe, but I found a richness of soul.”



Photo: shutterstock

▲ Michael J. Fox and his wife, actress Tracy Pollan, founded the Michael J. Fox Foundation for Parkinson’s Research in the year 2000.

## Some celebrities with Parkinson’s disease:



Photo: shutterstock

**Bob Hoskins** – Retired, award-winning English actor



Photo: shutterstock

**Muhammad Ali** – One of the greatest heavyweight boxers of all time.



Photo: AP

**Linda Ronstadt** – Award-winning singer of popular music.

## How is Parkinson's Diagnosed?

There are no blood or laboratory tests to diagnose Parkinson's disease. Diagnosis is based on medical history and a neurological examination. In some cases, early diagnosis is difficult because the symptoms may be considered as those of normal aging. Also, MRI or CT brain scans of people with Parkinson's usually appear normal. Since other diseases have similar features but require different treatments, making a diagnosis is important for properly treating Parkinson's.

With medications, most people with Parkinson's can live productive lives for many years after diagnosis.



Photo: Thinkstock

Medications for Parkinson's disease can help many patients live productive lives and maintain mobility.

## How is the Disease Treated?

At present, there is no cure for Parkinson's. Medications can often lessen its symptoms for several years. In later stages of the disease, surgery may be considered. A doctor will assess how the symptoms disrupt the person's life, then tailor treatment to the person's particular condition. Since no two people react the same way to a given drug, it may take time and patience to get the dose just right. Even then, symptoms may not be completely alleviated.

## Drugs

There are three categories of Parkinson's medications. The first includes drugs that increase dopamine in the brain. The most common is levodopa (L-dopa, for short). Others mimic dopamine or prevent or slow its breakdown. The second set of drugs eases some of Parkinson's movement symptoms, such as tremor. The third helps to control non-motor symptoms, including depression.

- **Levodopa.** L-dopa is the cornerstone of Parkinson's drug therapy. It helps replenish the brain's supply of dopamine, reducing the tremors and other motor symptoms of Parkinson's. It typically helps most with bradykinesia and rigidity, but not balance problems. L-dopa usually is combined with the drug carbidopa to diminish nausea, vomiting, and other side effects. Although there is often noticeable improvement after starting L-dopa, people typically need to gradually increase the dose for maximum benefit.
- L-dopa does not stop Parkinson's from progressing and is not a cure. Over long periods people commonly develop involuntary twisting and writhing (called dyskinesias). Although L-dopa can be reduced, doctors and patients must work together closely to find a tolerable balance between L-dopa's benefits and side effects. Surgery may be considered for severe dyskinesias. Because dyskinesias tend to be associated with long-term L-dopa use, doctors often start patients on other dopamine-increasing drugs and add L-dopa later.
- In late Parkinson's, before the first dose of L-dopa in the morning and between the day's subsequent doses,

symptoms may become more pronounced because the drug's effectiveness wears off. People may also experience sudden, unpredictable "off periods." One approach then is to take more frequent, smaller amounts of L-dopa. Patients should never stop taking L-dopa without consulting their doctor. Rapid withdrawal can have serious side effects.

In addition to L-dopa-carbidopa, there are other medications for Parkinson's:

- **Dopamine agonists.** These drugs include apomorphine, pramipexole, ropinirole, and rotigotine. They mimic dopamine in the brain and can be given alone or with L-dopa.
- **MAO-B inhibitors.** These drugs cause dopamine to accumulate in surviving nerve cells and reduce the symptoms of Parkinson's. They include selegiline (also called deprenyl) and rasagiline.
- **COMT inhibitors.** These drugs prolong L-dopa's effects by preventing the breakdown of dopamine. They include entacapone and tolcapone.
- **Amantadine.** An antiviral drug, amantadine, can help reduce symptoms and dyskinesia. It is often used alone in Parkinson's early stages.
- **Anticholinergics.** These drugs include trihexyphenidyl, benzotropine, and ethopropazine. They can be particularly effective for tremor.

**Medications for Non-Motor Symptoms.** Doctors also may prescribe a variety of medications to treat such non-motor Parkinson's symptoms as depression and anxiety.

► For some Parkinson's disease patients, **deep brain stimulation** (DBS) therapy can reduce some of the most disabling movement symptoms, such as shaking and stiffness. DBS therapy uses a surgically implanted medical device to deliver electrical stimulation to precisely targeted areas of the brain.

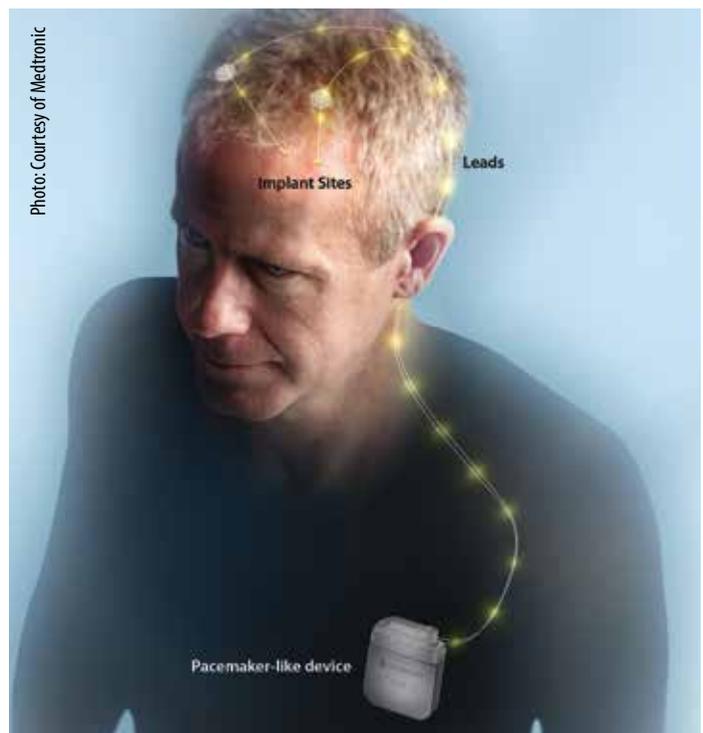
## Surgery

Before L-dopa, surgery was a common option for alleviating Parkinson's symptoms. Today, *deep brain stimulation* (DBS) is a common surgical treatment. It is approved by the U.S. Food and Drug Administration and widely used.

**Deep brain stimulation.** In DBS, an electrode is surgically implanted into part of the brain. It stimulates the brain to help block Parkinson's motor symptoms. People who initially respond well to L-dopa tend to respond well to DBS. While benefits on motor function benefits can be substantial, DBS usually does not help with speech problems, "freezing," posture, balance, anxiety, depression, or dementia.

Also, DBS does not stop Parkinson's from progressing, and some problems may gradually return. It is not generally an option for people with memory problems, hallucinations, severe depression, poor health, or a poor response to L-dopa. As with any brain surgery, there are potential complications, including stroke or brain hemorrhage. These are rare, however. There is also a risk of infection.

Researchers continue to study how best to improve DBS, its technology, the best part of the brain to receive stimulation, and the long-term effects.



## Complementary and Supportive Therapies

A wide variety of complementary and supportive therapies may be used for Parkinson's. Among them are standard physical, occupational, and speech therapies, which can help with such problems as walking and voice disorders, tremors and rigidity, and cognitive decline. Other supportive methods include:

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Other complementary therapies for Parkinson's include massage, yoga, tai chi, hypnosis, acupuncture, and the Alexander technique, which optimizes posture and muscle activity.

