

NIH MedlinePlus®

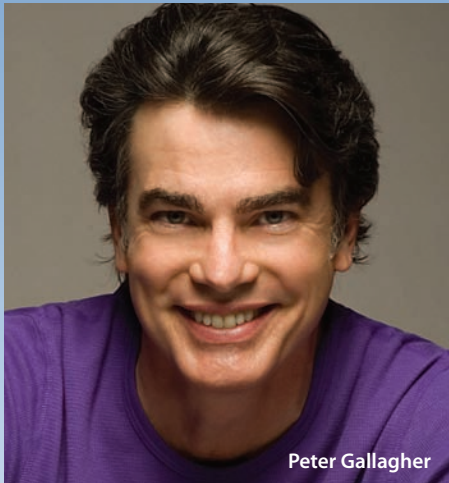
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Fall 2010

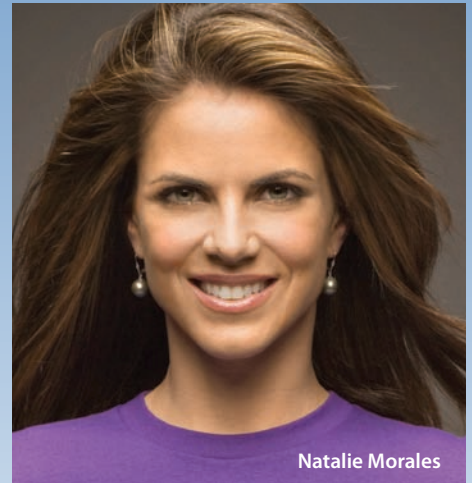
the magazine



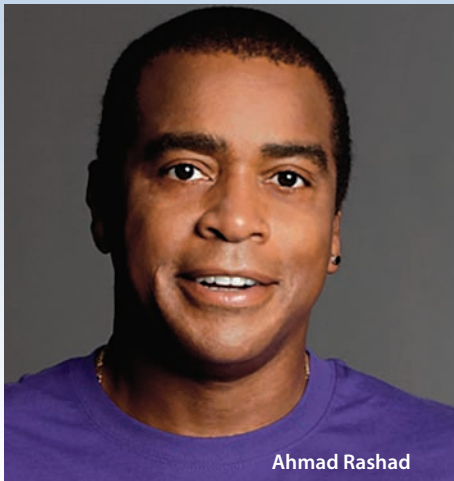
Leeza Gibbons



Peter Gallagher



Natalie Morales



Ahmad Rashad



Dick Van Dyke



Vivica A. Fox

Fight Alzheimer's

Celebrities
Spread
the Word

Plus, in this issue!

- Don't Panic: Phobias and Anxiety Disorders
- Coronary and Peripheral Artery Disease
- Clinical Trials: Helping Medical Research

Milestones in Medical Research: The Human Genome and ClinicalTrials.gov



Photo: NLM

Donald West King, M.D.
FNLN Chairman

This year marks the 10th anniversary of two important achievements in medical research—the first, a major milestone in understanding the genetic foundation of all human beings; the second, a comprehensive information service to help medical researchers and the public track clinical research trials of experimental treatments for many diseases and medical conditions.

On pages 2-3, Dr. Francis Collins, Director of the National Institutes of Health (NIH), discusses the groundbreaking research that mapped our human genetic makeup. And he explains how and why the real work of turning that map into tools to reduce or eliminate diseases is just beginning.

The second celebration marks the launch in 2000 of the free public information resource, ClinicalTrials.gov—the U.S. government’s registry of medical research trials. NIH’s National Library of Medicine runs this giant database, which currently holds more than 95,000 research trials underway in 173 countries. You will find out more about the importance of clinical trials starting on page 4.

Our cover story in this issue (starting on page 16) is about Alzheimer’s disease (AD), which slowly destroys a person’s memory, thinking skills, and ability to do everyday tasks. Although much research is under way to help prevent and treat Alzheimer’s, finding effective treatments remains frustratingly difficult. Gracing our cover are six of the Alzheimer’s Association’s celebrity Alzheimer’s Champions who help to spread the word about the importance of Alzheimer’s research and education.

This issue also features useful information on:

- phobias and other anxiety disorders (starting on page 12),
- the importance of preventing coronary artery disease to save your heart (starting on page 23), and
- what can happen when people don’t take care of their teeth and gums (page 8).

We hope that the information in this issue of *NIH MedlinePlus* magazine helps you and your loved ones stay healthier!

Sincerely,
Donald West King, M.D., Chairman
Friends of the National Library of Medicine

Let Us Hear From You!

We want your feedback on the magazine, ideas for future issues, as well as questions and suggestions. E-mail your letters to Managing Editor Selby Bateman (selby.bateman@vitality.com) or send mail to Editor, *NIH MedlinePlus* Magazine, P.O. Box 18427, Greensboro, NC 27419-8427. We will feature some of your letters in upcoming issues.

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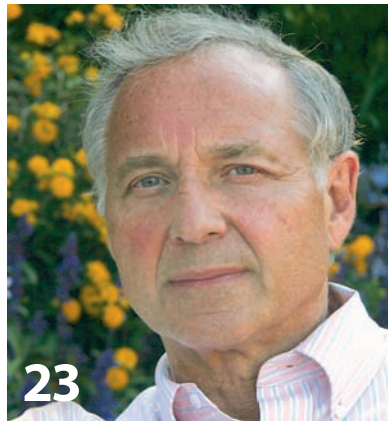
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David Cravedi thought he was in great health—until the heart attack.

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.

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From NIH Director Dr. Francis S. Collins

Cracking the Genetic Code

To mark the 10th anniversary of the decoding of the human genome,

PBS NewsHour's Jeffrey Brown interviewed Dr. Francis S. Collins, M.D., Ph.D., Director of the National Institutes of Health. As Director of the National Human Genome Research Institute (NHGRI) from 1993-2008, Dr. Collins led the successful public effort to crack the genome. Following are edited highlights of their discussion.

JEFFREY BROWN: It was a landmark moment in science in 2000: Cracking of the genetic code raised the prospect of pinpointing the root causes of illnesses, eventually leading to so-called designer drugs and other therapies...Hundreds of sites on the human genome have been linked with diseases, including various kinds of cancer. But developing cures has proven difficult, and some researchers now believe that genetic mutations, or changes in our DNA, may not have a direct cause-and-effect relationship with disease.

FRANCIS COLLINS: We have learned a prodigious amount about our own DNA instruction book, the human genome... We know that half-a-percent makes you different from me.

JEFFREY BROWN: Half-a-percent?

FRANCIS COLLINS: That's all. And we have learned how a lot of those variations play a role in risks of disease, almost 1,000 of them; that one increases your diabetes risk, that one cancer. The risks are modest, but those are really important insights.

JEFFREY BROWN: You wrote recently, "Genome research has already had a profound impact on scientific progress." In what ways?

FRANCIS COLLINS: A graduate student today cannot imagine how you did research without access to the human genome sequence. It is so fundamental, something you're looking at many times a day to guide your experiments. It is

the foundation of everything we do. For a scientist, this is incredibly empowering.

JEFFREY BROWN: Give me an example.

FRANCIS COLLINS: We know that autism has hereditary contributions. If a family has a child with that disease, the risk that the next child will have it goes up by almost a factor of 100. So, there's something really significant going on there.

But how do you approach that? Now, with sequencing technologies that allow you to sequence an entire genome for \$10,000 in less than a week, you can really begin to see what's there.

JEFFREY BROWN: But you've said that the Human Genome Project has not yet directly affected the health care of most individuals. Why not?

FRANCIS COLLINS: Frankly, predictions in 2000 that that was going to happen overnight were not very realistic.

JEFFREY BROWN: There's some sense of disappointment about being able to translate the scientific advances into clinical advances.

FRANCIS COLLINS: I understand that impatience. But this is a long and complicated pathway. It's one thing to scan through the genome and identify a pathway that seems to be involved in cancer. It's another to take that information and come up with a magic bullet for leukemia or lung cancer.



Photo: NH

“Over the next 10 years, more and more people will have their genomes sequenced, placed in their medical records, and have that information available to predict risk and what can be done.”

drug is going to work in an illness [because]... much of the variability in drug response comes from the genome. Most significant will be the development of completely new therapeutics, but that's probably another 10 years off.

For cancer, heart disease, Alzheimer's, Parkinson's, it's going to take a little longer because of those long steps leading from discovery to an idea about a compound that might work, to animal testing, clinical trials, and approval.

JEFFREY BROWN: What did you and others not quite grasp about how difficult this would be?

FRANCIS COLLINS: We underestimated the contribution of the parts of the genome—about 1.5 percent—that don't code for protein. If we understood that, we would be very far along in understanding risks of disease. It turns out, the other 98.5 percent of the genome is incredibly complicated, but incredibly important in regulating how those genes function. We probably should have known there must be a lot going on there.

JEFFREY BROWN: What's next in clinical advances in 10 years?

FRANCIS COLLINS: We are still not able to identify the heritability for common illnesses like diabetes and heart disease. We have identified a lot but there are some missing parts. In the next three to five years, now that we can sequence an entire human genome so quickly and do so many of them, our ability to accurately predict individual risks will increase greatly.

Over the next 10 years, more and more people will have their genomes sequenced, placed in their medical records, and have that information available to predict risk and what can be done. That same information will be very valuable in choosing what

JEFFREY BROWN: How close are we to affordable, readily available, personal genome sequencing?

FRANCIS COLLINS: People often mention Moore's law, where computer power gets better by a factor of two every two years. DNA sequencing is going much faster. Within four years, we see your complete genome being sequenced for less than \$1,000. So, once and for all, why not get that information into your medical record [and] begin to utilize it for a host of decisions about your medical care?

JEFFREY BROWN: Of course, that raises questions about privacy, about what we do with all this information.

FRANCIS COLLINS: Interpretation is going to be a moving target. Once we have our genome sequenced, we are going to want to be connected with the process of interpretation, which is going to get gradually better over time, so that if somebody makes a discovery that happens to be relevant to you, you learn about it.

For the complete transcript and video interview, visit <http://www.pbs.org/newshour/>. Click on “Recent Programs” and select the June 24, 2010 program.

ClinicalTrials.gov Turns 10!



*“...a powerful tool
for the healthcare
consumer”*

At the forefront of human health research today are clinical trials—studies that use human volunteers to help medical professionals test new treatments for a wide array of diseases and related health conditions.

