

NIH MedlinePlus

Trusted Health Information
from the National
Institutes of Health

FALL 2014

the magazine

*Living Well
with*

COPD

**Chronic Obstructive
Pulmonary Disease
(COPD) takes your
breath away.**

**COPD educator and activist
Grace Anne Dorney Koppel
and journalist husband,
Ted Koppel, want you to
Learn More Breathe Better®.**

Type 2 Diabetes: Serious but Manageable

Small steps can lead to big rewards in preventing and managing diabetes.

Meet the Bionic Man

An interactive web tool from one NIH institute showcases advances in wearable and insertable biomedical technology.

Helping Cancer Patients Have Children

A new specialty—oncofertility—aids would-be moms and dads with cancer.

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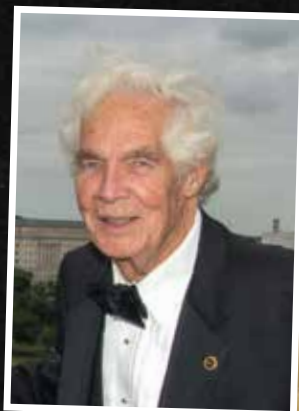
2014 Awards Gala Event!

On September 9, the Friends held its annual Awards Gala to celebrate advances in public health, medicine, and health communications, as well as the individuals and organizations dedicated to these causes. The 2014 Gala brought together representatives from the public, professional, and business sectors in health care to show their support for the Library.

Sincerely,
Glen P. Campbell, Chairman
Friends of the National Library of Medicine



▲ Dr. Piotr Grodzinski (left), Director of the NCI Alliance for Nanotechnology in Cancer at the National Cancer Institute, presented the Distinguished Medical Science Award to Chad A. Mirkin, PhD, the George B. Rathmann Professor of Chemistry at Weinberg College of Arts and Sciences at Northwestern University.



◀ Donald A.B. Lindberg, MD, Director of the National Library of Medicine (NLM), welcomed those attending this year's awards dinner.

▶ FNLM Board member Lucretia McClure (right) presented the Michael E. DeBakey Library Services Outreach Award to Patricia Bradley, MLS, of the Native and Distance Services Library, Health Sciences Library & Informatics Center, at the University of New Mexico.



▲ FNLM Board President, Barbara Redman, PhD, RN, (left) presented the first Nursing Informatics Award to Virginia K. Saba, EdD, RN, FAAN, FACMI.



▲ *Good Morning America* news anchor Amy Robach, who could not attend the Gala, sent a special thank you video for receiving the Distinguished Health Communications Award. (An image from the video.)



▲ Peter Reinecke, former chief of staff for Sen. Tom Harkin and a strategic advisor to the magazine, read a letter of thanks from Sen. Barbara Mikulski of Maryland, recipient of the Paul G. Rogers Award for Public Service.

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▲ Grace Anne Dorney Koppel, diagnosed in 2001 with COPD, offers a formula for living well with the breath-robbing disease.

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20 Back to School the Healthy Way



▲ A web-based "Bionic Man" from NIH is showcasing the latest biotechnology medical research.

Photo Credits:

Cover & Top: National Heart, Lung, and Blood Institute | Middle: Thinkstock | Bottom: John Russell, Vanderbilt University

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.

INSIDE FRONT COVER The Friends' 2014 Awards Gala celebrated advances in public health and medicine.

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▲ Learning as much as possible about type 2 diabetes is the best first step in preventing or managing it.

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Q&A: Grace Anne Koppel Living Well with COPD

Since January 2006, Grace Anne Dorney Koppel has served as a national spokeswoman and patient advocate for the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health (NIH) to increase awareness of COPD, a group of lung diseases including emphysema, chronic bronchitis, and bronchiectasis that affects some 25+ million Americans—12-13 million of whom are undiagnosed and untreated. She has appeared on *CBS Evening News*, *Good Morning America*, *The View*, and other major venues to draw attention to NHLBI's Learn More Breathe Better® education campaign. Dorney Koppel is a member of the Board of Directors at the COPD Foundation.

A graduate of Fordham University (BA), Stanford University (MA), and Georgetown Law (JD), Dorney Koppel is a practicing attorney and business manager for her husband, former *Nightline* anchor Ted Koppel. She is president of the Dorney-Koppel Family Charitable Foundation, one of whose missions is to provide start-up funding for pulmonary rehabilitation centers.

Dorney Koppel spoke recently to *NIH MedlinePlus* magazine.

What should Americans understand about COPD?

Not being able to catch your breath and the fear that your next breath may not be coming is like drowning. Nothing is more frightening. Nothing makes you feel more alone. Then, being told that you have a disease that is incurable ... It's almost as though the goal is to make COPD patients give up and go away.

Well, we're not alone. There are an estimated 25 million of us, only half of whom have been diagnosed and are receiving any kind of treatment. That's a national scandal. The medical profession has an ethical obligation to improve the level of diagnoses. And once they identify the disease properly, there's an even greater obligation to teach their patients the difference between incurable and untreatable.

There's a simple, inexpensive breathing test, called spirometry, that can identify COPD.

Is treatment effective? Well, in 2001 I was told to begin making end-of-life preparations in three to five years. That was 13 years ago.