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**Diet.** There currently are no specific vitamins, minerals, or other nutrients of proven therapeutic value in Parkinson's. While there is no proof that any specific dietary factor is

beneficial, a normal, healthy diet can promote overall well being for people with Parkinson's, just as it would for anyone else. For example, a fiber-rich diet and drinking plenty of fluids can help alleviate constipation.

**Exercise.** Exercise's effects on Parkinson's are not known, but it may improve body strength so that the person is less disabled. Exercises also improve balance, helping people minimize gait problems, and can strengthen certain muscles so that people can speak and swallow better. Walking, gardening, swimming, calisthenics, and other general physical activity improve emotional wellbeing. Parkinson's patients should always check with their doctors before beginning a new exercise program.

Other complementary therapies for Parkinson's include massage, yoga, tai chi, hypnosis, acupuncture, and the Alexander technique, which optimizes posture and muscle activity. Another important approach involves speech and swallowing evaluation and therapy. Certain techniques can help with the low voice volume that Parkinson's patients often experience.



Photo: Thinkstock

## What Research Is Being Done?

The National Institute of Neurological Disorders and Stroke (NINDS) is the nation's leading funder of research on Parkinson's disease. The goals are to better understand and diagnose the disease, develop new treatments, and, ultimately, prevent Parkinson's.

NINDS also supports training of the next generation of researchers and clinicians, and serves as an important source of information for people with Parkinson's and their families. The Institute conducts and supports three types of research:

- **basic**—scientific discoveries in the laboratory;
- **clinical**—development and study of therapeutic approaches, and
- **translational**—focus on tools and resources that speed development of therapeutics into practice.

**The Parkinson's Disease-Biomarkers Programs (PDBP)**, a major NINDS initiative, aims to discover how to identify those at risk for Parkinson's and to track its progression. Identifying biomarkers—signs that may indicate risk for and improve diagnosis of a disease—will speed development of new Parkinson's treatments.

The NINDS also collaborates with the Michael J. Fox Foundation for Parkinson's Research (MJFF) on **BioFIND**, a project collecting biological samples and clinical data from healthy volunteers and those with Parkinson's. For more information on how to get involved, please visit <http://pdbp.ninds.nih.gov/>.

**The NINDS Morris K. Udall Centers of Excellence for Parkinson's Disease Research program** is a central component of NINDS Parkinson's research to find the causes of Parkinson's and better diagnose and treat people with the disease. The NINDS currently funds 10 Udall Centers across the country, where researchers are examining the disease's mechanisms, the genetic contributions to Parkinson's, and potential therapeutic targets and treatment strategies. To learn more, see [www.ninds.nih.gov/research/parkinsonsweb/udall\\_centers/index.htm](http://www.ninds.nih.gov/research/parkinsonsweb/udall_centers/index.htm).

**Parkinson's Disease Clinical Studies** offer an opportunity now, and hope for the future, for researchers to find better ways to safely detect, treat, or prevent Parkinson's. NINDS conducts clinical studies on Parkinson's disease

at the NIH research campus in Bethesda, Maryland, and supports Parkinson's studies at medical research centers throughout the United States.

Current Parkinson's studies include ones on genetics, biomarkers, experimental therapies and other treatment options, diagnostic imaging, brain control and movement disorders, DBS, and exercise.

Studies depend on volunteers. By participating in a clinical study, both healthy individuals and people with Parkinson's can help to make a difference and improve the quality of life for everyone threatened with this disorder. For more information, see <http://clinicaltrials.gov/ct2/results?term=Parkinson's+disease+AND+NINDS>.

## To Find Out More

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# Preventing Falls



Many of us have a relative or friend who has fallen. They may have slipped while walking or felt dizzy and fallen after standing up. Maybe you've fallen yourself. If so, you're not alone. More than one in three people age 65 or older falls each year. The risk of falling—and fall-related problems—rises with age.

## Risk Increases With Age

More than 1.6 million older U.S. adults go to emergency departments for fall-related injuries each year. Among older adults, falls are the leading cause of fractures, hospital admissions for trauma, loss of independence, and deaths due to injury. Fractures, especially of the hip, can lead to hospital stays, disability, and loss of independence among older adults. Fortunately, most healthy, independent older adults hospitalized for broken hips can return home or live on their own after treatment and rehabilitation. But many cannot and need long-term care.

## Fear of Falling

Fear of falling becomes more common with age, even among those who haven't fallen. Consequently, older people may avoid walking, shopping, or taking part in social activities. If you're worried about falling, talk with your healthcare provider. Your provider may prescribe physical therapy to help improve your balance and walking—and restore your walking confidence. Getting over your fear can help you to stay active, maintain your physical condition, and avoid future falls.

Falls by seniors in the home, such as on stairways, are among the most common and dangerous accidents. They are largely preventable, with the right preparations.



# fastfacts

1



Each year, one in every three U.S. adults 65 and older falls, but less than half tell their healthcare providers about it.

2



Falls can cause hip, leg, and arm fractures, and head trauma. This makes it hard to get around or live independently, and increases the risk of death.

3



Over 95 percent of hip fractures are due to falls. Older women are more than twice as likely to fracture their hips in falls as older men.

4



People 75 and older who fall are much more likely to be admitted to long-term care facilities for a year or more.

5



More men are likely to die from falls than women.

6



Even if they are not injured, many people fear falling again and limit their activities. This reduces mobility and physical fitness, and actually increases the risk of another fall.

7

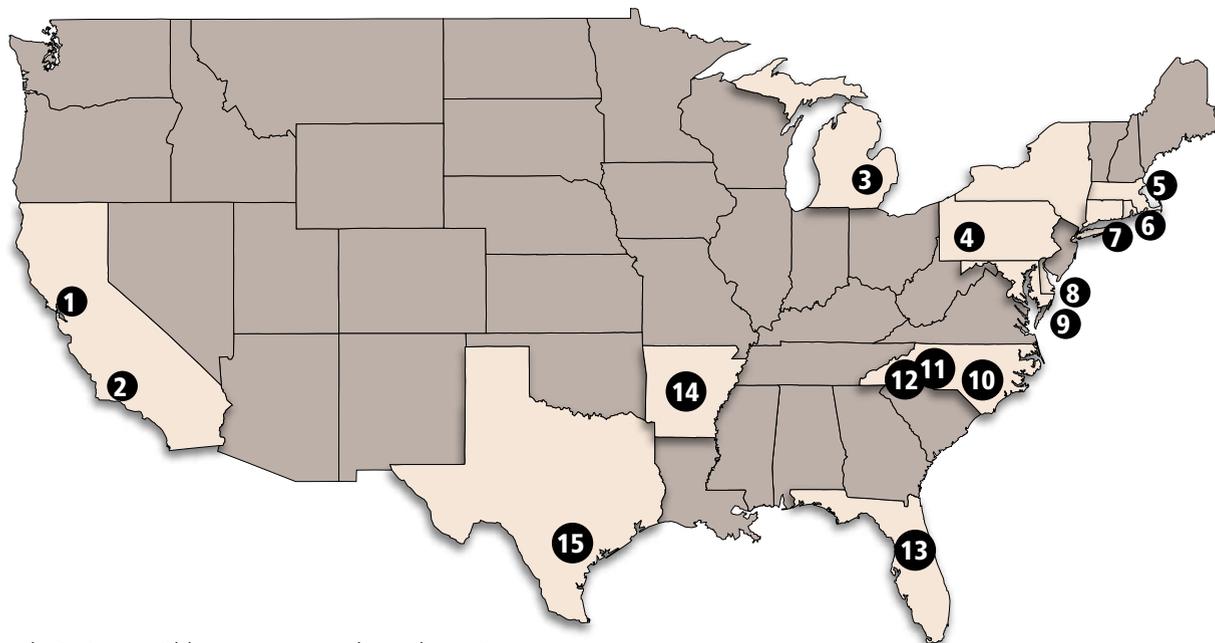


Fortunately, falls are largely preventable. Reduce the chance of falls through regular exercise, regular eye tests, removing tripping hazards at home, and identifying medicines that may cause dizziness.