Since being launched in February 2000, the Web site ClinicalTrials.gov has provided the latest, most complete information about clinical trials in the United States and abroad. It is a free online service to the public from the National Institutes of Health (NIH).

Says Donald A.B. Lindberg, M.D., Director of the National Library of Medicine, which manages the Web site, “ClinicalTrials.gov is a powerful tool for the healthcare consumer. These days, patients are taking an increasingly active role in their own health care.

“ClinicalTrials.gov lets them learn more about clinical studies on everything from Alzheimer’s disease to zinc supplements. Without question, it has helped medical investigators with their research recruiting efforts, too.”

The site receives 65,000 visitors daily and more than 50 million page views per month. It contains information on more than 95,000 trials funded by the National Institutes of Health, other federal agencies, and private industry. These trials are conducted in

all 50 states and in 173 countries.

Since September 2008, ClinicalTrials.gov has also provided a results database for trials of federally approved drugs and medical devices. The database includes information about the types of participants, a statistical summary of the main results, and a listing of adverse events that occurred during the trial, as well as links to published articles about the trial.

“No longer can results be hidden and the public trust betrayed,” says Dr. Lindberg. “The goal is to ensure that medical decisions are based on the most complete information possible.”

On the ClinicalTrials.gov Web site, you can search for a trial by the name of the disease, the location of the study, the type of treatment, or the sponsoring institution. The results show you what studies are under way and whether a trial is seeking volunteers. They also tell you the purpose of the study, where and when it will take place, eligibility criteria, and whom to contact for more information.

What Are Clinical Trials?

Clinical trials are scientific studies that try to find better ways to prevent, screen for, diagnose, or treat disease. They may also compare a new treatment to one that is already available. There are two basic kinds: observational and interventional.

- **In observational studies**, researchers follow people over time, but do not direct them to take certain treatments or to behave in particular ways. A famous example is the Framingham Heart Study. Since 1948, researchers have followed four generations of family members in Framingham, Mass., to see what affects their hearts. Some of its key findings, now widely accepted, are that high blood pressure, high-fat diets, and smoking are not good for the heart.
- **In interventional studies**, researchers assign individuals to particular treatments or other interventions and then assess the effect at a predetermined time. For example, researchers may test different drugs to control high blood pressure. Clinical trials in nearly every area of medical research are being conducted all the time.

ClinicalTrials.gov's Helpful Features

ClinicalTrials.gov has many helpful consumer features. If you are interested in breast cancer trials, for example:

- The site also links you to NLM's MedlinePlus (www.medlineplus.gov), where you will find in-depth information, including recent news articles and an interactive tutorial on the topic.
- It also links to NLM's Genetics Home Reference site (www.ghr.nlm.nih.gov) to help you understand genetic factors that can increase the incidence of breast cancer.
- Also, it lets you search medical journal references via NLM's PubMed (www.pubmed.gov).
- And it links to the National Cancer Institute (www.cancer.gov), the lead NIH institute on this particular topic.

The Different Phases of Clinical Trials

Clinical trials related to drugs are classified into four phases. The trials at each phase have a different purpose and help scientists answer different questions:

A Phase I trial tests an experimental treatment on a small group of people, to judge its safety and side effects, and to find the correct drug dosage. Sometimes, the study is in healthy people. If the trial is in people with a disease or condition, they receive the experimental treatment, not a placebo (a non-active substance).

A Phase II trial uses more people than a Phase I to find out if the experimental treatment is effective and safe. This phase can last several years.

A Phase III trial is usually a large study with many participants. This phase compares the experimental drug or procedure to a placebo or standard treatment, to make sure it is safe and works well. Some side effects that didn't show up in Phase II may show up in a Phase III trial because many more people are tested. The U.S. Food and Drug Administration will consider the results of clinical trials when determining whether to approve a new drug.

A Phase IV trial takes place after the U.S. Food and Drug Administration approves use of a drug. A drug's effectiveness and safety are monitored in large, diverse populations. Sometimes, the side effects of a drug may not become clear until more people have taken it over a longer period of time.

What Is "Informed Consent"?

Before you decide whether or not to participate in a clinical trial, you need to learn the key facts about it. To help you decide whether or not to participate, the doctors and nurses involved in the trial explain the details of the study. They also give you a document that includes details about the study, such as its purpose, duration, required procedures, risks, potential benefits, and key contacts. You can then decide whether or not to participate based on the information you've received. If you agree to participate, you give your informed consent. Informed consent is not a contract. You may withdraw from the trial at any time.

Clinical Trial Results Vary Widely, But Always Advance Research

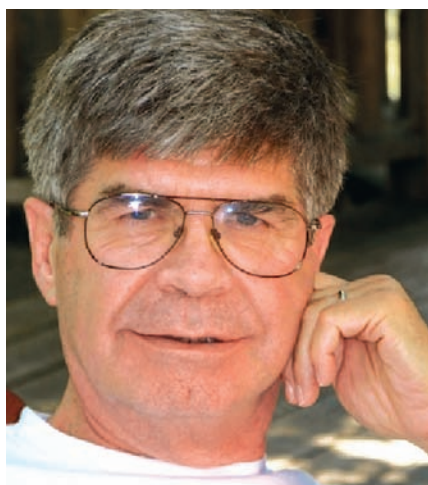


Photo: Clair Nelson

Clair Nelson is healthy and happy, two years after entering a clinical trial for cancer.

Suffering from advanced esophageal cancer, Clair Nelson, 66, joined a Phase I clinical trial. (See “Phases,” page 5.) Although few clinical trials provide immediate cures, Nelson was found cancer-free two months later because of the experimental medical treatments.

By Christopher Klose

Should You Be Interested in a Clinical Trial

People volunteer to take part in clinical trials for many reasons. Often, they hope that by participating, their health will benefit in some way.

Researchers are comparing different treatments to determine which is better—for example, more effective or less risky. Sometimes the newer treatment is better, and sometimes the standard treatment is better. The study is being done because it's not yet known which one is better.

Clinical trials can entail risks that must be disclosed to potential participants as part of the informed consent process prior to enrollment. Always discuss a clinical trial with your health professional before participating.

Many times, people volunteer simply because they want to contribute to a medical research effort that may help others in the future.

—Source: MedlinePlus.gov; Patient Education Institute

“They found the tumor in my throat. It was about three-and-a-half inches in diameter, and inoperable—Stage IV esophageal cancer,” says Clair Nelson, 66, of Chattanooga, Tenn. “My oncologist offered me two choices: palliative care (pain and symptom relief) for, if I was lucky, two years, or a clinical trial.

“It took two seconds. I chose the clinical trial. It wasn’t a hard decision,” he smiles. That was February 5, 2008, at Vanderbilt-Ingram Cancer Center, in Nashville, Tenn.

Less than two weeks later, he was enrolled in a Phase 1 clinical trial at the Duke Esophageal Cancer Clinic, part of Duke Medicine in Durham, N.C. The goal was to shrink the tumor enough so that it could be removed surgically.

Under the care of principal investigator Brian Czito, M.D., over a six-week period Nelson received 28 radiation treatments and a combination of three powerful drugs. The third drug had never been used to treat esophageal cancer before.

Then, in April, Nelson and family members met with his surgeon to learn the results: “When we first met, I told you it was inoperable. Well, you’re still inoperable. The tumor’s gone! my doctor said,” Nelson recalls. “It was very emotional.”

Since then, he has become a strong and vocal advocate for clinical research trials. “The level of care is top-notch and 24/7,” he reports. “Everyone wants to know there’s hope, and that is what you gain through these clinical trials.”

Of the nine patients initially enrolled in the same clinical trial, only Nelson and another patient were deemed tumor-free and sent home, notes Dr. Czito.

Volunteering for Clinical Trials Can Help Improve Health Care for Everyone

For Melanie Modlin, volunteering to take part in a clinical trial was a gift she was happy to give. Modlin, who is Deputy Director of Communications and Public Liaison at the National Library of Medicine, participated in a clinical research trial studying the impact of changes in hormone levels on cognitive (thinking) ability and sleep patterns. She spoke recently with Christopher Klose, *NIH MedlinePlus* magazine Coordinator.



Photo: Fran Sandridge

“I believe it is very important for healthy people to help,” says Melanie Modlin about clinical trials. “We have a role to play in helping find new, more effective treatments that can save lives.”

“There is a lot of room for improvement in cancer treatment,” Dr. Czito says. “We will not predict long-term survival in this study but are encouraged by the results so far.”

Based on the results of Phase 1, Phase 2 of the trial opened in mid-2009, scheduled to enroll 20 new patients.

How to Participate

If you would like to participate in a clinical trial, you can find more information at government Web sites, such as:

- www.clinicaltrials.gov
- www.cancer.gov/search/clinicaltrials (Cancer studies)
- <http://aidsinfo.nih.gov/ClinicalTrials/Default.aspx?MenuItem=ClinicalTrials> (HIV and AIDS studies)
- www.childrenandclinicalstudies.nhlbi.nih.gov (A Web site about children and clinical trials, sponsored by the National Heart, Lung, and Blood Institute)

Why did you volunteer to be in a clinical trial?

I’ve always been interested in public service, in volunteering, and wanted to contribute, in some small way, to science.

Were you suffering some rare illness?

No. I was perfectly healthy.

What happened in the study?

It was quite intensive. I had to keep a detailed diary of my moods, did two treadmill tests with frequent blood draws, and checked in at the NIH Clinical Center for two 24-hour periods with no sleep.

Were you concerned at any time?

No. I had total confidence in the researchers because of the care they took and their devotion to detail. First, I was given a complete physical examination and a complete blood analysis. Then we had a two-hour briefing about the trial – how long it would take, what would happen and who would be taking care of us. I felt perfectly safe. Also, as with all clinical studies, I had the right to withdraw for any reason, at any time.

How do you feel about clinical trials?

First, I feel so lucky to be healthy. I had a sister who died of cancer, so I believe it is very important for healthy people to help. We have a role to play in helping find new, more effective treatments that can save lives. What could be better than that?

Keep Gum Disease Away!

Photo: iStock

By Christopher Klose

“Take care of your teeth, and they’ll take care of you,” admonishes Santa Monica, Calif., auctioneer and insurance executive Fredric Havens, 62. Last November, he began the first of four intricate—and expensive—surgical procedures to remove and replace eight of his upper teeth with implanted bridgework.