Grace Anne Dorney Koppel was diagnosed with chronic obstructive pulmonary disease (COPD) in 2001. The news set her on a course of aggressive rehabilitation—and advocacy.



Photo By: Steven Biver

▲ Grace Anne Dorney Koppel has been living with COPD since 2001.

What have you done to help slow the effects of COPD in your own case since you were diagnosed in 2001?

Doctors can give us the tools to treat our disease, but if we don't use them properly, the best tools can't help. Doctors can prescribe inhalers to open our airways, but if we don't use those inhalers on time and follow the directions on exactly how to use them, they're going to be of limited help. Doctors can recommend annual flu shots and getting the pneumonia vaccine, but we're the ones who have to follow up.

Perhaps the best advice I received from a doctor was to exercise. Understand, though, we're not training for the Olympics. We're trying to get as much as we possibly can out of a damaged set of lungs. Many COPD patients are on oxygen. They can barely walk.

Exercise sounds like a bad joke.

If your doctor doesn't offer it, ask for a prescription for pulmonary rehabilitation. Under controlled conditions, with the guidance and the support of a trained respiratory therapist, COPD patients who could barely stand without help, can make extraordinary progress.

When I was diagnosed with COPD, I was in a wheelchair. My lung capacity was at 26 percent of predicted capacity. As I said earlier, I was told I'd probably be dead by 2006.

I'm still here. My predicted lung capacity is at 50 percent. I work a 12-14 hour day, every day; and I find time to do a couple of miles on the treadmill at least five days a week.

Recent research has confirmed that women are more susceptible to COPD and develop symptoms earlier than men. What needs to be done to address this gender disparity?

Through recent research, we have come to realize just how severely women—66 percent of COPD patients are women—have been affected by COPD. Women have more symptoms than men: shortness of breath, constant coughing, wheezing. They have more flare-ups than

COPD has had something of a stigma attached to it because of smoking as a primary cause. Is this going away with better understanding of the disease?

Smoking is a primary cause of COPD, and the first thing any smoker should do is quit! But about 25 percent of those with COPD never smoked a cigarette. There are environmental, industrial, and genetic causes of COPD.

Almost every form of prejudice is the result of ignorance. The simple reality is that many among the public and far, far too many doctors still blame their COPD patients for their disease. Often, we end up penalizing COPD patients who simply grew up in a home where there was smoking, or who worked in an industry environment where there were airborne toxic agents.

I was a smoker. I stopped, though, many years before I was diagnosed with COPD. That's very often the case. Smokers quit, but the



Photo: ©Renzi & Hawkens Studio

▲ Grace Anne and her three daughters: (left to right), Andrea Koppel-Pollack, Grace Anne, Deirdre Cohen, and Tara Koppel.

men and more hospitalizations than men. No one fully understood this until a 2012 report was released from an NIH-funded nationwide study conducted by the Centers for Disease Control and Prevention (CDC). COPD kills more women than breast cancer or ovarian cancer combined. We have smaller bodies. Our lungs are smaller, and the airways are smaller. And that may make us more susceptible to COPD.

Part of what needs to be done is, of course, to educate. Make people know that not only does the disease manifest itself from middle age on, but also that women have a more toxic reaction. Gender is not the only disparity in COPD. Those in the lower levels of socioeconomic tiers are typically hit the hardest.

disease catches up with them in their 40s or 50s. We need to encourage smokers and former smokers to seek early testing for COPD if they have symptoms. It makes no more sense to blame the smoker for her disease than it does to humiliate the overweight heart patient. We need to encourage good behavior. Guilt is a patient who already suffers from fear, low self-esteem, and the knowledge of an incurable condition is, quite simply, cruel and unhelpful.

The NIH's COPD Learn More Breathe Better® Campaign Network is now in all 50 states and the District of Columbia. What has been the key to its success?

The key to its success has been its ability to serve as an "honest broker" to bring together organizations that are also committed to



◀ Ted Koppel and Grace Anne Dorney Koppel (center) with patients, hospital staff, and respiratory therapists at the anniversary of St. Mary's Hospital's Grace Anne Dorney Clinic.

Photo By: Saint Mary's Hospital

"Seeing people who have lost hope and physical function get their own lives back is the most rewarding thing we have ever done."

— Grace Anne Dorney Koppel

educate and improve the lives of Americans with COPD. But “success” is a relative term. While most Americans still don't view COPD as a disease that could occur to them or their family members, it is the No. 3 killer of all Americans, behind only heart disease and cancer. It is the No. 2 disease that disables Americans. Patients suffering from nine of the top 10 diseases in the United States are decreasing in number. The one exception is COPD.

One goal for NIH has been to empower their partners, those organizations that are collaborating with them to spread the awareness message and establish communities at the state and regional levels. The goal is for each state to have a COPD action plan. There are only nine states that do. NIH has activated partners to educate the public in all 50 states.

Another goal of the “Learn More Breathe Better” campaign is to encourage medical professionals to diagnose COPD earlier and listen for COPD symptoms when patients complain that they are breathless or have persistent coughing. Doctors! Please! Listen to your patient. When the patient talks about breathing problems, test for COPD. It's hard to think of another area in which progress is more important.

For the last four years, you and your husband, Ted, have been working to improve the knowledge about—and availability of—pulmonary rehabilitation clinics. Tell us about that.