Photo: Thinkstock

# Great Help for Older Americans:

## Claude D. Pepper Older American Independence Centers (OAICs)



The Claude D. Pepper Older Americans Independence Centers (OAICs), also known as Pepper Centers, are designed to maintain or restore independence to older persons. They honor the late Florida Congressman and Senator Claude Denson Pepper, who advocated for improving the quality of life for Americans of advancing age.

The National Institute on Aging (NIA) supports 12 Pepper Centers nationwide. Each has its own particular research interests—some look at factors that contribute to disability, some study specific age-related conditions that lead to or increase risk for loss of function, and others design and test interventions that may prevent or delay disability.

Despite their unique identities, the OAICs each have a similar structure with specific overarching goals. Each is responsible for stimulating the translation between basic and clinical research. They all support young researchers, especially those from under-represented populations. Along with conducting their own studies, the Pepper Centers often collaborate with each other and other types of centers in larger projects.

**For more information on the Centers and to contact one in your area, go to: <http://www.nia.nih.gov/research/dgcn/claude-d-pepper-older-american-independence-centers-oaics>, then click on National Pepper Center website.**

1. **University of California San Francisco**  
Kenneth Covinsky, MD, MPH
2. **University of California Los Angeles**  
P.I. David Reuben, MD
3. **University of Michigan**  
P.I. Jeffrey Halter, MD
4. **University of Pittsburgh**  
P.I. Stephanie Studenski, MD
5. **Boston University**  
P.I. Shalender Bhasin, MD
6. **Yale University**  
P.I. Thomas M. Gill, MD
7. **Mt. Sinai Medical Center**  
P.I. Albert L. Siu, MD
8. **University of Maryland**  
P.I. Jeremy Walston, MD
9. **National Institute on Aging**  
Basil A. Eldadah, MD, PhD
10. **Duke University**  
P.I. Harvey Cohen, MD
11. **Wake Forest University**  
P.I. Stephen Kritchevsky, PhD
12. **Pepper Coordinating Center**  
Kevin High, MD
13. **University of Florida**  
P.I. Marco Pahor, MD
14. **University of Arkansas**  
P.I. Jeanne Wei, MD, PhD
15. **University of Texas Medical Branch**  
P.I. Elena Volpi, MD

# How Can Older Adults Prevent Falls?

Falls are not inevitable, even as we age. But a trip on a rug or slip on a wet floor can change your life: you could break a bone. For older people, breaks can lead to more serious problems.

Many things can cause a fall. Your eyesight, hearing, and reflexes might not be as sharp as when you were younger. Diabetes, heart disease, or other health problems can affect balance. Some medicines can make you dizzy or sleepy, making falls more likely.

Do not let fear of falling keep you from being active. Getting together with friends, gardening, walking, or going to the local senior center can help you stay healthy and happy. There are simple ways to prevent most falls.

## Take the Right Steps for Safety

Most falls and accidents don't "just happen." Here are some steps to avoid falls and broken bones:

- **Stay physically active.** Regular exercise makes you stronger. It also helps keep your joints, tendons, and ligaments flexible. Walking, climbing stairs, and other mild weight-bearing activities may slow bone loss from osteoporosis.
- **Have your eyes and hearing tested.** Even small changes in sight and hearing may cause you to fall. Take time to get used to new eyeglasses and always wear them when you need them. If you have a hearing aid, be sure it fits well, and wear it.
- **Find out about the side effects of the medicines you take.** If a drug makes you sleepy or dizzy, tell your doctor or pharmacist.
- **Get enough sleep.** If you are sleepy, you are more likely to fall.
- **Limit how much alcohol you drink.** Even small amounts can throw you off balance and slow your reflexes.
- **Stand up slowly.** Blood pressure can drop if you get up too quickly, and you'll feel wobbly or even black out.
- **Use a cane or walker if your doctor says so.** Make sure it's the right size and the wheels roll smoothly. This is very helpful when walking in areas you don't know or on uneven walkways.
- **Be very careful on wet, slippery, or icy surfaces.** Spread sand, salt, or kitty litter on icy sidewalks, on front and back steps and before doorways.
- **Wear non-skid, low-heeled or lace-up shoes that fully support your feet.** The soles should not be too thin or too thick. Don't walk around in socks or smooth-soled shoes and slippers.

Always tell your doctor if you have fallen since your last checkup—even if you aren't hurt.



Photo: Thinkstock

## Your Own Medical Alarm

Think about getting a home-monitoring system. Usually, you wear a button on a chain around your neck. If you fall or need emergency help, you push the button to alert the service. You can find local "medical alarm" services in your yellow pages. Since most medical insurance companies and Medicare do not cover home-monitoring systems, be sure to ask about costs.

## Home Improvements Prevent Falls

Many state and local governments have education and/or home modification programs to help older people prevent falls. Check with your local health department, senior affairs office, or area agency on aging to see if there is a program near you. There are many changes you can make to your home that will help you avoid falls and ensure your safety.

### “Safe-ty-fy” Your Home

#### In Stairways, Hallways, and Pathways

- Install handrails on both sides of the stairs, and make sure they are tightly fastened. Hold on to the handrails when you use the stairs. If you must carry something up or down stairs, hold it in one hand and grip the handrail with the other. Don't let what you're carrying block your view of the steps.
- Make sure there is good lighting with switches at the top and bottom of stairs and at each end of a hall. Remember to use the lights!
- Keep stairs, halls, walkways, and floors free of clutter. Don't leave books, papers, clothes, and shoes lying in harm's way.
- Firmly affix all carpets to the floor, so they won't slip. Put no-slip strips on tile and wooden floors.
- Don't use throw rugs or small area rugs.

#### In Bathrooms and Powder Rooms

- Mount grab bars near toilets and on both the inside and outside of your tub and shower.
- Place non-skid mats, strips, or carpet on all surfaces that may get wet.
- Remember to turn on nightlights.

#### In Your Bedroom

- Put nightlights and light switches close to your bed.
- Keep your telephone and a flashlight within reach.

#### In Other Living Areas

- Run extension cords and telephone wires along walls and away from walking paths.
- Tack down all carpets and large area rugs.
- Arrange your furniture (especially low coffee tables) and other objects so they are not in your way when you walk.
- Make sure sofas and chairs are the right height, easy to get in and out of.



Photo: Thinkstock

- Avoid walking on newly washed floors—they are slippery.
- Keep items you use often within easy reach.
- Never stand on a chair or table to reach something that's too high. Use a stepstool or stepladder instead, or a "reach stick." If you use a step stool, make sure it is steady and has a handrail on top. Have someone stand next to you.
- Don't trip over your cat or dog. Know where your pet is before standing or walking.
- Keep emergency numbers IN LARGE PRINT near each telephone.

## Weak Bones

Osteoporosis is a disease that makes bones weak and more likely to break. Many people think osteoporosis is only a problem for women, but it can also affect older men. For people with osteoporosis, even a minor fall may be dangerous. Talk to your doctor about whether you have osteoporosis.

Illustration: Thinkstock



▲ Hip fractures (above)—In 2010, there were 258,000 hospital admissions for hip fractures among people aged 65 and older. More than 95 percent of hip fractures are caused by falling.