“I had excellent teeth, never a lot of cavities, but I just didn’t take care of them,” he says. “In my 30s, I lost an upper back molar to gum disease. That was a signpost but I ignored it. It was false economy not to get my teeth checked.”

Slowly, but steadily, gum disease took more of his upper teeth. “Never any pain; they just fell out,” he says. He tried dentures, but they didn’t work well, especially in the middle of an auction when his tongue would hit the denture: “It felt like I had peanut butter in my mouth!”

Deciding enough was enough, Havens went to the dentist: “Do whatever it takes to save my teeth, doctor; I said, only to have him tell me, ‘I can’t. There’s nothing to hold them in place.’”

Although Havens thanks his dentist and his surgeon for stabilizing his jaw and putting his “winning smile back in place” with the implanted bridgework, he advises people to be very careful when it comes to oral surgery. “Remember, it can’t be done twice. So get the most experienced team possible.”

And he’s become a stickler for good dental hygiene. “People need to brush and floss every day, and see the dentist regularly. No lapses,” he urges.



Photo: Fredric Havens

Fredric Havens has undergone multiple surgeries to repair damage resulting from uncared-for teeth and gums.

Take Care of Your Teeth



Ever wonder why pictures of President George Washington never show him smiling? He suffered from poor dental health, lost his teeth at an early age, and had them replaced with two sets of false teeth, carved from hippopotamus ivory and gold. They were uncomfortable.

If you have gum (periodontal) disease, you are not alone. Many U.S. adults currently have some form of the disease. It ranges from simple gum inflammation, called gingivitis, to serious damage to the tissue and bone supporting the teeth. In the worst cases, you lose teeth.

Whether your gum disease is stopped, slowed, or gets worse depends on how well you take care of your teeth and gums every day, from now on.

Who gets gum disease?

Generally, people don't show signs of gum disease until their 30s or 40s. Men are more likely to develop it than women. Although teenagers rarely develop the severe disease, periodontitis, they can have the milder gingivitis.

Most commonly, gum disease develops when plaque is allowed to build up along and under the gum line.

What causes gum disease?

Our mouths are full of bacteria. Along with mucus and other particles, they constantly form a sticky, colorless "plaque" on teeth. Brushing and flossing help get rid of plaque. Plaque that is not removed can harden and form "tartar" that can only be removed by thorough cleaning by a dentist or dental hygienist.

continued on page 10

Do you have gum disease?

Symptoms include:

- Bad breath that won't go away
 - Red or swollen gums
 - Tender or bleeding gums
 - Painful chewing
 - Loose teeth
 - Sensitive teeth
 - Receding gums or longer-appearing teeth
- Any symptom may signal a serious problem and should be checked by a dental professional. The dentist or hygienist should:
 - Ask about your medical history to identify underlying conditions or risk factors (such as smoking).
 - Examine your gums and note any signs of inflammation.
 - Use a tiny ruler ('probe') to check for and measure any pockets between the gums and teeth. In healthy mouths, pocket depth is usually between 1 and 3 millimeters. (Three millimeters is about a tenth of an inch.) This test is usually painless.
 - The dentist or hygienist may also:
 - Take an x-ray to see if there is any bone loss.
 - Refer you to a periodontist—an expert at diagnosing and treating gum disease, who may recommend treatment options not offered by your dentist.

continued from page 9

Gingivitis: Mild Gum Disease

The longer plaque and tartar remain, the more harmful they become. The bacteria inflame the gums, which become red, swollen and can bleed easily. This is called gingivitis, a mild form of gum disease. Usually it can be reversed with daily brushing and flossing and regular cleaning by a dentist or dental hygienist. Typically, there is no loss of bone or tissue that hold teeth in place.

Periodontitis: Severe Gum Disease

Left untreated, gingivitis can advance to “periodontitis” (which means “inflammation around the tooth”). Here, gums pull away from the teeth, forming pockets that become infected. The body’s immune system fights the bacteria as the plaque spreads and grows below the gum line. The infection starts to break down the bone and connective tissue holding the teeth. If not treated, the bones, gums, and tissue are destroyed. Eventually the teeth loosen and may have to be removed.

How can I prevent gum disease?

- Brush your teeth twice a day (with a fluoride toothpaste)
- Floss daily
- Visit the dentist regularly for a check-up and professional cleaning
- Eat a balanced diet
- Don't smoke



Photo: Centers for Disease Control and Prevention (CDC)



Photo: Centers for Disease Control and Prevention (CDC)

Photos of gingivitis (top) and periodontitis (bottom) show inflamed gums. Left untreated, these conditions can result in gum damage and loss of teeth.

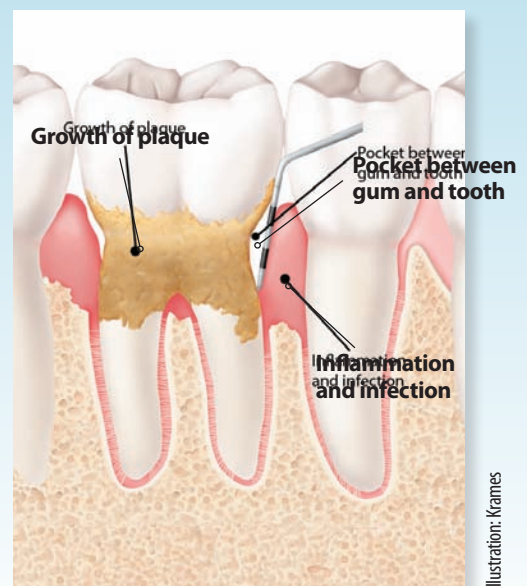


Illustration: Krames

Risk Factors

- **Smoking** – Smoking is one of the most significant risk factors associated with gum disease. It also can lower the chances for successful treatment.
- **Hormonal changes in girls/women** – These changes can make gums more sensitive and make it easier for gingivitis to develop.
- **Diabetes** – People with diabetes are at higher risk of infection, including gum disease.
- **Illnesses** – Treatments for cancer, HIV/AIDS, and other diseases can negatively affect the health of gums.
- **Medications** – Hundreds of prescription and over-the-counter medicines can reduce the flow of saliva, which protects the mouth. Without enough saliva, the mouth is vulnerable to gum disease and other infections. Some medications also can cause abnormal overgrowth of gum tissue, making it difficult to keep gums clean.

Treatment

How is gum disease treated?

The main goal of treatment is to control the infection. Depending on the extent of the gum disease, treatment varies. But all treatment requires the patient to maintain good daily care. The doctor may also suggest changing certain behaviors, such as quitting smoking as a way to improve treatment outcome.

Deep Cleaning (Scaling and Root Planing)

The dentist, periodontist, or dental hygienist scrapes off the tartar from above and below the gum line, and gets rid of rough spots on the tooth root, where the germs gather. This helps remove disease-causing bacteria. In some cases, lasers are used to remove plaque and tartar. This can result in less bleeding, swelling, and discomfort than traditional deep cleaning methods.

Medications

Medications may be used with scaling and root planing, but they cannot always take the place of surgery. Long-term studies are needed to determine whether medication reduces the need for surgery and is effective over a long period.

Surgical Treatments

- **Flap Surgery.** This common technique involves lifting back

the gums, removing the tartar, and suturing the gums back in place so that the tissue will shrink to fit more tightly around the tooth. This sometimes makes the teeth appear longer.

- **Bone and Tissue Grafts.** Grafting replaces or encourages new growth of bone or gum tissue destroyed by periodontitis. In “guided tissue regeneration” a small piece of mesh-like fabric is inserted between the bone and gum tissue. This keeps the tissue from growing into the area where the bone should be, allowing the bone and connective tissue to regrow.

Because each case is different, it is not possible to predict with certainty which grafts will be successful over the long-term. Treatment results depend on many things, including how far the disease has progressed, how well the patient keeps up with post-operative care, and risk factors, like smoking, which may lower chances of success.

Get a Second Opinion

When considering any extensive dental or medical treatment options, consider getting a second opinion. Call your local dental society for a dentist or periodontist in your area. Additionally, dental schools may sometimes offer second opinions. Call your area dental school to find out whether it offers this service.

Latest NIH Research

Researchers supported by the National Institute of Dental and Craniofacial Research (NIDCR) are working to learn more about preventing and treating gum problems. Some are exploring whether stem cells might help to restore damaged tissues that support the teeth. Others are searching for genes and proteins produced by our bodies and by the bacteria in our mouths to see how they interact to affect gum health.

Studies such as these might one day lead to the development of new ways to diagnose and treat periodontal disease.

To Find Out More

- **MedlinePlus:** www.medlineplus.gov; type “gum disease” in Search box
- **National Institute of Dental and Craniofacial Research (NIDCR):** www.nidcr.nih.gov; click on “Oral Health”
- **NIH Senior Health:** <http://nihseniorhealth.gov>
- **Registry of clinical research trials:** ClinicalTrials.gov

Don't Panic!

Phobias and other anxiety disorders affect millions of Americans. But researchers have found that there are treatments and techniques that can help people manage them.

“No one was aware of what I was feeling.”

—Terry Ahmed

FASTFACTS

- Each year, anxiety disorders affect about 40 million American adults age 18 years and older (about 18%), filling them with fearfulness and uncertainty.
- Unlike the relatively mild, brief anxiety caused by having to speak in public or going on a first date, anxiety disorders last at least 6 months and can get worse if they are not treated.
- A phobia is an intense, irrational fear of something that poses little or no actual danger. More than 19 million American adults suffer from phobias; they are twice as common in women as men.
- Anxiety disorders commonly accompany other mental or physical conditions, such as alcohol or substance abuse, which may mask anxiety symptoms or make them worse. These illnesses may need to be treated before a person will respond to treatment for the anxiety disorder.
- Effective therapies for phobias and other anxiety disorders are available, and research is uncovering new treatments that can help.

The fear first struck Terry Ahmed four years ago. “I was on a plane, and we hadn’t taken off yet,” he says today. “I’ve flown many times, and I’d never had a problem before.”

Suddenly, as he sat in his window seat, hemmed in by a passenger in the next seat on a crowded flight, anxiety began to build. His breathing grew fast and shallow. “I started to feel claustrophobic and trapped; not in control, with a strong feeling of uneasiness,” he adds. “It’s hard to explain the feeling. In my mind, I felt isolated and alone. No one was aware of what I was feeling.”