Pulmonary rehabilitation is a breathing program based on the highest level of scientific evidence that can improve patient's lives. We need to improve quality of life of COPD patients now and not wait decades for a cure. That is where I have focused my attention lately.

My husband, Ted, and I have used our resources to locate other partners to help establish pulmonary rehabilitation centers where there are none. There are not enough pulmonary rehab centers and, where they do exist, it's in the big cities. Our first COPD Clinic is located in southern Maryland, our home state. We have, with the

help of our partners, funded three other rehabilitation centers in West Virginia. Two more are opening there in the near future, and we hope soon to establish a couple more in North Carolina, with the help of local partners there. In each of the centers, we involve the community, and our funding has to be matched by the community or institutions in the community.

The Grace Anne Dorney Pulmonary Rehabilitation Clinics are intended to empower people to learn about the management of their disease—to exercise, while being monitored—and to gradually get their lives back. They learn about COPD, set a goal at the beginning of the program, and when they meet those goals they gain confidence and an ability to manage the disease.

Seeing people who have lost hope and physical function get their own lives back is the most rewarding thing we have ever done.

Fast Facts

- ✓ COPD is the third leading cause of death in the United States and causes serious, long-term disability.
- ✓ COPD kills more than 130,000 Americans each year. That's one death every 4 minutes.
- ✓ More than 12 million people are diagnosed with COPD. An additional 12 million likely have COPD and don't even know it.
- ✓ November is National COPD Awareness Month. As part of National COPD Awareness Month, the COPD Learn More Breathe Better® program encourages Breathe Better Network members and all those interested in raising COPD awareness to conduct events, discussions and other types of outreach to help start the conversation about COPD in your community.

What Is COPD?

COPD is a serious lung disease that, over time, makes it hard to breathe. You may also have heard COPD called other names, like emphysema or chronic bronchitis. In people who have COPD, the airways—tubes that carry air in and out of your lungs—are partially blocked, which makes it hard to get air in and out. The air sacs in the lungs may also lose their elasticity and shape.

When COPD is severe, shortness of breath and other symptoms of COPD can get in the way of even the most basic tasks, such as doing light housework, taking a walk, even washing and dressing.

How Does COPD Affect Breathing?

The “airways” are the tubes that carry air in and out of the lungs through the nose and mouth. Healthy airways and air sacs in the lungs are elastic—they bounce back to their original shape after being stretched or filled with air, just the way a new rubber band or balloon does. This elastic quality helps retain the normal structure of the lung and helps to move the air quickly in and out.

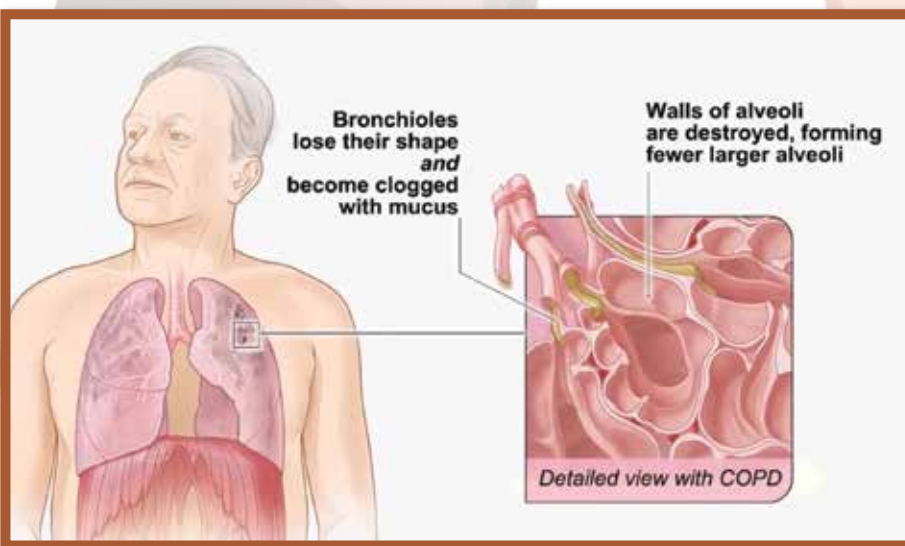
In people with COPD, the air sacs no longer bounce back to their original shape. The airways can also become swollen or thicker than normal, and mucus production might increase. The floppy airways are blocked, or obstructed, making it even harder to get air out of the lungs.

Symptoms

Many people with COPD avoid activities that they used to enjoy because they become short of breath more easily.

Symptoms of COPD include:

- Constant coughing, sometimes called “smoker’s cough”
- Shortness of breath while doing activities you used to be able to do
- Excess sputum production
- Feeling like you can’t breathe
- Not being able to take a deep breath
- Wheezing



When COPD is severe, shortness of breath and other symptoms can get in the way of doing even the most basic tasks, such as doing light housework, taking a walk, even bathing and getting dressed.

COPD develops slowly, and can worsen over time, so be sure to report any symptoms you might have to your doctor or healthcare provider as soon as possible, no matter how mild they may seem.

What Is COPD? Watch an animation at:

www.nhlbi.nih.gov/health/health-topics/videos/what-is-copd.html

What Causes COPD?