## Some Questions for Your Provider

- Will my medicines make me sleepy, dizzy, or lightheaded?
- What exercises should I do to make me stronger and prevent falls?
- Should I use a cane or a walker?
- How can I make my bathroom safer? Should I use a shower chair and a raised toilet seat? Do I need help bathing?
- Should I put a bed on the first floor and quit climbing the stairs altogether? Would a hospital bed be best for me?
- What should I do if I fall?



“Injuries from falls are a major cause of loss of independence for older people. This is a significant public health problem.”

—Dr. Richard J. Hodes, Director,  
National Institute on Aging

## Find Out More

Here are some helpful resources:

- ✓ **MedlinePlus:** Type “Falls” in the search box.  
<http://www.nlm.nih.gov/medlineplus/falls.html>
- ✓ **Eldercare Locator**  
1-800-677-1116 (toll-free)  
[www.eldercare.gov](http://www.eldercare.gov)
- ✓ **National Center for Injury Prevention and Control at the Centers for Disease Control and Prevention**  
1-800-232-4636 (toll-free)  
1-888-232-6348 (TTY/toll-free)  
[www.cdc.gov/ncipc](http://www.cdc.gov/ncipc)
- ✓ **National Resource Center on Supportive Housing and Home Modifications University of Southern California Fall Prevention Center of Excellence**  
1-213-740-1364  
[www.homemods.org](http://www.homemods.org)
- ✓ **Rebuilding Together**  
1-800-473-4229 (toll-free)  
[www.rebuildingtogether.org](http://www.rebuildingtogether.org)
- ✓ **Looking for more information about exercise?** Check out Go4Life®, at [www.nia.nih.gov/Go4Life](http://www.nia.nih.gov/Go4Life). This exercise and physical activity campaign from the National Institute on Aging has exercises, success stories, and free video and print materials.

# HPV

PROTECT YOURSELF AGAINST

## Human Papilloma Virus

### Block this cervical cancer - causing virus

More than half of all sexually active people get a genital infection with the human papillomavirus (HPV) at some point in their lives, but most never know it. As a result, they might be spreading the virus to others without realizing it. Fortunately, vaccines are available to protect against the most harmful forms of HPV. These vaccines work best if given well before a person becomes sexually active.

HPV infection is the most common sexually transmitted disease in the United States. The virus is spread from person to person through direct contact during vaginal, anal, or oral sex.

Many different types of HPV can cause infections in the throat or genital area in both men and women. In most cases, HPV infections go away on their own without being noticed. Other times, they can cause health problems, including genital warts and certain cancers. "A variety of cancers are caused by HPV infection," says Dr. Douglas Lowy, Deputy Director of the National Cancer Institute (NCI) and a cancer researcher there. "The most prominent is cervical cancer."

Cervical cancer is the fourth-deadliest cancer among women worldwide. Nearly all cases are caused by HPV.

The U.S. Food and Drug Administration (FDA) has approved two vaccines that protect against harmful forms of HPV. These vaccines were developed, in part,

based on initial discoveries made by Lowy and his NIH colleague Dr. John Schiller.

Both HPV vaccines, called Gardasil and Cervarix, protect against the two types (or strains) of HPV that are responsible for about 70 percent of all cervical cancers. These two strains also cause most cancers of the anus, vagina, vulva, and the middle part of the throat (the oropharynx). Thus, the HPV vaccines should protect against all these forms of cancer. Gardasil also blocks two HPV strains that cause 90 percent of genital warts. Both vaccines are available for females. Only Gardasil is approved for males.

"Because the vaccines only work before you get infected, and most people become infected relatively soon after they begin sexual activity, the vaccines are mainly targeted to young adolescent girls and boys," Lowy explains.

The vaccines are given in a series of three shots over a six-month period. The U.S. Centers for Disease Control and Prevention (CDC) recommends that all girls and boys get vaccinated at ages 11 or 12. In addition, the vaccines are recommended for teen boys and girls not yet vaccinated, young women through age 26, and young men through age 21. The vaccines are also suggested for gay and bisexual men and certain people with weakened immune systems.



“An HPV vaccine is your best opportunity to protect your child or yourself against HPV infection and subsequent disease,” says Dr. Carolyn Deal, an NIH expert on sexually transmitted diseases.

Research has shown that HPV vaccines are highly effective. A recent study found that even though only about one-third of girls ages 13 to 17 have been fully vaccinated against HPV, the number of HPV-infected young women has dropped by 50 percent since the first vaccine was introduced in 2006. “The vaccines are already starting to have a real-world impact,” Deal says. “They are safe and effective vaccines.”

When you get an HPV vaccine, you’re not only protecting yourself from some strains of this cancer-causing virus, you’re also helping to prevent its spread to others.

— Courtesy *NIH News In Health*



Cancer Expert:

## “Get Vaccinated Today!”



▲ Harold Varmus, M.D., co-recipient of a Nobel Prize for studies of the genetic basis of cancer, has led the National Cancer Institute since 2010. He previously served as Director of the National Institutes of Health.

“It is critically important to be vaccinated against HPV. The latest research shows that even a single dose of the HPV vaccine can provide protection against the most potent virus strains that cause cervical cancer and other, less common cancers. But people, both male and female, should get all the doses their doctors recommend.

HPV vaccination can save lives—yours and your loved ones!”

## Find Out More

- ✓ **MedlinePlus**  
[www.medlineplus.gov](http://www.medlineplus.gov)  
Type “HPV” in the Search box.
- ✓ **National Cancer Institute**—HPV Page  
[www.cancer.gov/cancertopics/factsheet/Risk/HPV](http://www.cancer.gov/cancertopics/factsheet/Risk/HPV)
- ✓ **U.S. Department of Health & Human Services**—HPV Fact Sheet  
<http://www.hhs.gov/opa/reproductive-health/stis/hpv/>

# Heart Disease in Women

***Awareness among women about their No. 1 killer is increasing.***

Heart disease is the leading cause of death for American women, a fact that just a few years ago, most women did not know. A national heart health movement, being led by the NIH's National Heart, Lung, and Blood Institute (NHLBI) in partnership with many other organizations, has achieved progress in getting women to pay attention to their risk for heart disease. According to a recent survey, awareness of heart disease among all U.S. women has nearly doubled in the last 15 years—from 30 percent to 56 percent. Among African American women, awareness has more than doubled (from 15 percent in 1997 to 36 percent in 2012) and increased among Hispanic women from 20 percent in 1997 to 34 percent in 2012.

Continued educational efforts have contributed to increasing awareness of heart disease among women. For 11 years, the NHLBI has been sponsoring *The Heart Truth*<sup>®</sup> ([www.hearttruth.gov](http://www.hearttruth.gov)), a national education program for women that raises awareness about heart disease and its risk factors and educates and motivates them to take action to prevent the disease.

Through the program, launched in

## fast facts

**1**  In the United States, 1 in 4 women dies from heart disease. In fact, coronary heart disease (CHD)—the most common type of heart disease—is the #1 killer of both men and women in the U.S.

**2**  About 6.6 million American women have coronary heart disease, according to 2012 figures from the National Heart, Lung, and Blood Institute (NHLBI).

**3**  Each year, 395,000 women have a heart attack, or about one every minute and a half.

2002, the NHLBI leads the nation in a landmark heart health movement embraced by millions who share the common goal of better heart health for all women.

The centerpiece of *The Heart Truth* is the *Red Dress*<sup>SM</sup>, which was created by the NHLBI and introduced as

the national symbol for women and heart disease awareness in 2002. *The Red Dress* is a powerful red alert that inspires women to learn more about their personal risk for heart disease and take action to protect their heart health.

# Heart Attack Symptoms

A heart attack happens when blood flow to the heart suddenly becomes blocked and the heart can't get oxygen. If not treated quickly, the heart muscle fails to pump and begins to die. The most common heart attack symptom in men and women is chest pain or discomfort.