Ahmed, a Derwood, Md. resident, was experiencing for the first time what has since become a continuing phobia for him—an intense, irrational fear of something that poses little or no actual danger. Some of the more common specific phobias are closed-in places, heights, escalators, tunnels, highway driving, water, flying, snakes, and injuries involving blood.

Such phobias aren’t just extreme fear; they are irrational fear of a specific thing. You may be able to ski the world’s tallest mountains with ease but be

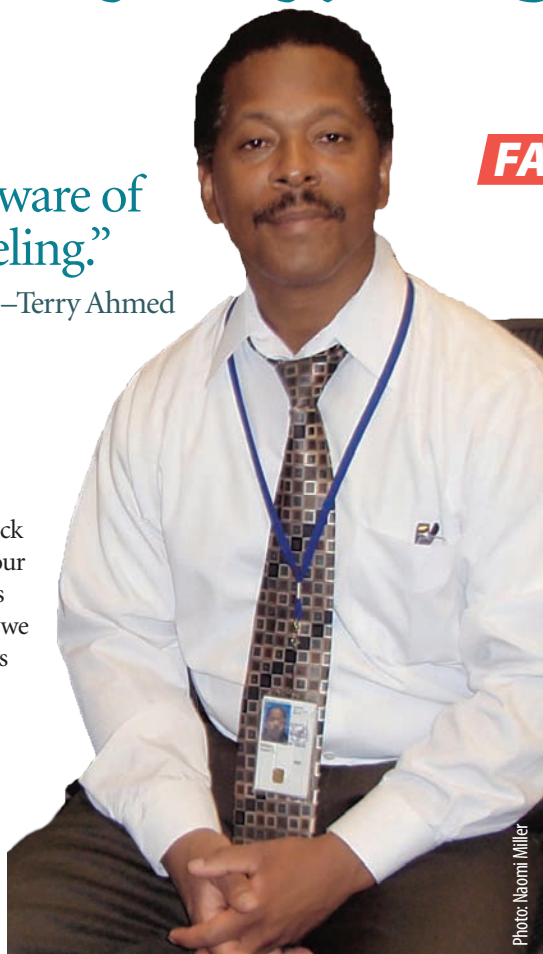


Photo: Naomi Miller

Today, Terry Ahmed has learned to cope with a recently developed phobia about flying.

unable to go above the 5th floor of an office building. While adults with phobias realize that these fears are irrational, they often find that facing—or even thinking about facing—the feared object or situation brings on a panic attack or severe anxiety.

On the plane, Terry Ahmed immediately stood up and walked to the back of the aircraft. He drank a cup of water to settle down. But the thought of going back to the window seat paralyzed him. He asked a flight attendant for an aisle seat, got it, and—just as suddenly—he was fine again.

On a different flight sometime later, he was placed in a middle seat. The uneasiness came over him again, and, without warning, he passed out. He was moved to an aisle seat, given oxygen, and a fellow passenger talked to him to help him relax. The aisle seat and the conversation eased the phobia.

As with many people who experience a phobia or related severe anxiety condition, Ahmed has found ways to cope with the challenge. He still flies when he needs to, but never in a window or middle seat. And that works well for him. But, he admits, if that option didn't work, he would most likely seek professional help to overcome the phobia. That, too, is not uncommon.

Studying Anxiety Disorders

Anxiety is a normal reaction to stress. It helps us deal with a tense situation in the office, study harder for an exam, and keep focused on an important speech. But when anxiety becomes an excessive, irrational dread of everyday situations, it becomes a disabling disorder.

The NIH's National Institute of Mental Health (NIMH) supports research into the causes, diagnosis, prevention, and treatment of anxiety disorders. Researchers are investigating the impact of environmental factors, such as pollution, physical and psychological stress, and diet.

5 Major Anxiety Disorders

- **Generalized Anxiety Disorder (GAD):** chronic anxiety, exaggerated worry and tension, even when there is little or nothing to provoke it.
- **Obsessive-Compulsive Disorder (OCD):** recurrent, unwanted thoughts (obsessions) and/or repetitive behaviors (compulsions). Repetitive behaviors, such as handwashing, counting, checking, or cleaning, are often performed with the hope of preventing obsessive thoughts or making them go away.
- **Panic Disorder:** unexpected and repeated episodes of intense fear, accompanied by physical symptoms that may include chest pain, heart palpitations, shortness of breath, dizziness, or abdominal distress. Phobias often result in panic attacks.
- **Post-Traumatic Stress Disorder (PTSD):** chronic anxiety that can develop after exposure to a terrifying event or ordeal in which grave physical harm occurred or was threatened. Traumatic events that may trigger PTSD include violent personal assaults, natural or human-caused disasters, accidents, or military combat.
- **Phobias:** A phobia is an intense, irrational fear of something that poses little or no actual danger. One of the most common is **social anxiety disorder**. People with social phobia feel overwhelming anxiety and excessive self-consciousness in everyday situations. They may fear speaking in public or eating or drinking in front of others. The most severe form may be so broad that symptoms occur almost anytime around other people.

Symptoms: Personal snapshots of anxiety disorders

Some symptoms among different anxiety disorders are similar; others are specific to particular disorders. Comments by anxiety-disorder patients illustrate the often paralyzing effects of these conditions:

Panic Disorder: *“For me, a panic attack is almost a violent experience. I feel disconnected from reality. I feel like I’m losing control in a very extreme way. My heart pounds really hard, I feel like I can’t get my breath, and there’s an overwhelming feeling that things are crashing in on me.”*

Post-Traumatic Stress Disorder: *“I was raped when I was 25 years old. For a long time, I spoke about the rape as though it was something that happened to someone else...there was just no feeling. Then I started having flashbacks. They kind of came over me like a splash of water. I would be terrified. Suddenly, I was reliving the rape. Every instant was startling. I wasn’t aware of anything around me, I was in a bubble, just kind of floating. And it was scary.”*

Social Anxiety Disorder (Social Phobia): *“In any social situation, I felt fear. I would be anxious before I even left the house, and it would escalate as I got closer to a college class, a party, or whatever. I would feel sick in my stomach—it almost felt like I had the flu. My heart would pound, my palms would get sweaty, and I would get this feeling of being removed from myself and from everybody else.”*

Generalized Anxiety Disorder: *“I always thought I was just a worrier. I’d feel keyed up and unable to relax. At times it would come and go, and at times it would be constant. It could go on for days. I’d worry about what I was going to fix for a dinner party, or what would be a great present for somebody. I just couldn’t let something go.”*

Obsessive-Compulsive Disorder: *“Getting dressed in the morning was tough, because I had a routine, and if I didn’t follow the routine, I’d get anxious and would have to get dressed again. I always worried that if I didn’t do something, my parents were going to die. I’d have these terrible thoughts of harming my parents. That was completely irrational, but the thoughts triggered more anxiety and more senseless behavior. Because of the time I spent on rituals, I was unable to do a lot of things that were important to me.”*

Treating Anxiety Disorders

Anxiety disorders are generally treated with medication, specific types of psychotherapy such as “talk therapy,” or both. Treatment depends on the problem and the person’s preference. Before any treatment, a doctor must do a careful evaluation to see whether a person’s symptoms are from an anxiety disorder or a physical problem. The doctor must also check for coexisting conditions, such as depression or substance abuse. Sometimes, treatment for the anxiety disorder must wait until after treatment for the other conditions.

How Medications Can Help

Doctors may prescribe medication, along with talk therapy, to help relieve anxiety disorders. Some medicines may take a few weeks to work. Your family doctor or psychiatrist may prescribe:

- **Antidepressants.** These medications take up to four to six weeks to begin relieving anxiety. The most widely prescribed antidepressants for anxiety are the SSRIs (selective serotonin reuptake inhibitors). *Commonly prescribed: Prozac, Zoloft, Paxil, Lexapro, and Celexa.*
- **Anti-anxiety medicines** (or “tranquilizers”). These medications produce feelings of calm and relaxation. Side effects may include feeling sleepy, foggy, and uncoordinated. The higher the dose, the greater the chance of side effects. Benzodiazepines are the most common class of anti-anxiety drugs. *Commonly prescribed: Xanax, Klonopin, Valium, and Ativan.*
- **Beta blockers.** These drugs block norepinephrine, the body’s “fight-or-flight” stress hormone. This helps control the physical symptoms of anxiety, such as rapid heart rate, a trembling voice, sweating, dizziness, and shaky hands. Because beta blockers don’t affect the emotional symptoms of anxiety, such as worry, they’re most helpful for phobias, particularly social phobia and performance anxiety. *Commonly prescribed: Tenormin and Inderal.*

To Find Out More

- **MedlinePlus:** www.medlineplus.gov; type “anxiety disorders” in the Search box
- **National Institute of Mental Health (NIMH):** www.nimh.nih.gov/health/topics/anxiety-disorders; NIMH has a variety of booklets to help you understand anxiety disorders.

Latest NIH Research

- Recent research funded by the National Institute of Mental Health (NIMH) has led to a new treatment model for anxiety disorders that shows improved results—Coordinated Anxiety Learning and Management (CALM). CALM includes cognitive behavioral therapy (“talk therapy”), along with medication, tailored to any one of four anxiety disorders—panic disorder, generalized anxiety disorder, social anxiety disorder, or post-traumatic stress disorder.
- An NIMH-funded study has revealed that female rat brain cells are more sensitive to a key stress hormone than male cells. “Although more research is necessary to determine whether this translates to humans, these findings may help to explain why women are twice as vulnerable as men to many stress-related disorders,” says NIMH grantee Rita Valentino Ph.D., of The Children’s Hospital of Philadelphia.
- A specific population of brain cells could provide a target for developing new medications aimed at reducing or stopping the fears underlying anxiety disorders, according to NIMH-supported scientists.

Ask Your Health Professional

1. How will you find out whether or not I have an anxiety disorder?
2. What are my treatment options?
3. Are there any medications that might help?
4. How long before we know if the medication is helping?
5. Are there any lifestyle changes I can make to help?
6. How long will it take before I notice some improvement?
7. How long will I have to take medication?
8. How often should I see you about this disorder?
9. Do I need to see a counselor to help with this?