Long-term exposure to lung irritants that damage the lungs and the airways usually is the cause of COPD. In the United States, the most common irritant that causes COPD is cigarette smoke. Pipe, cigar, and other types of tobacco smoke also can cause COPD, especially if the smoke is inhaled.

Breathing in secondhand smoke, air pollution, or chemical fumes or dust from the environment or workplace also can contribute to COPD. (Secondhand smoke is smoke in the air from other people smoking.)

More rarely, a genetic condition called alpha-1 antitrypsin deficiency may play a role in causing COPD. People who have this condition have low levels of alpha-1 antitrypsin (AAT)—a protein made in the liver.

Having a low level of the AAT protein can lead to lung damage and COPD if you're exposed to smoke or other lung irritants. If you have this condition and smoke, COPD can worsen very quickly.



Photo By: Thinkstock



Photo By: Thinkstock

The major causes of COPD are smoking and chemical and other industrial air pollutants, including secondhand smoke from other people smoking.

TOP REASONS PATIENTS WITH COPD SYMPTOMS AREN'T TELLING THE DOCTOR³



I didn't think of it.



I don't want another 'quit smoking' message.



These problems will just go away in time.



I have had these problems for years.

Photo By: NHLBI



▲ A spirometer measuring the amount of air a patient can blow out.

Getting Tested

Everyone at risk for COPD who has cough, sputum production, or shortness of breath, should be tested for the disease. The test for COPD is called spirometry.

Spirometry can detect COPD before symptoms become severe. It is a simple, non-invasive breathing test that measures the amount of air a person can blow out of the lungs (volume) and how fast he or she can blow it out (flow). Based on this test, your doctor or healthcare provider can tell if you have COPD, and if so, how severe it is. The spirometry reading can help them to determine the best course of treatment.

How Spirometry Works

Spirometry is one of the best and most common lung function tests. The test is done with a spirometer, a machine that measures how well your lungs function, records the results, and displays them on a graph. You will be asked to take a deep breath, then blow out as hard and as fast as you can using a mouthpiece connected to the machine with tubing. The spirometer then measures the total amount exhaled, called the forced vital capacity or FVC, and how much you exhaled in the first second, called the forced expiratory volume (FEV) in one second. Your doctor or healthcare provider will read the results to assess how well your lungs are working and whether or not you have COPD.

Pulmonary Rehab

"Pulmonary rehabilitation is a breathing program based on the highest level of scientific evidence that can improve patients' lives. We need to improve the quality of life of COPD patients now and not wait decades for a cure. My husband, Ted, and I have used our resources to locate other partners to help establish pulmonary rehabilitation centers where there are none. There are not enough pulmonary rehab centers and, where they do exist, it's in the big cities."

—Grace Anne Koppel (Read her interview, starting on page 2.)

Take Action

There are many things people at risk for COPD can do:

► Quit Smoking

If you smoke, the best thing you can do to prevent more damage to your lungs is to quit. To help you quit, there are many online resources and several new aids available from your doctor or healthcare provider. The National Cancer Institute has information on smoking cessation (SmokeFree.gov or call 1-800-QUIT NOW), as does the American Lung Association (www.lung.org/) and the Centers for Disease Control and Prevention (www.cdc.gov/tobacco/quit_smoking/index.htm).

► Avoid Exposure to Pollutants

Try to stay away from other things that could irritate your lungs, like dust and strong fumes. Stay indoors when the outside air quality is poor. You should also stay away from places where there might be cigarette smoke.

► Visit Your Doctor or Healthcare Provider on a Regular Basis

See your doctor or healthcare provider regularly, even if you are feeling fine. Make a list of your breathing symptoms and think about any activities that you can no longer do because of shortness of breath. Be sure to bring a list of all the medicines you are taking to each office visit.

► Take Precautions Against Seasonal Flu

Get the seasonal flu shot to protect against viruses predicted to cause disease in the winter season. Do your best to avoid crowds during flu season. In addition to avoiding people with the flu, remembering to wash and sanitize your hands can be one of the best ways to guard against getting sick. It is also a good idea to get a flu shot every year, since the flu can cause serious problems for people with COPD. You should also ask your doctor or healthcare provider about the pneumonia vaccine.

(See more about seasonal flu in "Time to Get Your Seasonal Flu Shot" on pages 10 and 11 in this issue.)



Am I at Risk?

Most people who are at risk for getting COPD have never even heard of it and, in many cases, don't even realize that the condition has a name. Some of the things that put you at risk for COPD include:

Smoking

COPD most often occurs in people age 40 and over with a history of smoking (either current or former smokers), although as many as one out of six people with COPD never smoked. Smoking is the most common cause of COPD. It accounts for as many as nine out of 10 COPD-related deaths.

Environmental Exposure

COPD can also occur in people who have had long-term exposure to things that can irritate your lungs, like certain chemicals, dust, or fumes in the workplace. Heavy or long-term exposure to secondhand smoke or other air pollutants may also contribute to COPD.

Genetic Factors

In some people, COPD is caused by a genetic condition known as alpha-1 antitrypsin, or AAT, deficiency. While very few people know they have AAT deficiency, it is estimated that close to 100,000 Americans have it. People with AAT deficiency can get COPD even if they have never smoked or had long-term exposure to harmful pollutants.