However, women also are somewhat more likely to have shortness of breath, nausea and vomiting, unusual tiredness (sometimes for days), and pain in the back, shoulders, and jaw.

Many people aren't sure what's wrong when they are having symptoms of a heart attack.

If you think you might be having a heart attack (even if you're not sure), call 9–1–1 immediately. Don't wait!

Some of the most common warning symptoms of a heart attack for men and women are:

- **Chest pain or discomfort.** Most heart attacks involve discomfort in the center or left side of the chest. The discomfort usually lasts for more than a few minutes or goes away and comes back. It can feel like pressure, squeezing, fullness, or pain. It also can feel like heartburn or indigestion.
- **Upper body discomfort.** You may feel pain or discomfort in one or both arms, the back, shoulders, neck, jaw, or upper part of the stomach (above the belly button).
- **Shortness of breath.** This may be your only symptom, or it may occur before or along with chest pain or discomfort. It can occur when you are resting or doing a little bit of physical activity.

Heart attacks don't always cause common symptoms. They can start slowly and cause only mild pain or discomfort. Symptoms can be mild or more intense and sudden. Symptoms also may come and go over several hours. Women who have high blood sugar (diabetes) may have no symptoms or very mild ones.

Any time you think you might be having heart attack symptoms or a heart attack, don't ignore it or feel embarrassed to call for help. Call 9–1–1 for emergency medical care, even if you are not sure whether you're having a heart attack.

Consider taking part in a research study (clinical trial) if you've had or are at risk for a heart attack. Research supported by NHLBI has uncovered some of the causes of heart diseases and conditions, as well as ways to prevent or treat them.



Photo: Thinkstock



Each February since 2002, The Heart Truth's Red Dress Campaign has held a Red Dress runway event during Fashion Week in New York City. The event is sponsored by the NIH's National Heart, Lung, and Blood Institute (NHLBI).

## *Join* The Heart Truth® Community

To make women more aware of the danger of heart disease, the NHLBI is sponsoring a national campaign called *The Heart Truth*®, in partnership with many national and community organizations. The program's goal is to raise awareness about heart disease and its risk factors among women and educate and motivate them to take action to prevent the disease and control its risk factors.

*The Heart Truth* and its logo and *The Red Dress* are registered trademarks of the U.S. Department of Health and Human Services (HHS). *National Wear Red Day* is a registered trademark of HHS and the American Heart Association. *Red Dress* is a service mark of HHS.



*A program of the National Institutes of Health*

## Primary Objectives

The program is especially for women ages 40 to 60, the age when a woman's risk of heart disease starts to rise. But its messages are also important for younger women, since heart disease develops gradually and can start at a young age—even in the teenage years. Older women have an interest too—it's never too late to take action to prevent and control the risk factors for heart disease. Even those who have heart disease can improve their heart health and quality of life.

Heart disease disproportionately affects women of color. African American and Hispanic women, in particular, have high rates of the major risk factors for heart disease, including obesity, physical inactivity, high blood pressure, and diabetes. The program's objectives recognize the critical need to eliminate health inequities by placing an emphasis on reaching African American and Hispanic women with heart health awareness messages and science-based public education information.

## National Symbol

The centerpiece of *The Heart Truth*® is *The Red Dress*® which was introduced as the national symbol for women and heart disease awareness in 2002 by the NHLBI. *The Red Dress* reminds women of the need to protect their heart health and inspires them to take action to lower their risk for the disease.

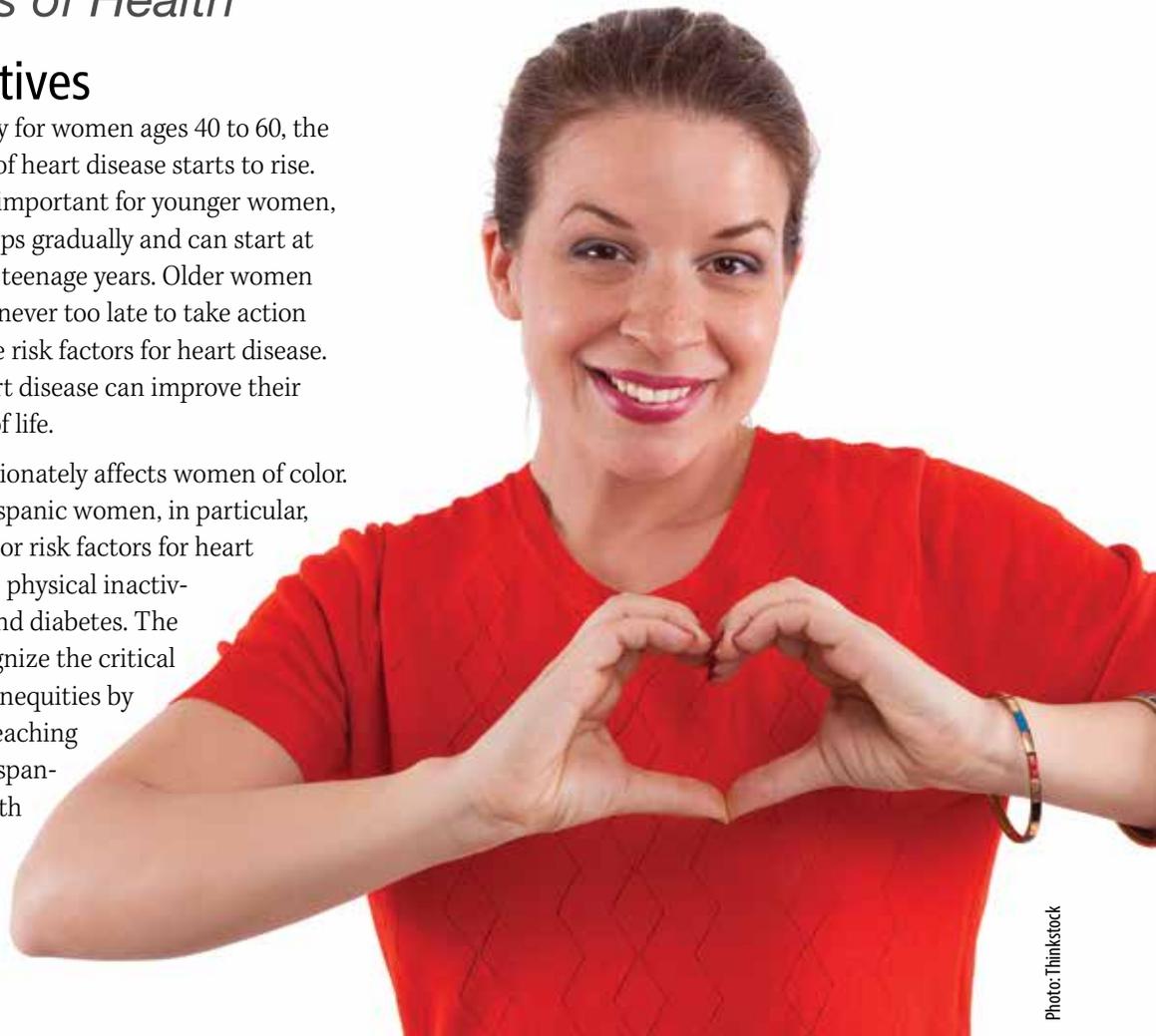


Photo: Thinkstock

## National Wear Red Day®

On Friday, February 7, 2014, join The Heart Truth® Campaign by wearing red to show your commitment and passion for fighting for women against heart disease. Because by the end of the day, everyone should know why Women Go Red.