FASTFACTS

- Alzheimer's disease (AD) is a progressive brain disease that slowly destroys a person's memory, thinking skills, and the ability to perform simple, everyday tasks. In the final stage of AD, called Alzheimer's dementia, people are completely dependent on others for care.
- AD is the most common form of dementia among older people. Estimates vary, but experts suggest as many as 2.4 to 5.1 million Americans may have AD. In most cases, the first symptoms appear after age 60.
- About 5 percent of men and women ages 65 to 74 have AD, and nearly half of those age 85 and older are estimated to have the disease.
- Researchers are seeking volunteers with AD and those free of the disorder for studies of possible treatments, including drugs and lifestyle interventions—like exercise—to see if they can delay or prevent the disease.



When Memories Disappear

*Understanding
and Dealing with
Alzheimer's Disease*

Photo: iStock

Early Alzheimer's: “Stay Active!”

Jestene McCord suspected she was in the early stages of Alzheimer's disease (AD) even before being diagnosed. And she had no intention of sitting still for it.

For most of her career as a geriatric nurse and nurse administrator in Milwaukee, Jestene had cared for the elderly. Many of them had Alzheimer's disease. She didn't let those patients sit still for it, either. “I always believed—and taught my staff—you use it, or you lose it. So, I took my Alzheimer's patients places. I never let them sit around and feel sorry for themselves.”

It was in 2008 that the 73-year-old retiree began noticing a few changes in her own life. “I needed more time and energy to get things done,” she says. “I would have to put forth more energy to do something.” She had also watched and helped as her grandmother, and then her mother, both went through Alzheimer's. She knew what to look for.

Jestene immediately consulted a specialist, and the doctor confirmed she was in the early stages of AD. Two years later, she's as active as ever. She stays socially engaged with her friends and keeps her two sons aware of everything going on and how she's doing. She's a volunteer with the Alzheimer's Association, and was chosen to be one of 10 members of an Early-Stage Advisory Group.

“I have a Palm Pilot, and everything is on the computer,” she says. “All that helps, and I feel more comfortable having that.” She and four of her senior friends even host an ongoing weekly radio talk show.

Because she had gone directly to a specialist when she suspected AD, she saved precious time. Alzheimer's experts say that many general practitioners can take from six months to two years to diagnose AD. Since early detection means that the patient can contribute to the conversation about his or her own treatment, delays in diagnosis can prevent that.

“So many family members are embarrassed and try to get their loved ones hidden away; they don't want anyone to know that mom or grandpa forgets,” says Jestene. “There's nothing to be ashamed of; it doesn't happen because you're a lesser person. Stay as active as you can, and get a good support system.”



Photo: The Alzheimer's Association

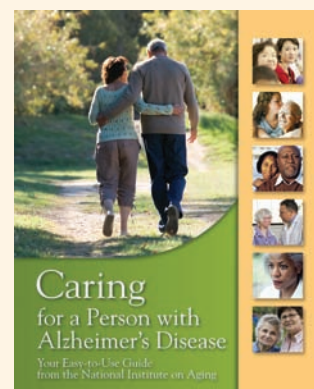
Since Jestene McCord's Alzheimer's disease was caught early, she has been an active participant in the planning for her future.

Free Guide for Alzheimer's Caregivers

Caring for a person with Alzheimer's disease at home is a difficult task and can become overwhelming at times. Each day brings new challenges, as the caregiver copes with changing levels of ability and new patterns of behavior. Research has shown that caregivers themselves often are at risk for depression and illness if they don't receive adequate support from family, friends, and the community.

The National Institute on Aging (NIA) has created the *Caring for a Person with Alzheimer's Disease* guide for people who care for family members or others with Alzheimer's disease at home. The guide is meant to help caregivers learn about and cope with the many challenges of AD.

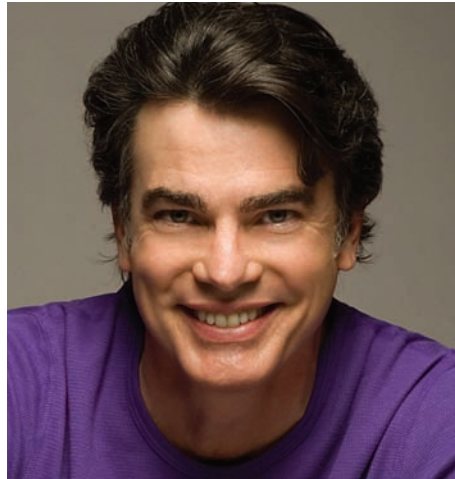
For copies of this book, contact the Alzheimer's Disease Education and Referral (ADEAR) Center, a service of the National Institute on Aging; Phone: 1-800-438-4380; www.nia.nih.gov/Alzheimers





Leeza Gibbons

"We've got to act, we've got to move, and we've got to use our voices to create a world without Alzheimer's. This is a serious epidemic. It will take money. It will take awareness. And it will take activism."



Peter Gallagher

"My mother had Alzheimer's disease for nearly 20 years. It tears the seams of the family to the breaking point."



Natalie Morales

"It's time to speak up. Raise your voice to end Alzheimer's disease."



Ahmad Rashad

"The fact that not many people know about Alzheimer's is shocking."



Dick Van Dyke

"What we need is for people to voice their support."



Vivica Fox

"You always think that it can't affect you."

Photos: Alzheimer's Association

Spreading the Word: Alzheimer's Touches Everyone

Featured on our cover this issue are six of the many celebrities and thousands of Americans across the country who spread the word about Alzheimer's disease under the leadership of the Alzheimer's Association. The Association—the leading voluntary health organization in Alzheimer's care and support and the largest private, nonprofit funder of Alzheimer

research—frequently works with the NIH's National Institute on Aging to help educate the public about Alzheimer's research, care and support, and treatment. They also often work together to advance and improve Alzheimer's research.

Symptoms

Scientists believe that changes in the brain may begin 10 to 20 years before symptoms appear and Alzheimer's disease is diagnosed.

Mild Alzheimer's dementia

- Memory problems
- Finding the right words to use
- Getting lost
- Difficulty managing money
- Repeating questions
- Losing things
- Taking longer to do routine tasks
- Showing poor judgment
- Changes in personality or loss of a spark for life

Moderate Alzheimer's dementia

- Increased memory loss and confusion
- Problems recognizing family and friends
- Loss of ability to learn new things
- Difficulty completing routine tasks that have multiple steps, such as getting dressed
- Problems coping with new situations
- Delusions and paranoia
- Impulsive behavior

Severe Alzheimer's dementia

- Inability to communicate
- Inability to recognize oneself or family
- Weight loss
- Difficulty swallowing
- Groaning or grunting
- Increased sleeping
- Lack of bowel and bladder control

Diagnosis

AD is typically diagnosed after healthcare providers perform tests and look at health history to help determine whether a person's memory problems or other mental skills are declining over time. Your doctor may:

- Ask about your medical history, your ability to carry out routine tasks, and changes in your behavior or personality.
- Perform tests to assess your memory, problem solving, attention, counting, and language skills.
- Order medical tests to check your urine, blood, and spinal fluid.
- Conduct brain scans, such as a computed tomography (CT) scan or magnetic resonance imaging (MRI) test.

Treatment

There is no cure for AD. Scientists believe that because it is a complex disease, it's unlikely that one treatment will prevent or cure it. Extensive research is developing and testing a variety of possible treatments for AD.

Current treatments: These focus on ways to slow symptoms of the disease. The Food and Drug Administration (FDA) has approved four drugs to treat Alzheimer's dementia:

- For mild to moderate symptoms, rivastigmine, galantamine, and donepezil may help maintain mental abilities and control specific behavioral symptoms for varying periods of time.
- Memantine is designed to help with the symptoms of moderate and severe Alzheimer's dementia.
- Donepezil is also used for severe Alzheimer's dementia.

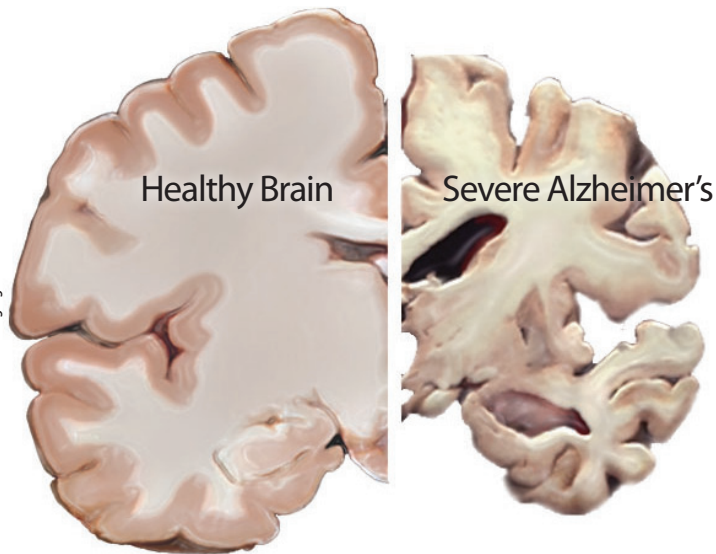
Potential treatments: Scientists are now conducting research studies to see if they can find ways to delay or prevent the disease by targeting the underlying disease process. Possible strategies include:

- drugs that interfere with basic processes that may be involved in Alzheimer's, including immunization therapy and other interventions designed to lower the levels of Alzheimer's pathologies in the brain
- treatments for health issues that may be related to AD, such as heart disease and type 2 diabetes
- cognitive training
- specific diets
- exercise.



Photo: iStock

Your, or your loved one's, health professional can help explain the different stages of Alzheimer's.



How Alzheimer's Changes the Brain

The only definite way to diagnose Alzheimer's disease is with an autopsy—an examination of the body after death. In severe Alzheimer's disease, abnormal growths called plaques and tangles are widespread throughout the brain and most areas of the brain have shrunk (above right).

7 Warning Signs of Alzheimer's

The purpose of this list is to alert the public to the early warning signs of Alzheimer's disease. If someone has several or even most of these symptoms, it does not mean they definitely have the disease. It does mean they should be thoroughly examined by a medical specialist trained in evaluating memory disorders, or by a comprehensive memory disorder clinic, with an entire team of experts knowledge about memory problems.

1. **Asking the same question over and over again.**
2. **Repeating the same story, word for word, again and again.**
3. **Forgetting how to cook, or how to make repairs, or how to play cards—activities that were previously done with ease and regularity.**
4. **Losing one's ability to pay bills or balance one's checkbook.**
5. **Getting lost in familiar surroundings, or misplacing household objects.**
6. **Neglecting to bathe, or wearing the same clothes over and over again, while insisting that they have taken a bath or that their clothes are still clean.**
7. **Relying on someone else, such as a spouse, to make decisions or answer questions they previously would have handled themselves.**

* National Institute on Aging; Reprinted with permission of The Suncoast Gerontology Center, University of South Florida.