For additional information on COPD, visit the NHLBI's Health Topics, MedlinePlus, or the American Lung Association's COPD information section.

COPD Learn More Breathe Better® Program

The COPD Learn More Breathe Better® program seeks to:

- **Bridge the gap between research and practice to:**
 - Educate healthcare providers on the benefits of early diagnosis and appropriate selection of treatment options.
- **Provide empowering calls to action to:**
 - Encourage people at risk for COPD to get a simple breathing test and talk to their healthcare provider about optimal treatment options.
 - Motivate those diagnosed with COPD to take personal ownership and responsibility for their overall care and treatment plans.

*James Kiley, Ph.D.,
director of the Division
of Lung Diseases at the
National Heart, Lung,
and Blood Institute
at NIH*



Photo By: NHLBI

Chronic obstructive pulmonary disease, COPD, kills more than 130,000 people a year. It's the third-leading cause of death in this country. There are as many as 24 million people that have this disease, and as many as half of those people don't know that they have COPD. That means that COPD affects someone you know.

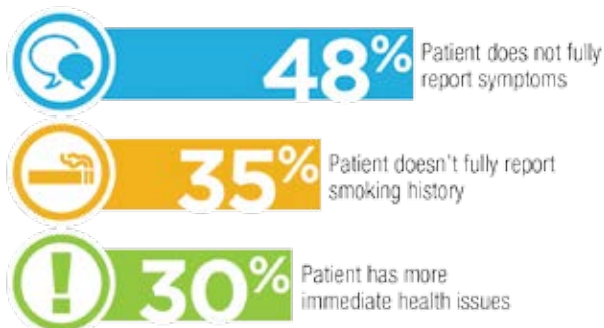
When NHLBI launched the Learn More Breathe Better campaign in 2007, we had very little information or awareness of COPD. Now, we can say with confidence that many, many Americans know what those four letters stand for. I'm very happy to say that today, all 50 states in the U.S. have COPD awareness programs.

Providers need to know we have tools, such as spirometers, bronchodilators, inhaled steroids, and pulmonary rehabilitation. We can control symptoms like chronic cough, shortness of breath, wheezing, excess sputum, and difficulty breathing.

The patient needs to know that if they don't talk to the doctor, they're not going to be able to get the doctor to provide them the information and help they need.

COPD is a preventable disease. If we take steps toward identifying people early, those at risk, and we provide them the educational materials, open a dialogue, and treat them, they will live a better life, and they'll breathe better.

TOP DIAGNOSIS BARRIERS HEALTH CARE PROVIDERS ENCOUNTER¹



To Find Out More

- MedlinePlus www.nlm.nih.gov/medlineplus/copd.html
- National Heart, Lung, and Blood Institute www.nhlbi.nih.gov/health/health-topics/topics/copd
- National Heart, Lung, and Blood Institute's Learn More Breathe Better® www.nhlbi.nih.gov/health/educational/copd/
- COPD Foundation www.copdfoundation.org
- Centers for Disease Control and Prevention (CDC) www.cdc.gov/copd/

COPD Quiz

Test your knowledge about the causes and symptoms of COPD. Learn how the disease affects the lungs and how you can prevent its complications. **Only one answer is correct.**

Question 1.

COPD is a lung disease that:

- A. usually starts during childhood and develops quickly
- B. makes it hard to breathe and gets worse over time
- C. is passed from person to person

Question 2.

In the United States, the term “COPD” describes two main conditions in the lungs:

- A. emphysema and pulmonary hypertension
- B. cystic fibrosis and chronic bronchitis
- C. emphysema and chronic bronchitis

Question 3.

The most common lung irritant that causes COPD is:

- A. allergies
- B. cigarette smoke
- C. air pollution

Question 4.

Common signs and symptoms of COPD include:

- A. fever
- B. an ongoing cough, or a cough that produces large amounts of mucus, and shortness of breath
- C. a racing heartbeat

Question 5.

If you have COPD, which steps can you take to prevent complications and slow the progress of the disease?

- A. quit smoking and avoid secondhand smoke
- B. avoid other lung irritants, such as air pollution, chemical fumes, and dust
- C. follow your treatment plan for COPD exactly as your doctor prescribes
- D. all of the above

Answers

Question 1.

The correct answer is B.

COPD is a lung disease that makes it hard to breathe. This is because less air flows in and out of the airways. COPD develops slowly. Most people who have COPD are at least 40 years old when symptoms begin. The disease isn't passed from person to person—you can't catch it from someone else. Symptoms often worsen over time and can limit your ability to do routine activities.

Question 2.

The correct answer is C.

In the United States, the term “COPD” includes two main conditions—emphysema and chronic bronchitis. In emphysema, the walls between many of the air sacs in the lungs are damaged. In chronic bronchitis, the lining of the airways is constantly irritated and inflamed. Most people who have COPD have both emphysema and chronic bronchitis. Thus, the general term “COPD” is more accurate.

Question 3.

The correct answer is B.

In the United States, the most common irritant that causes COPD is cigarette smoke. Pipe, cigar, and other types of tobacco smoke also can cause COPD, especially if the smoke is inhaled. Secondhand smoke—that is, smoke in the air from other people smoking—also can irritate the lungs and contribute to COPD.

Question 4.

The correct answer is B.