## Women's Heart Research: Menopausal Hormone Therapy

One of the most confusing issues for women and their healthcare providers over the years has been the safety and effectiveness of hormone therapy before, during, and after menopause.

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### One size does not fit all when it comes to hormone therapy and risk of coronary heart disease (CHD).

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treatment (estrogen with or without progestin) for a number of years and with no hormone treatment for an extended number of years.

Among the many findings from the research is that healthcare providers must assess a woman's individual risk status before considering hormone therapy and treat any risk factors discovered. These risk factors include age, the number of years since menopause, high blood cholesterol, hot flashes and night sweats in older women, whether or not a hysterectomy has been performed, and other factors.

To help find answers to hormone therapy questions, the Women's Health Initiative (WHI) was launched by the National Institutes of Health (NIH) in the 1990s. The resulting WHI Hormone Therapy Trials included more than 27,000 women ages 50-79 who were followed during active hormone

One size does not fit all when it comes to hormone therapy and risk of coronary heart disease (CHD). Women should talk to their healthcare providers about their own risk factors. And while the risks-and-benefits pattern is complex, the WHI trials "do not support use of this therapy for chronic disease prevention, although it is appropriate for symptom management in some women," according to a 2013 study in the *Journal of the American Medical Association (JAMA)*.

## New Heart Guidelines Released; Talk to Your Healthcare Provider

Your healthcare provider now has new research information to help guide decisions about your heart health. In November, four clinical guidelines were released that focus on assessing risks to your heart, making lifestyle changes to reduce those risks, and managing elevated blood cholesterol and body weight in adults. The guidelines were released by the American College of Cardiology (ACC) and the American Heart Association (AHA), and other professional societies that worked in collaboration with the National Heart, Lung, and Blood Institute (NHLBI).

Each guideline provides important updated guidance for primary care providers, nurses, pharmacists, and specialty medicine providers on how best to manage care of patients who are at risk for heart-related diseases based on the latest scientific evidence.

"The guidelines, developed by the AHA and ACC in collaboration with and endorsed by other professional societies, provide a valuable updated roadmap to help clinicians and patients manage prevention and treatment challenges in four key areas of concern: cholesterol, lifestyle, risk assessment, and overweight and obesity," says Gary H. Gibbons, M.D., Director of the National Heart, Lung, and Blood Institute (NHLBI).

"We appreciate the outstanding work and dedication of the panelists who helped shape the NHLBI evidence reviews, as well as the collaborative contributions of the professional societies, for their extensive efforts to translate and disseminate these guidelines to the public. The guidelines reflect the most comprehensive and rigorous systematic evidence reviews to date on these topics, and we are pleased that the reviews provided by NHLBI-convened expert panels enabled the professional society partners to move with such deliberate speed. The NHLBI looks forward to continuing to develop accurate and timely evidence reviews, fueled by our investment in primary research on cardiovascular disease as well as implementation science to improve public health."

For more information about these guidelines, talk to your healthcare provider.

# Cindy Parsons and *Follow the Fifty*



Cindy Parsons is one woman who has made a commitment to protecting her heart. In the process, she has inspired awe, hope, and pride among many. Her story begins as the owner of a dress shop—the Trink-et Shoppe—in northeastern Connecticut. She began working in the shop at age 13 when it belonged to her parents. Last year, the Trink-et Shoppe became an important community partner in a local heart health campaign. It was there that many women found their crowning reward—a beautiful red dress—to celebrate their triumph in achieving a heart healthier lifestyle.

Cindy joined these women as part of *Follow the Fifty: Models of Heart Health*, a program funded through *The Heart Truth*® Community Action Program, knowing that her personal risk factors for heart disease, including family history, were high. She watched her mother pass away from heart disease in 2010. Over the years, Cindy steadily watched her weight and risk factors for heart disease increase. *Follow the Fifty* provided the perfect opportunity for her to become a true role model of heart health ... and that she did.

In February 2012, she recruited her daughter Stacy to join the program, too, and together they pledged to become models of heart health for themselves, for their loved ones, and for their community. In just 9 months, Cindy transformed her health. She lost 77 pounds, lowered her body mass index by 11 points, and decreased her blood pressure from 128/82 to 110/72. The *Follow the Fifty* pledge she took has become an oath for life.

*“My greatest surprise is that the Follow the Fifty ‘sisterhood’ was real,” says Cindy. “We were always there for each other—lifting, cheering, motivating, inspiring one another to keep going, and celebrating every success, large or small. Even today, we are taking what we learned, and we keep spreading the message with pride. We started as one person trying to get heart healthy and somehow transformed our community along the way.*

*“The FTF pledge we took for the campaign slowly became an oath for life: ‘I am a model of heart health. I pledge to honor my body, mind, and spirit; and promise to live my life in a way that will inspire others to follow my example.’ We said it. We lived it ... and here we are.”*

On February 6, 2013, Cindy Parsons walked the runway at *The Heart Truth’s Red Dress Collection* Fashion Show in New York. She participated in the event to honor her body, mind, and spirit, and as a promise to live her life in a way that will inspire others to follow her example

## To Find Out More

- ✓ **MedlinePlus heart information**  
<http://www.nlm.nih.gov/medlineplus/heartdiseaseinwomen.html>
- ✓ **NHLBI’s The Heart Truth educational campaign**  
[www.hearttruth.gov](http://www.hearttruth.gov)
- ✓ **NHLBI’s Heart Disease in Women Health Topic**  
<http://www.nhlbi.nih.gov/health/health-topics/topics/hdw/>
- ✓ **NIHSeniorHealth Heart and Lungs information**  
<http://nihseniorhealth.gov/category/heartandlungs.html>
- ✓ **DHHS Office of Women’s Health heart information**  
<http://womenshealth.gov/publications/our-publications/fact-sheet/heart-disease.html>

# Heart Disease Risk Factors:

## You *Can* Reduce Your Risk

Certain traits, conditions, or habits may raise your risk for coronary heart disease (CHD). These conditions are known as risk factors. Risk factors also increase the chance that existing CHD will worsen.

Women generally have the same CHD risk factors as men. However, some risk factors may affect women differently from men. For example, diabetes raises the risk of CHD more in women. Also, some risk factors, such as birth control pills and menopause, only affect women.

Having just one risk factor doubles your risk for CHD. Having

two risk factors increases your risk for CHD fourfold. Having three or more risk factors increases your risk for CHD more than tenfold. Also, some risk factors, such as smoking and diabetes, put you at greater risk for CHD and heart attack than others.

About 91 percent of women aged 40 to 60 have one or more modifiable risk factors for CHD. Many risk factors start during childhood; some even develop within the first 10 years of life. You can control most risk factors, but some you can't.

To find out whether you're at risk for CHD, talk with your doctor or healthcare provider.

## Risk Factors You Can Control



Photos: Thinkstock

- **Smoking**—Smoking is the most powerful risk factor that women can control.

- **High Blood Cholesterol and High Triglyceride Levels**—Cholesterol travels in the bloodstream in small packages called lipoproteins. The two

major kinds of lipoproteins are low-density lipoprotein (LDL) cholesterol and high-density lipoprotein (HDL) cholesterol. LDL cholesterol is sometimes called "bad" cholesterol. This is because it carries cholesterol to tissues, including your heart arteries. HDL cholesterol is sometimes called "good" cholesterol. This is because it helps remove cholesterol from your arteries.

- Guidelines for those levels are currently changing, depending on your age and other factors unique to you.

- **High Blood Pressure**—Blood pressure is the force of blood pushing against the walls of the arteries as the heart pumps blood. If this pressure rises and stays high over time, it can damage the body in many ways. Women who have blood pressure greater than 120/80 mmHg are at increased risk for CHD. (The mmHg is millimeters of mercury—the units used to measure blood pressure.)