Latest NIH Research

- NIH's National Institute on Aging (NIA) leads the federal government's research efforts on AD. Scientists at NIA-supported Alzheimer's Disease Centers and other research institutions conduct clinical trials and carry out a variety of studies, looking at the causes, diagnosis, and management of AD. NIA also sponsors the Alzheimer's Disease Cooperative Study, a group of leading AD researchers throughout the United States and Canada who conduct clinical trials on promising AD treatments.
- The NIA's Alzheimer's Disease Neuroimaging Initiative (ADNI) is an ongoing study that uses advanced imaging techniques, as well as biomarker measures found in blood and spinal fluid, to track subtle changes in the brain before symptoms appear and during the course of the disease. The researchers are seeking a range of volunteers, from those free of memory

problems to those with diagnosed AD. To volunteer or learn more about the study, contact the NIA Alzheimer's Disease Education and Referral (ADEAR) Center at 1-800-438-4380 or go to www.nia.nih.gov/Alzheimers.

- Until recently, only four genes were associated with risk for developing AD. Mutations in three of those genes cause a rare, early-onset form of AD, and one increased risk for developing the more common, late-onset AD, which generally occurs after age 60. However, researchers conducting large-scale genetics studies have now identified several other strong candidate genes, including CR1, CLU, PICALM, and SORL1. These and other genes recently implicated in AD are being verified and characterized to see how they many influence the development of AD.

To view the videos, go here: www.nihseniorhealth.gov



Photo: NIH SeniorHealth

Understanding Alzheimer's—Free Videos Can Help

The NIH Senior Health Web site (www.nihseniorhealth.gov) offers a collection of free instructional videos to help the public understand Alzheimer's disease, how it is diagnosed, and current research. In this video, *Cognitive Test for Alzheimer's*, psychiatrist Dr. Peter V. Rabins, an expert on Alzheimer's, shows how he works with a patient to test for the presence or absence of the disease. Dr. Rabins is the author of *The 36-Hour Day: A Family Guide to Caring for People with Alzheimer's Disease, Other Dementias, and Memory Loss in Later Life*. NIH Senior Health.gov offers videos on many other diseases, as well.

Ask Your Health Professional

- If I have AD, will my children inherit it from me?
- What risk factors may contribute to AD?
- What is the difference between Alzheimer's and dementia?
- What is "mild cognitive impairment"?
- What other conditions have symptoms like AD?
- If a member of my family has AD, am I at increased risk for developing it?
- Are there effective drugs to stop AD?
- Are there steps I can take to prevent Alzheimer's?
- What type of arrangements should I make before the disease worsens?

To Find Out More

To learn about support groups, services, research centers, research studies, and publications about AD, contact the following resources:

- **National Institute on Aging's (NIA) Alzheimer's Disease Education and Referral (ADEAR) Center** for answers to your questions, free publications, referrals to support organizations, Spanish-language resources, clinical trials, and more: www.nia.nih.gov/Alzheimers or toll-free 1-800-438-4380 (8:30 am–5:00 pm EST/EDT, Mon–Fri) or email to adear@nia.nih.gov or surface mail to ADEAR Center, P.O. Box 8250, Silver Spring, Md. 20907-8250
- **A Listing of Clinical Trials**, sponsored by the NIH, other federal agencies, and private industry: www.ClinicalTrials.gov
- **NIH Senior Health**: <http://nihseniorhealth.gov/alzheimersdisease/toc.html>
- **The National Institute of Neurological Disorders and Stroke**: www.ninds.nih.gov/disorders/alzheimersdisease/alzheimersdisease.htm
- **National Institute of Mental Health**: www.nimh.nih.gov
- **MedlinePlus**, a Service of the NIH and National Library of Medicine: <http://medlineplus.gov>
- **Alzheimer's Association**: www.alz.org
- **Alzheimer's Foundation of America**: www.alzfdn.org
- **Fisher Center for Alzheimer's Research Foundation**: www.alzinfo.org
- **U.S. Administration on Aging's Eldercare Locator**: www.eldercare.gov

Quiz: Alzheimer's Disease Quiz

1. How many people in the United States have Alzheimer's disease?

- A. as many as 5.1 million
- B. as many as 50 million
- C. as many as 100 million

2. The most well-known risk factor for Alzheimer's disease is

- A. increasing age
- B. depression
- C. family history of the disease

3. Another risk factor for Alzheimer's disease is

- A. poor vision
- B. arthritis
- C. family history of the disease

4. What approaches to healthy aging are being studied for preventing AD?

- A. lowering high blood pressure
- B. being physically active
- C. eating a healthy diet
- D. all of the above

5. It is important to have an early diagnosis of Alzheimer's disease

- A. so that patients and families can plan for the future
- B. so that the symptoms can be better managed
- C. so that other diseases can be ruled out
- D. all of the above

6. With Alzheimer's disease, the time from diagnosis to end of life

- A. can be as little as 3 years
- B. may be as long as 10 years or more
- C. both of the above

7. People with mild Alzheimer's disease may be helped in day-to-day living by

- A. a list of daily plans
- B. notes about simple safety measures
- C. written directions describing how to use common household items
- D. all of the above

8. A person's genetic makeup can affect the risk of developing

- A. early-onset Alzheimer's disease.
- B. late-onset Alzheimer's disease.
- C. both early- and late-onset Alzheimer's disease.

Source: NIHSeniorHealth.gov Alzheimer's disease section

ANSWERS

1. A is the correct answer. Estimates vary, but experts suggest that as many as 5.1 million people in the United States may have Alzheimer's disease. Most of them are age 60 or older, but some are in their 30s, 40s, and 50s.

2. A is the correct answer. Increasing age is the most important known risk factor for Alzheimer's disease. The disease usually begins after 60, and the risk goes up with age.

3. C is the correct answer. Family history is another risk factor for Alzheimer's disease. Early-onset familial Alzheimer's, a rare form of the disease that occurs between the ages of 30 and 60, is inherited. It is caused by mutations, or changes, in certain genes. There is no evidence that poor vision and arthritis are risk factors for Alzheimer's.

4. D is the correct answer. Research suggests that controlling blood pressure, being physically active, and eating a healthy diet may lower the risk of developing Alzheimer's disease. Currently, there are no treatments, drugs, or pills that can prevent Alzheimer's disease.

5. D is the correct answer. Although there is no cure for Alzheimer's disease, early diagnosis makes it possible to consider treatment options and make legal and financial arrangements while the person

with Alzheimer's can still take part in making decisions. Early treatment may help the person function independently for longer. Finally, doctors may find other possible causes of the person's symptoms, such as thyroid problems, drug reactions, depression, brain tumors, or blood-vessel disease in the brain. Some of these other conditions can be treated successfully.

6. C is the correct answer. With Alzheimer's disease, the time from diagnosis to end of life varies. It can be as little as 3 years if the person is over 80 years old when diagnosed, or as long as 10 years or more if the person is younger.

7. D is the correct answer. Memory aids may help some people with mild Alzheimer's disease with day-to-day living. A big calendar, a list of daily plans, notes about simple safety measures, and written directions describing how to use common household items can be useful.

8. C is the correct answer. A person's genetic make-up can affect the risk of developing both early- and late-onset forms of Alzheimer's disease. Early-onset Alzheimer's, a rare form of the disease affecting 5 percent or fewer of people with Alzheimer's, can be inherited. One gene — apoE4 — may increase a person's risk of having the common, late-onset form of the disease, which occurs after age 65.

Coronary Artery Disease

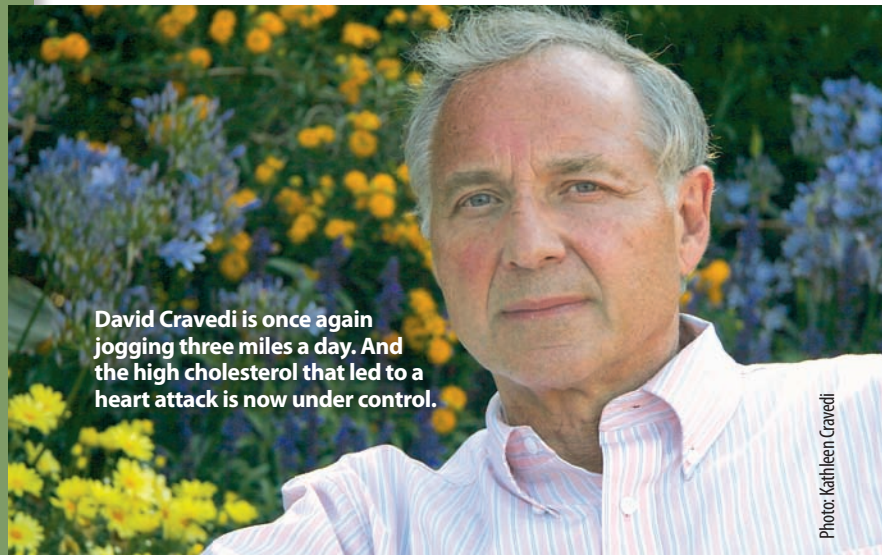
Our nation's number one killer. And high cholesterol is a major cause.

FASTFACTS

- Arteries are blood vessels that carry oxygen-rich blood to your heart and other parts of your body.
- Atherosclerosis (ATH-er-o-skler-O-sis) is a disease in which plaque builds up inside your arteries.
- One atherosclerosis-related disease, coronary artery disease (CAD) is the most common heart disease and the number one killer of men and women in the United States.
- Many people don't know they have CAD until they have a heart attack, stroke, or other medical emergency.
- Controlling your risk factors can help prevent or delay atherosclerosis and its related diseases. This includes making lifestyle changes and/or taking medicines as prescribed by your doctor.

At age 55, David Cravedi of Bethesda, Md., was in perfect health. Or, so he thought. He didn't smoke, drank moderately, ate a balanced diet, wasn't overweight, and exercised daily. And he did not have a family history of heart disease. The only early symptom of a potential heart problem was an elevated cholesterol reading from a physical exam.