People who have COPD often have an ongoing cough or a cough that produces large amounts of mucus. Other common signs and symptoms include shortness of breath, especially with physical activity; wheezing (a whistling or squeaky sound when you breathe); and chest tightness.

Question 5.

The correct answer is D.

If you have COPD, the most important step you can take is to quit smoking. This can help prevent complications and slow the progress of the disease. You also should avoid other lung irritants (such as secondhand smoke, air pollution, chemical fumes, and dust) and follow your treatment plan.

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- C. follow your treatment plan for COPD exactly as your doctor prescribes
- D. all of the above

Time to Get Your Seasonal Flu Shot

Flu season runs from October 2014 through May 2015. The best way to avoid catching the flu is by getting a flu vaccination each year. Here's what you need to know.

For the 2014-2015 flu season, the flu vaccine provides protection against three viruses: A (H1N1), A (H3N2), and B.

The Centers for Disease Control and Prevention (CDC) recommends a yearly flu vaccine for everyone 6 months of age and older as the first and most important step in protecting against this serious disease.

While there are many different flu viruses, the seasonal flu vaccine is designed to protect against the top three or four flu viruses that research indicates will cause the most illness during the flu season.

People should begin getting vaccinated soon

after flu vaccine becomes available, ideally by October, to ensure that as many people as possible are protected before flu season begins.

Flu vaccines are designed to protect against flu viruses that experts predict will be the most common during the upcoming season. Three kinds of flu viruses commonly circulate among people today: influenza A (H1N1) viruses, influenza A (H3N2) viruses, and influenza B viruses. Each year, one or two flu viruses of each kind are used to produce the seasonal influenza vaccine.



Photo: iStock

Give Your Sneeze the Sleeve!

If you don't have a tissue to cover your mouth and nose, cough or sneeze into your elbow, not your hands.

All of the 2014-2015 influenza vaccine is made to protect against the following three viruses:

- an A/California/7/2009 (H1N1)pdm09-like virus
- an A/Texas/50/2012 (H3N2)-like virus
- a B/Massachusetts/2/2012-like virus.

Some of the 2014-2015 flu vaccine also protects against an additional B virus (B/Brisbane/60/2008-like virus).

Vaccines that give protection against three viruses are called trivalent vaccines. Vaccines that give protection against four viruses are called quadrivalent vaccines.

More information about influenza vaccines is available at www.cdc.gov/flu/protect/vaccine/index.htm

Signs and Symptoms of Flu

People who have the flu often feel some or all of these signs and symptoms:

- Fever* or feeling feverish/chills
- Headaches
- Cough
- Fatigue (very tired)
- Sore throat
- Some people may have vomiting and diarrhea, though this is more common in children than adults.
- Runny or stuffy nose
- Muscle or body aches

***It's important to note that not everyone with flu will have a fever.**

How flu spreads

Most experts believe that flu viruses spread mainly by droplets made when people with flu cough, sneeze, or talk. These droplets can land in the mouths or noses of people who are nearby. Less often, a person might also get flu by touching a surface or object that has flu virus on it and then touching their own mouth, eyes, or possibly their nose.

Period of contagiousness

You may be able to pass on the flu to someone else before you know you are sick, as well as while you are sick. Most healthy adults may be able to infect others beginning one day **before** symptoms develop and up to 5 to 7 days **after** becoming sick. Some people, especially young children and people with weakened immune systems, might be able to infect others for an even longer time.

How serious is the flu?

Certain people are at greater risk for serious complications if they get the flu. This includes older people, young children, pregnant women, and people with certain health conditions

(such as asthma, diabetes, or heart disease), and persons who live in facilities like nursing homes.

Flu seasons are unpredictable and can be severe. Over a period of 30 years, between 1976 and 2006, estimates of flu-associated deaths in the United States range from a low of about 3,000 to a high of about 49,000 people.

Preventing seasonal flu: Get vaccinated

The single best way to prevent the flu is to get a flu vaccine each season. There are two types of flu vaccines:

- ✓ "Flu shots"—inactivated vaccines (containing killed virus) that are given with a needle. There are three flu shots being produced for the United States market now.
- ✓ The nasal-spray flu vaccine—a vaccine made with live, weakened flu viruses that is given as a nasal spray (sometimes called LAIV for "Live Attenuated Influenza Vaccine"). The viruses in the nasal spray vaccine do not cause the flu. LAIV is approved for use in healthy people 2 to 49 years of age who are not pregnant.



Photo: Centers for Disease Control and Prevention

Nasal-Spray Option

For those who do not receive a "flu shot," a nasal-spray flu vaccine is available.

Find out more

- ✓ MedlinePlus:
www.nlm.nih.gov/medlineplus/flu.html
- ✓ National Institute of Allergy and Infectious Diseases:
www.niaid.nih.gov/topics/Flu
- ✓ U.S. Department of Health and Human Services:
<http://flu.gov>
- ✓ Centers for Disease Control and Prevention:
www.cdc.gov/flu/
- ✓ ClinicalTrials.gov:
www.clinicaltrials.gov; type "influenza" into the Search box to find the latest flu studies

Find Flu Clinics Near You at www.flu.gov

Use the Flu Vaccine Finder at www.flu.gov/prevention-vaccination/vaccination/index.html to find nearby locations offering flu shots or nasal spray flu vaccine. Locations are being added and updated throughout the season by the Department of Health and Human Services (HHS).