- **Diabetes and Prediabetes**—Diabetes is a disease in which the body's blood sugar level is too high. This is because the body doesn't make enough insulin or doesn't use its insulin properly. Insulin is a hormone that helps move blood sugar into cells, where it's used for energy. Over time, a high blood sugar level can lead to increased plaque buildup in your arteries. Prediabetes

is a condition in which your blood sugar level is higher than normal, but not as high as it is in diabetes. Diabetes and prediabetes raise the risk of CHD more in women than in men.

- **Overweight and Obesity**—The most useful measure of overweight and obesity is body mass index (BMI). BMI is calculated using your height and weight. In adults, a BMI of 18.5 to 24.9 is considered normal. A BMI of 25 to 29.9 is considered overweight. A BMI of 30 or more is considered obese.

- You can use the National Heart, Lung, and Blood Institute's (NHLBI's) online BMI calculator to figure out your BMI, or your healthcare provider can help you. (<http://www.nhlbi.nih.gov/guidelines/obesity/BMI/bmicalc.htm>)

- **Metabolic Syndrome**—This is the name for a group of risk factors that raises your risk for CHD and other health problems, such as diabetes and stroke. A diagnosis of metabolic syndrome is made if you have at least three of the following risk factors:

- A large waistline. Having extra fat in the waist area is a greater risk factor for CHD than having extra fat in other parts of the body, such as on the hips.

- A higher than normal triglyceride level (or you're on medicine to treat high triglycerides).

- A lower than normal HDL cholesterol level (or you're on medicine to treat low HDL cholesterol).

- Higher than normal blood pressure (or you're on medicine to treat high blood pressure).

- Higher than normal fasting blood sugar (or you're on medicine to treat diabetes).

Metabolic syndrome is more common in African American women and Mexican American women than in men of the same racial groups.



■ **Birth Control Pills**—Women who smoke and take birth control pills are at very high risk for CHD, especially if they're older than 35. For women who take birth control pills but don't smoke, the risk of CHD isn't fully known.

■ **Lack of Physical Activity**—Inactive people are nearly twice as likely to develop CHD as those who are physically active.

■ **Unhealthy Diet**—An unhealthy diet can raise your risk for CHD. For example, foods that are high in saturated and trans fats and cholesterol raise your LDL cholesterol level. A high-sodium (salt) diet can raise your risk for high blood pressure.

■ **Stress or Depression**—Stress may play a role in causing CHD. Stress can trigger your arteries to narrow. This can raise your blood pressure and your risk for a heart attack. Getting upset or angry also can trigger a heart attack. Stress also may indirectly raise your risk for CHD if it makes you more likely to smoke or overeat foods high in fat and sugar. People who are depressed are two to three times more likely to develop CHD than people who are not. Depression is twice as common in women as in men.



## Risk Factors You Can't Control

■ **Age and Menopause**—As you get older, your risk for CHD and heart attack rises. This is due in part to the slow buildup of plaque inside your heart arteries, which can start during childhood.

■ **Family History**—Family history plays a role in CHD risk. Your risk increases if your father or a brother was diagnosed with CHD before 55 years of age, or if your mother or a sister was diagnosed with CHD before 65 years of age. Also, a family history of stroke—especially a mother's stroke history—can help predict the risk of heart attack in women.

Making lifestyle changes and taking medicines to treat risk factors often can lessen genetic influences and prevent or delay heart problems.

## Emerging Risk Factors

■ **Inflammation**—Research suggests that inflammation plays a role in causing CHD. Inflammation is the body's response to injury or infection. Damage to the arteries' inner walls seems to trigger inflammation and help plaque grow.

High blood levels of a protein called C-reactive protein (CRP) are a sign of inflammation in the body. Research suggests that women who have high blood levels of CRP are at increased risk for heart attack. Also, some inflammatory diseases, such as lupus and rheumatoid arthritis, may increase the risk for CHD.

■ **Migraines**—Some studies suggest that women who have migraine headaches may be at greater risk for CHD. This is especially true for women who have migraines with auras (visual disturbances), such as flashes of light or zig-zag lines.

■ **Reduced Vitamin Levels**—Low bone density and low intake of folate and vitamin B6 also may raise a woman's risk for CHD. More research is needed to find out whether calcium supplements with or without vitamin D affect CHD risk. You may want to talk with your doctor to find out whether these types of supplements are right for you.

## From DNA to Beer: A Unique Look at the Mighty Microbe

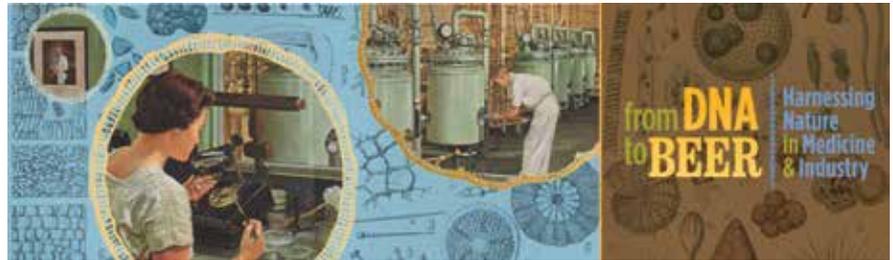
A new online exhibition offers an engaging look at how microbes have changed history. Microbes are tiny organisms too small to be seen with the naked eye. Yet, they've had a big impact on our lives—from the medicines we take to the food and drink we consume. The exhibition is called *From DNA to Beer: Harnessing Nature in Medicine and Industry*. NIH's National Library of Medicine created it with the Smithsonian's National Museum of American History. *From DNA to Beer* includes an interactive "Learn More" section, and more educational resources will be added. The online exhibition is part of the Library's collection of digital projects for research and education, <http://www.nlm.nih.gov/digitalprojects.html>.

## Earliest Marker for Autism Found

Researchers have found what they say is the earliest sign of developing autism ever observed. A recent study suggests a baby's eye contact could be a key to early detection.

Scientists studied the eye movements of children as they watched a video of a caregiver. The children were followed from birth to age 3. The study found that children who were later diagnosed with autism looked less into people's eyes when they were infants than children who weren't diagnosed with the disorder. The decline in eye contact was noticed between two and six months.

Autism usually isn't detected until after age 2, when social behavior and language skills are apparent, notes Thomas R. Insel, MD, director of NIH's National Institute of Mental Health, which funded the study.



▲ *From DNA to Beer: Harnessing Nature in Medicine and Industry* is an online exhibition created by the National Library of Medicine and the Smithsonian's National Museum of American History: <http://www.nlm.nih.gov/digitalprojects.html>.

"This study shows that children exhibit clear signs of autism at a much younger age," says Insel. "The sooner we are able to identify early markers for autism, the more effective our treatment interventions can be."

The next step is to replicate these findings in a larger study.

The researchers say the eye contact differences they saw require sophisticated technology and aren't something parents or health professionals would see with the naked eye.

## Drug Abuse Information Goes Mobile

It's now easier for teenagers and the adults who care for them to get answers about drug abuse and addiction. NIH's National Institute on Drug Abuse (NIDA) has enhanced several of its web tools leading up to National Drug Facts Week, which begins January 27th, 2014.

NIDA has updated its popular "NIDA for Teens" website to provide a better view on smartphones and tablets. The website offers free interactive resources including a blog for teens. On NIDA's main website, the "Parents and Educators" webpage has been redesigned. It's now easier to find free, scientifically based prevention and education resources, including a "Family Checkup" tool for talking with children about drugs. In addition, there is now more

Spanish language information available on NIDA's Easy-to-Read website.