So, in September 2005, no one suspected that Cravedi was having a heart attack when he awoke one morning with numbness in his left arm. His wife drove him to a nearby emergency room to be checked.



David Cravedi is once again jogging three miles a day. And the high cholesterol that led to a heart attack is now under control.

Photo: Kathleen Cravedi

He was immediately placed in a helicopter and flown to a hospital specializing in heart surgery. There, he was found to have had a heart attack. Further tests indicated the need for immediate bypass surgery. Within 24 hours of his first symptoms, Cravedi awoke in a hospital intensive care unit following a successful six-bypass surgical procedure.

Today, David is on a daily regimen of cholesterol-reducing medication, eats a diet rich in fruits and vegetables, and is back to his daily 3-mile run.

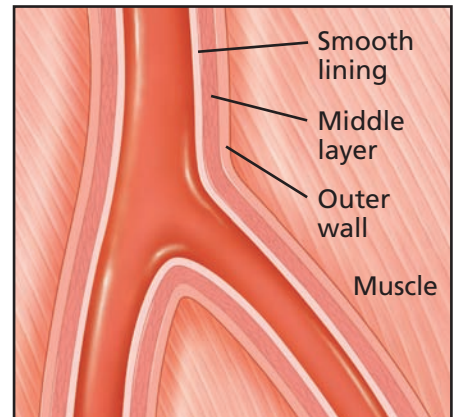
"Don't wait to have a heart attack, like I did, to take the necessary action to reduce your high cholesterol," said Cravedi. "I thought diet and exercise could take care of it, and it did not. However, I have been told that there was little damage to my heart. Perhaps my daily exercise routine produced a strong heart!"

Understanding Arteries

With each beat, your heart pumps oxygen-rich blood throughout your body. Arteries carry this blood to your organs and muscles. Veins return oxygen-poor blood to the heart. This cycle works well when the arteries and veins are healthy.

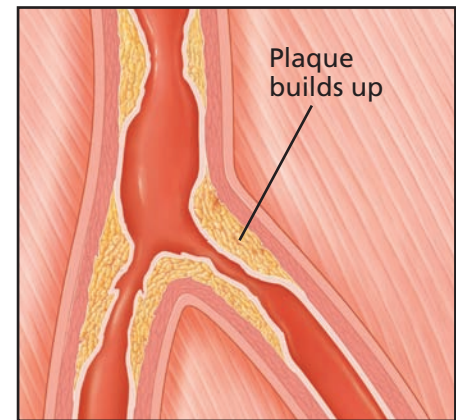
A Healthy Artery

An artery is a muscular tube. It has a smooth lining and flexible walls that allow blood to pass freely. Active muscles need more oxygen, requiring increased blood flow. Healthy arteries can meet this need.



A Damaged Artery

If an artery is damaged, blood flow may be slowed or blocked. This means your muscles and tissues don't get all the oxygen they need. Plaque (PLAK), a buildup of fat and other materials, can start to form within the artery wall. At this stage, blood flows normally, so you're not likely to have symptoms.



A Narrowed Artery

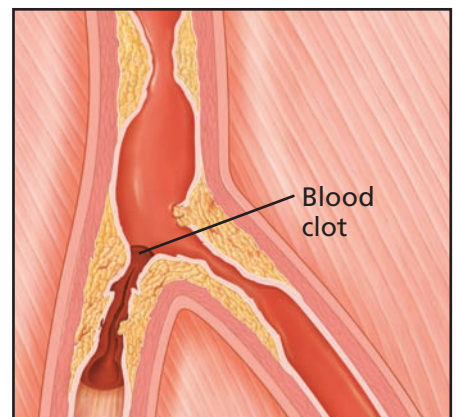
If plaque continues to build up, the space inside the artery narrows. The artery walls become less able to expand. The artery still provides enough blood and oxygen to your muscles during rest. But when you're active, the increased demand for blood can't be met. As a result, for example, your leg may cramp or ache when you walk.

When You Have a Blockage

As you age, your arteries become stiffer and thicker—often called “hardening of the arteries.” In addition, smoking, high cholesterol, and other risk factors can damage the artery lining. Plaque forms within the artery walls, narrowing the space inside and sometimes blocking blood flow. This process is called atherosclerosis.

A Blocked Artery

Plaque or a blood clot lodged in a narrowed section can block an artery. When this happens, oxygen can't reach the muscle below the blockage. Then you may feel pain when lying down (rest pain). This is especially common at night when you're lying flat. In time, the affected tissue can die, leading to the loss of a toe or foot.



Illustrations: Krames

Signs and Symptoms of Artery Disease

Artery disease (atherosclerosis) usually doesn't cause symptoms until it severely narrows or totally blocks an artery. Many people don't know they have the disease until they have a medical emergency, such as a **heart attack** or **stroke**. Some people may have signs and symptoms of the disease, but this depends on which arteries are affected.

Coronary Arteries

Coronary arteries supply oxygen-rich blood to the heart. When plaque narrows or blocks these arteries—a condition called **coronary artery disease (CAD)** or **coronary heart disease (CHD)** occurs. A common symptom is **angina**. Angina is chest pain that occurs when your heart doesn't get enough oxygen-rich blood.

Angina may feel like pressure or a squeezing pain in your chest. You also may feel it in your shoulders, arms, neck, jaw, or back. It tends to get worse with activity and go away when you rest. Emotional stress also can trigger the pain.

Carotid Arteries

Carotid arteries supply the brain with oxygen-rich blood. When plaque narrows or blocks them (a condition called **carotid artery disease**), you may experience the symptoms of a stroke, including:

- Sudden weakness or numbness in the face or limbs, often on just one side of the body
- Inability to move one or more of your limbs
- Trouble speaking and understanding
- Sudden trouble seeing in one or both eyes
- Dizziness or loss of balance
- A sudden, severe headache with no known cause

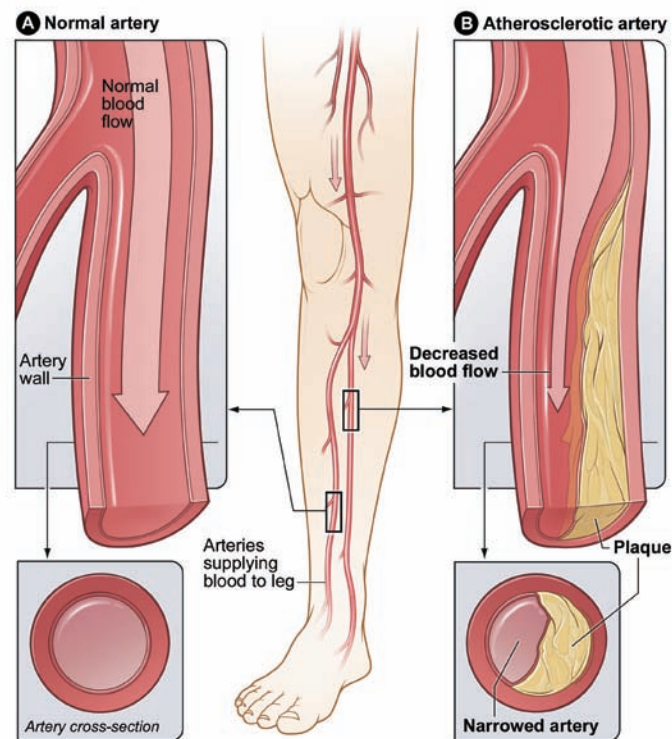
Peripheral Arteries

Plaque also can build up in the major arteries supplying oxygen-rich blood to the legs, arms, and pelvis. This is called **peripheral artery disease (P.A.D.)**. If these major arteries are narrowed or blocked, it can lead to numbness, pain, and, sometimes, dangerous infections.

Just like clogged arteries in the heart, clogged arteries in the legs raise the risk for heart attack or stroke. **P.A.D. affects approximately 9 million Americans. It is a chronic disease requiring lifelong care. (See illustration above right.)**

PERIPHERAL ARTERY DISEASE

The National Heart, Lung, and Blood Institute (NHLBI), the P.A.D. Coalition, and other vascular and heart disease organizations are promoting September as National Awareness Month for peripheral artery disease (P.A.D.) and other vascular diseases. (See "To Find Out More" on page 27.)



Illustrations: Krames

Should You Be Tested for P.A.D.?

National medical guidelines recommend that the following individuals be tested for P.A.D. Review these with your health professional. Place a check in any box that applies.

- I am under 50 years of age, have diabetes and at least one other risk factor:
 - History of smoking
 - Abnormal cholesterol
 - High blood pressure
- I am 50 years or older and have diabetes
- I am 50 years or older and am a former or current smoker
- I am 70 years or older
- I have one or more symptoms of PAD:
 - Fatigue, heaviness, tiredness or cramping in the leg muscles (calf, thigh or buttocks) that occurs during activity such as walking and goes away with rest
 - Foot or toe pain at rest that often disturbs sleep
 - Skin wounds or ulcers on the feet or toes that are slow to heal (or that do not heal for 8 to 12 weeks)

If you check one or more boxes, talk to your health professional about being tested for P.A.D.

Source: National Heart, Lung, and Blood Institute; P.A.D. Coalition

Diagnosis

Your healthcare provider diagnoses coronary artery disease (atherosclerosis) based on your medical and family histories, a physical exam, and results from tests.

Specialists Involved

If you have coronary artery disease, your healthcare provider may recommend other healthcare specialists. These may include:

- **A cardiologist.** This is a doctor who specializes in diagnosing and treating heart diseases and conditions. You may see a cardiologist if you have coronary heart disease (CHD).
- **A vascular specialist.** This is a doctor who specializes in diagnosing and treating blood vessel problems. You may see a vascular specialist if you have peripheral arterial disease (P.A.D.).
- **A neurologist.** This is a doctor who specializes in diagnosing and treating nervous system disorders. You may see a neurologist if you've had a stroke due to carotid artery disease.

Methods of Diagnosis

- **Physical Exam:** During a physical exam, your health professional may use a stethoscope to check your arteries for an abnormal whooshing sound called a **bruit**, which may indicate poor blood flow due to plaque buildup. He or she also may check to see whether any of your pulses (for example, in the leg or foot) are weak or absent, which can be a sign of a blocked artery.
- **Diagnostic Tests:** Your healthcare provider may recommend one

or more tests to diagnose atherosclerosis. These tests can help define the extent of your disease and the best treatment plan.