Flu Vaccine Finder

Find flu clinics near you

The new seasonal flu vaccine protects against H1N1. All ages need protection.

powered by Google

VISIT FLU.GOV SHARE THIS WIDGET

DIABETES

IS SERIOUS BUT
MANAGEABLE

type 2

Am I at
Risk?



If you have wondered or possibly been told that you are at risk for developing diabetes or that you have prediabetes, you should know that diabetes prevention is proven, possible, and powerful. Studies show that people at high risk for diabetes can prevent or delay the onset of the disease by losing 5 to 7 percent of their weight, if they are overweight—that's 10 to 14 pounds for a 200-pound person.

Two keys to success:

1
Get at least 30 minutes of moderate-intensity physical activity five days a week.

2
Eat a variety of foods that are low in fat and reduce the number of calories you eat per day.

In other words, you don't have to knock yourself out to prevent diabetes. The key is: small steps that lead to big rewards. Learn more about your risk for developing type 2 diabetes and the small steps you can take to delay or prevent the disease and live a long, healthy life.

Diabetes Risk Factors

There are many factors that increase your risk for diabetes. To find out about your risk, note each item on this list that applies to you.

Nearly 26 million Americans have diabetes, a serious disease in which blood glucose (blood sugar) levels are above normal. Most people with diabetes have type 2, which used to be called adult-onset diabetes. At one time, type 2 diabetes was more common in people over age 45. But now more young people, even children, have the disease because many are overweight or obese.

- I am 45 years of age or older.
- The At-Risk Weight Chart shows my current weight puts me at risk. <http://ndep.nih.gov/am-i-at-risk/DiabetesRiskFactors.aspx#weightcharts>
- I have a parent, brother, or sister with diabetes.
- My family background is African American, Hispanic/Latino, American Indian, Asian American, or Pacific Islander.
- I have had diabetes while I was pregnant (this is called gestational diabetes) or I gave birth to a baby weighing 9 pounds or more.
- I have been told that my blood glucose (blood sugar) levels are higher than normal.
- My blood pressure is 140/90 or higher, or I have been told that I have high blood pressure.
- My cholesterol (lipid) levels are not normal. My HDL cholesterol ("good" cholesterol) is less than 35 or my triglyceride level is higher than 250.
- I am fairly inactive. I am physically active less than three times a week.
- I have been told that I have polycystic ovary syndrome (PCOS).
- The skin around my neck or in my armpits appears dirty no matter how much I scrub it. The skin appears dark, thick and velvety. This is called acanthosis nigricans.
- I have been told that I have blood vessel problems affecting my heart, brain, or legs.
- If you have any of the items above, be sure to talk with your health care team about your risk for diabetes and whether you should be tested. Diabetes is preventable.



Gestational Diabetes

If you had gestational diabetes when you were pregnant, you and your child have a lifelong risk for getting diabetes.



Family Health History

Family health history is an important risk factor for developing a number of serious diseases, including type 2 diabetes. In fact, most people with type 2 diabetes have a family member—such as a mother, father, brother, or sister—with the disease.