### **NIDA for Teens:**

<http://teens.drugabuse.gov/>

### **Parents and Educators:**

<http://www.drugabuse.gov/parents-educators>

### **Easy-to-Read:**

<http://www.easyread.drugabuse.gov/index.php>

## Advances in Vaccine Development

NIH scientists report recent advances in developing vaccines for two common conditions: genital herpes and RSV infection.

Respiratory syncytial virus (RSV) causes lung infections. It can be serious for very young children and the elderly. There's no vaccine to protect against it. NIH scientists have developed an experimental vaccine and are planning early-stage clinical trials.

NIH scientists are starting an early-stage clinical trial to test a vaccine for genital herpes. Genital herpes is one of the most common sexually transmitted diseases in the country. While treatable, it's a lifelong infection that can pass to a partner even when symptoms aren't showing. Researchers say a protective vaccine would significantly reduce the spread of the disease.

# Info to Know

## NIH Quickfinder

For more information or to contact any of the following NIH institutes, centers, and offices directly, please call or go online as noted below:

### Institutes

- **National Library of Medicine (NLM)**  
[www.nlm.nih.gov](http://www.nlm.nih.gov)  
1-888-FIND-NLM (1-888-346-3656)
- **National Cancer Institute (NCI)** [www.cancer.gov](http://www.cancer.gov)  
1-800-4-CANCER (1-800-422-6237)
- **National Eye Institute (NEI)** [www.nei.nih.gov](http://www.nei.nih.gov)  
(301) 496-5248
- **National Heart, Lung, and Blood Institute (NHLBI)**  
[www.nhlbi.nih.gov](http://www.nhlbi.nih.gov) (301) 592-8573
- **National Human Genome Research Institute (NHGRI)** [www.genome.gov](http://www.genome.gov) (301) 402-0911
- **National Institute on Aging (NIA)** [www.nia.nih.gov](http://www.nia.nih.gov)  
Aging information 1-800-222-2225  
Alzheimer's information 1-800-438-4380
- **National Institute on Alcohol Abuse and Alcoholism (NIAAA)** [www.niaaa.nih.gov](http://www.niaaa.nih.gov)  
(301) 443-3860
- **National Institute of Allergy and Infectious Diseases (NIAID)** [www.niaid.nih.gov](http://www.niaid.nih.gov)  
(301) 496-5717
- **National Institute of Arthritis and Musculoskeletal and Skin Diseases** [www.niams.nih.gov](http://www.niams.nih.gov)  
1-877-22NIAMS (1-877-226-4267)
- **National Institute of Biomedical Imaging and Bioengineering (NIBIB)** [www.nibib.nih.gov](http://www.nibib.nih.gov)  
(301) 451-6772
- **Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)**  
[www.nichd.nih.gov](http://www.nichd.nih.gov) 1-800-370-2943
- **National Institute on Deafness and Other Communication Disorders (NIDCD)**  
[www.nidcd.nih.gov](http://www.nidcd.nih.gov) 1-800-241-1044 (voice)  
1-800-241-1055 (TTY)
- **National Institute of Dental and Craniofacial Research (NIDCR)** [www.nidcr.nih.gov](http://www.nidcr.nih.gov)  
(301) 480-4098
- **National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)** [www.niddk.nih.gov](http://www.niddk.nih.gov)  
Diabetes 1-800-860-8747  
Digestive disorders 1-800-891-5389  
Overweight and obesity 1-877-946-4627  
Kidney and urologic diseases 1-800-891-5390

- **National Institute on Drug Abuse (NIDA)**  
[www.nida.nih.gov](http://www.nida.nih.gov) (301) 443-1124
- **National Institute of Environmental Health Sciences (NIEHS)** [www.niehs.nih.gov](http://www.niehs.nih.gov)  
(919) 541-3345
- **National Institute of General Medical Sciences (NIGMS)** [www.nigms.nih.gov](http://www.nigms.nih.gov)  
(301) 496-7301
- **National Institute of Mental Health (NIMH)**  
[www.nimh.nih.gov](http://www.nimh.nih.gov) 1-866-615-6464
- **National Institute on Minority Health and Health Disparities (NIMHD)** [www.nimhd.nih.gov](http://www.nimhd.nih.gov)  
(301) 402-1366
- **National Institute of Neurological Disorders and Stroke (NINDS)** [www.ninds.nih.gov](http://www.ninds.nih.gov)  
1-800-352-9424
- **National Institute of Nursing Research (NINR)**  
[www.ninr.nih.gov](http://www.ninr.nih.gov) (301) 496-0207

### Centers & Offices

- **Fogarty International Center (FIC)**  
[www.fic.nih.gov](http://www.fic.nih.gov) (301) 402-8614
- **National Center for Complementary and Alternative Medicine (NCCAM)**  
[www.nccam.nih.gov](http://www.nccam.nih.gov) 1-888-644-6226
- **National Center for Advancing Translational Research (NCATS)**  
[www.ncats.nih.gov](http://www.ncats.nih.gov) (301) 435-0888
- **NIH Clinical Center (CC)**  
[www.cc.nih.gov](http://www.cc.nih.gov) (301) 496-2563
- **Office of AIDS Research (OAR)**  
<http://www.oar.nih.gov> (301) 496-0357
- **Office of Behavioral and Social Sciences Research (OBSSR)**  
<http://obssr.od.nih.gov> (301) 402-1146
- **Office of Rare Diseases Research (ORDR)**  
<http://rarediseases.info.nih.gov>  
Genetic and Rare Disease Information Center  
1-888-205-2311
- **Office of Research on Women's Health (ORWH)**  
<http://orwh.od.nih.gov> (301) 402-1770

## NIH MedlinePlus Advisory Group

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**Alyssa Cotler**, National Center for Complementary and Alternative Medicine

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**Claudia Faigen**, NIH Office of Dietary Supplements

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**Thomas Johnson**, National Institute of Biomedical Imaging and Bioengineering

**Kathy Kranzfelder**, National Institute of Diabetes and Digestive and Kidney Diseases

**Carol Krause**, National Institute on Drug Abuse

**Lonnie Lisle**, National Institute on Deafness and Other Communication Disorders

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**Trish Reynolds**, National Institute of Arthritis and Musculoskeletal and Skin Diseases

**Mark Siegal**, National Institute of Alcohol Abuse and Alcoholism

**Ann Taubenheim**, National Heart, Lung, and Blood Institute

**Larry Thompson**, National Human Genome Research Institute

# MedlinePlus Marks 15<sup>th</sup> Anniversary!

## ***MedlinePlus launched in October 1998.***

Over two million people turn to MedlinePlus ([medlineplus.gov](http://medlineplus.gov)) every day to find accurate, up-to-date information. The site consistently ranks at or near the top of the American Customer Satisfaction Index for government news sites.

Over the past 15 years, MedlinePlus has brought trusted health information to millions of people across the country and around the world. It now includes:

- More than 950 pages providing links to reliable consumer information on important health issues
- Information on prescription and over-the-counter medicines, as well as herbs and supplements
- An illustrated medical encyclopedia with anatomy videos
- Interactive health tutorials—narrated programs that use animated graphics to explain conditions and procedures in easy-to-read language
- The latest health news
- A full-featured Spanish site
- A multiple language collection with links to health information in over 40 languages
- A medical dictionary



***You can keep up to date with the latest health information from MedlinePlus on:***

**Twitter:** <http://twitter.com/medlineplus>

**Subscribing to news feeds via RSS:** [www.nlm.nih.gov/medlineplus/rss.html](http://www.nlm.nih.gov/medlineplus/rss.html)

There are several general interest feeds, as well as feeds for every health topic page on the site.