- **Blood Tests** check the levels of certain fats, cholesterol, sugar, and proteins in your blood. Abnormal levels may put you at risk for atherosclerosis.
- **Ankle/Brachial Index** compares the blood pressure in your ankle with the blood pressure in your arm to see how well your blood is flowing. Used to help diagnose P.A.D.
- **EKG (Electrocardiogram)** detects and records the heart's electrical activity. It shows how fast the heart is beating and its rhythm (steady or irregular).
- **Echocardiography** uses sound waves to create a moving picture of your heart. The test provides information about the size and shape of your heart, how well your heart chambers and valves are working, and areas of poor blood flow.
- **Computed Tomography Scan** creates computer-generated pictures and can show hardening and narrowing of large arteries.
- **Stress Testing:** You exercise (or are given medicine if you are unable to exercise) to make your heart work hard and beat fast while heart tests are done. A stress test can show possible signs of CAD.
- **Angiography:** Angiography uses dye and special X-rays to reveal the insides of your arteries. It can show whether plaque is blocking your arteries and how severe the blockage is.

Treatment

Lifestyle changes

- **Follow a Healthy Diet.** This can prevent or reduce high blood pressure and high blood cholesterol and help you maintain a healthy weight.
- **Exercise Regularly.** Regular physical activity can lower many atherosclerosis risk factors, including LDL ("bad") cholesterol, high blood pressure, and excess weight. It also can lower the risk of diabetes and raise your HDL ("good") cholesterol, which helps prevent atherosclerosis. Talk to your healthcare provider before you start a new exercise plan.
- **Maintain a Healthy Weight.** Maintaining a healthy weight can lower your risk of atherosclerosis. A general goal is a body mass index (BMI) of less than 25. BMI measures your weight in relation to your height and gives an estimate of your total body fat. You can use the NHLBI's online BMI calculator to figure out your BMI, or your healthcare provider can help you. A BMI between 25 and 29.9 is considered overweight. A BMI of 30 or more is considered obese. A BMI of less than 25 is the goal for preventing and treating atherosclerosis. Your healthcare provider can help you set an appropriate goal.
- **Quit Smoking.** If you smoke or use tobacco, quit. Smoking can damage and tighten blood vessels, raising the risk of atherosclerosis. Talk to your healthcare provider about programs and products to help you quit.
- **Manage Stress.** Research shows that the most commonly reported "trigger" for a heart attack is an emotionally upsetting event—particularly one involving anger. Also, drinking, smoking, or overeating to cope with stress is not healthy.

Medicines

To slow the buildup of plaque, your health professional may prescribe medicines to help lower your cholesterol level or blood pressure or to prevent blood clots from forming.

Medical Procedures and Surgery

In the event of severe atherosclerosis, your doctor may recommend one of several procedures or surgeries.

Angioplasty is a procedure to open blocked or narrowed coronary (heart) arteries. It can improve blood flow, relieve chest pain, and possibly prevent a heart attack. Sometimes a small mesh tube, called a stent, is placed in the artery to keep it open after angioplasty.

Coronary artery bypass grafting (CABG) is a type of surgery that uses arteries or veins from other areas in your body to bypass your narrowed coronary arteries. CABG can improve blood flow to your heart, relieve chest pain, and possibly prevent heart attack.

Bypass grafting also can be used for leg arteries. In this surgery, a healthy blood vessel is used to bypass a narrowed or blocked artery in one of your legs. The healthy blood vessel redirects blood around the artery, improving blood flow to the leg.

Carotid endarterectomy, or carotid artery surgery, removes plaque buildup from the carotid arteries in the neck. This procedure opens the arteries and improves blood flow to the brain, helping prevent a stroke.

Latest NIH Research

- Recent gene-mapping research has found the largest set of genes yet discovered underlying high cholesterol and high triglycerides—the major risk factors for coronary heart disease. The new findings point to specific genetic signposts that help scientists understand why many people from all walks of life have abnormal levels of cholesterol and other blood lipids that lead to heart disease. The research was funded by the National Heart, Lung, and Blood Institute and several other NIH Institutes.
- New research from the Women’s Health Initiative (WHI) confirm that combination hormone therapy (HT) increases the risk of heart disease in healthy postmenopausal women. Researchers report a trend toward an increased risk of heart disease during the first two years of hormone therapy among women who began therapy within 10 years of menopause, and a more marked elevation of risk among women who began hormone therapy more than 10 years after menopause. Analyses indicate that overall a woman’s risk of heart disease more than doubles within the first two years of taking combination HT.
- Cholesterol screening rates for young adults who have at least one of the common risk factors for bad cholesterol are low and need to be increased, according to the Centers for Disease Control and Prevention (CDC). Young men and women have a high burden of risk factors for heart disease, the study indicates.

To Find Out More

- **MedlinePlus:** www.medlineplus.gov; type “heart disease,” “artery disease,” “cholesterol,” or “PAD” in the Search box for links to information.
- **National Heart, Lung, and Blood Institute (NHLBI) on heart and vascular diseases:** www.nhlbi.nih.gov/health/public/heart/index.htm
- **National Heart, Lung, and Blood Institute (NHLBI) on peripheral artery disease:** www.nhlbi.nih.gov/health/public/heart/pad
- **The P.A.D. Coalition:** www.padcoalition.org
- **The Vascular Disease Foundation:** www.vdf.org

Ask Your Health Professional

- Is my cholesterol level currently under control?
- How often should I have my cholesterol checked?
- What type of exercises would you recommend that I do to safely help lower my bad cholesterol and raise my good cholesterol?
- Do I have any other risk factors that could affect my heart health?
- What, if any, medications do I need to take? What are their side effects?

Plan to Get Your Flu Shot

The U.S. Food and Drug Administration (FDA) has approved the vaccine for the upcoming flu season in the United States. The 2010-2011 seasonal flu vaccine will protect against three viruses, including the 2009 H1N1 virus that caused so many illnesses last year. Because influenza viruses can change, the vaccines may change from year to year. That is why people are advised to get a flu shot every year. The Centers for Disease Control and Prevention (CDC) says that, on average, 36,000 people in the United States die from the flu each year and more than 200,000 others end up in the hospital. To find out more, visit www.flu.gov, the U.S. government's comprehensive flu information Web site.

Egg or Milk Allergy... and Peanut, too?

Infants who are allergic to egg or milk may also be at risk of developing an allergy to peanut. Researchers suggest parents of those infants talk with their healthcare provider before giving their children peanuts or peanut products. Scientists studied 500 infants known to be allergic to egg and milk but not peanut. The researchers found a strikingly high number of the infants were sensitized to peanuts and some may already be allergic without their parents knowing it. The study is part of a food allergy research program funded by the National Institute of Allergy and Infectious Diseases.

Lose Weight, Gain Rewards

Overweight girls who lose weight before adulthood can reduce their risk of developing type 2 diabetes. That's the most common form of the disease. NIH researchers analyzed information provided by nearly 110,000 women. Those who were overweight children but lean adults did not have an increased risk of diabetes. But women who said they were overweight as children and into their adult years were 15 times more likely to develop the disease.

Researchers at the Eunice Kennedy Shriver National Institute of Child Health and Human Development conducted the study.



Photo: iStock

Comparing Knee Pain Treatments

Some people with osteoarthritis of the knee try to relieve their pain by taking the dietary supplements glucosamine and chondroitin. New data from a long-term study compared those two supplements with an anti-inflammatory drug and a placebo (or dummy pill). Researchers say people who took the supplements or celecoxib had some improvement during the two-year study, but none of the treatments was significantly better than the placebo. Two components of NIH funded the study, which was part of the Glucosamine/Chondroitin Arthritis Intervention Trial: the National Center for Complementary and Alternative Medicine and the National Institute of Arthritis and Musculoskeletal and Skin Diseases.

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
1-888-FIND-NLM (1-888-346-3656)
- **National Cancer Institute (NCI)** www.cancer.gov
1-800-4-CANCER (1-800-422-6237)
- **National Eye Institute (NEI)** www.nei.nih.gov
(301) 496-5248
- **National Heart, Lung, and Blood Institute (NHLBI)**
www.nhlbi.nih.gov (301) 592-8573
- **National Human Genome Research Institute (NHGRI)** www.genome.gov (301) 402-0911
- **National Institute on Aging (NIA)** 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
(301) 443-3860
- **National Institute of Allergy and Infectious Diseases (NIAID)** www.niaid.nih.gov
(301) 496-5717
- **National Institute of Arthritis and Musculoskeletal and Skin Diseases** www.niams.nih.gov
1-877-22NIAMS (1-877-226-4267)
- **National Institute of Biomedical Imaging and Bioengineering (NIBIB)** www.nibib.nih.gov
(301) 451-6772
- **Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)**
www.nichd.nih.gov 1-800-370-2943
- **National Institute on Deafness and Other Communication Disorders (NIDCD)**
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
(301) 480-4098
- **National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)** 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 (301) 443-1124
- **National Institute of Environmental Health Sciences (NIEHS)** www.niehs.nih.gov
(919) 541-3345
- **National Institute of General Medical Sciences (NIGMS)** www.nigms.nih.gov
(301) 496-7301
- **National Institute of Mental Health (NIMH)**
www.nimh.nih.gov 1-866-615-6464
- **National Institute of Neurological Disorders and Stroke (NINDS)** www.ninds.nih.gov
1-800-352-9424
- **National Institute of Nursing Research (NINR)**
www.ninr.nih.gov (301) 496-0207

Centers & Offices

- **Fogarty International Center (FIC)**
www.fic.nih.gov (301) 402-8614
- **National Center for Complementary and Alternative Medicine (NCCAM)**
www.nccam.nih.gov 1-888-644-6226
- **National Center on Minority Health and Health Disparities (NCMHD)** www.ncmhd.nih.gov
(301) 402-1366
- **National Center for Research Resources (NCRR)**
www.ncrr.nih.gov (301) 435-0888
- **NIH Clinical Center (CC)**
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
(888) 205-2311 Toll-free
- **Office of Research on Women's Health (ORWH)**
http://orwh.od.nih.gov (301) 402-1770

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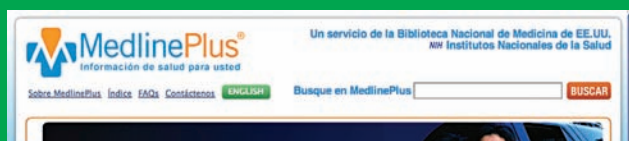
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