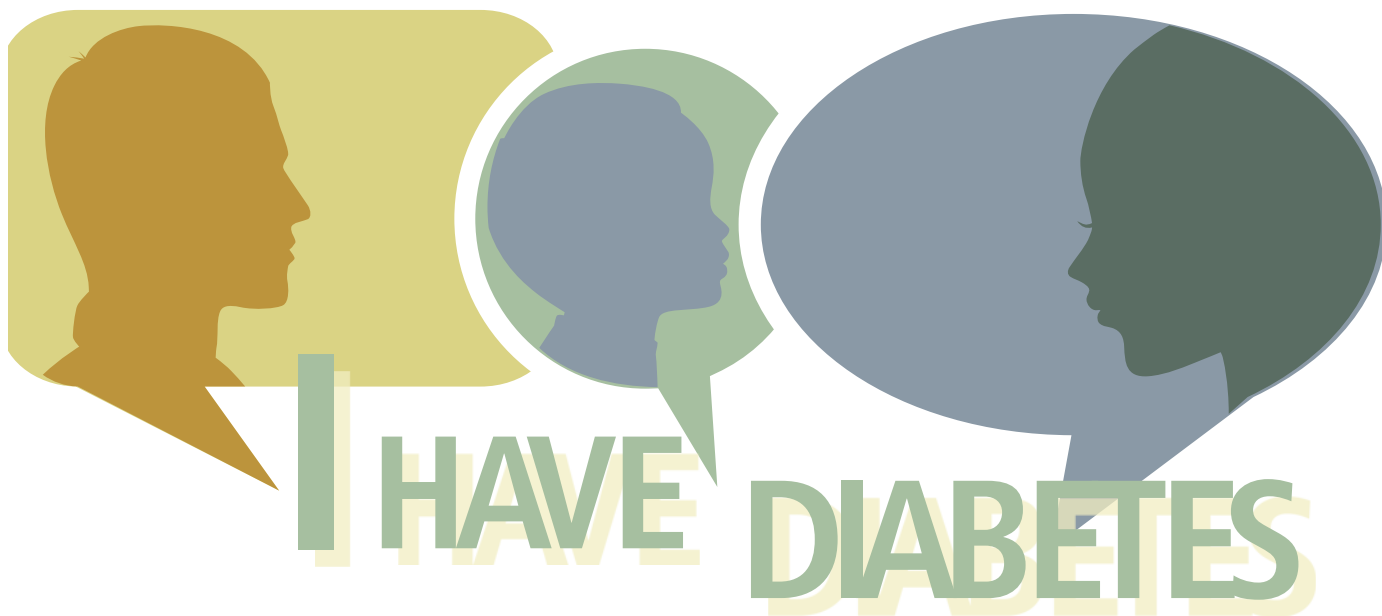
Take Small Steps to Prevent Diabetes

When you take steps to prevent diabetes, you will also lower your risk for possible complications of diabetes such as heart disease, stroke, kidney disease, blindness, nerve damage, and other health problems. That's a big reward for you and your family and friends.



Diabetes HealthSense

Find tools and programs that can help you with making lifestyle and behavior changes. Diabetes HealthSense also includes research articles on lifestyle changes and behavioral strategies. <http://ndep.nih.gov/resources/diabetes-healthsense/>



If you are living with diabetes or have a loved one with the disease, it's important to work together to manage diabetes to stay healthy and prevent complications. Managing diabetes is not easy, but support from family members can make it much easier. The NDEP has resources for making healthy lifestyle choices that not only help people with diabetes manage the disease, but also help keep the whole family healthy!

Here are four key steps to help you control your diabetes and live a long, active life.

Step 1: Learn About Diabetes

Diabetes means that your blood glucose (blood sugar) is too high. There are two main types of diabetes.

Type 1 diabetes—the body does not make insulin. Insulin helps the body use glucose from food for energy. People with type 1 need to take insulin every day.

Type 2 diabetes—the body does not make or use insulin well. People with type 2 often need to take pills and or insulin. Type 2 is the most common form of diabetes.

Celebrities who have diabetes



▲ After battling high blood sugar for 20 years, Tom Hanks went from prediabetes to type 2 diabetes in 2013. Photo By: Frazer Harrison



▲ In 1995, singer Patti LaBelle collapsed on stage from type 2 diabetes. But today, she manages the disease with healthy foods and exercise. Photo By: Frazer Harrison



▲ When Alec Baldwin was diagnosed with prediabetes, he cut out sweets and carbs and lost 30 pounds to lower his blood sugar. Photo By: Andreas Rentz



▲ David Letterman recently said that he fights high blood sugar—the same night that his guest, Tom Hanks, revealed his own diabetes. Photo By: Brendan Hoffman

Gestational diabetes—may occur when a woman is pregnant. Gestational diabetes raises her risk of getting another type of diabetes, mostly type 2, for the rest of her life. It also raises her child's risk of being overweight and getting diabetes.

Diabetes is serious.

You may have heard people say they have “a touch of diabetes” or “your sugar is a little high.” These words suggest that diabetes is not a serious disease. That is not correct. Diabetes is serious, but you can learn to manage it!

All people with diabetes need to make healthy food choices, stay at a healthy weight, and be physically active every day.

Taking good care of yourself and your diabetes can help you feel better. It may help you avoid health problems caused by diabetes, such as:

- heart disease and stroke.
- eye problems that can lead to trouble seeing or going blind.
- nerve damage that can cause your hands and feet to feel numb. Some people may even lose a foot or a leg.
- kidney problems that can cause your kidneys to stop working.
- gum disease and loss of teeth.

When your blood glucose (blood sugar) is close to normal, you are likely to:

- have more energy.
- be less tired and thirsty and urinate less often.
- heal better and have fewer skin or bladder infections.
- have fewer problems with your eyesight, feet, and gums.

Learn how caring for your diabetes helps you feel better today and in the future.

Actions you could take:

- ✓ Ask your health care team what type of diabetes you have.
- ✓ Learn why diabetes is serious.
- ✓ Learn what your A1C, blood pressure, and cholesterol numbers are
- ✓ What should your ABC numbers should be
- ✓ What you can do to reach your targets

Step 2: Know Your Diabetes ABCs

Talk to your health care team about how to manage your A1C (blood glucose or sugar), Blood Pressure, and Cholesterol. This will help lower your chances of having a heart attack, a stroke, or other diabetes problems. Here's what the ABCs of diabetes stand for:

A for the A1C test.

The A1C test shows you what your blood glucose has been over the last three months. The A1C goal for many people is below 7. High blood glucose levels can harm your heart and blood vessels, kidneys, feet, and eyes.

B for Blood Pressure.

Your blood pressure goal should be below 140/80 unless your doctor helps you set a different goal.

High blood pressure makes your heart work too hard. It can cause heart attack, stroke, and kidney disease.

C for Cholesterol.

Ask what your cholesterol numbers should be. LDL or “bad” cholesterol can build up and clog your blood vessels. It can cause a heart attack or a stroke. HDL or “good” cholesterol helps remove cholesterol from your blood vessels.

Diabetes HealthSense

Find tools and programs that can help you with making lifestyle and behavior changes. Diabetes HealthSense also includes research articles on lifestyle changes and behavioral strategies.

<http://ndep.nih.gov/resources/diabetes-healthsense/>

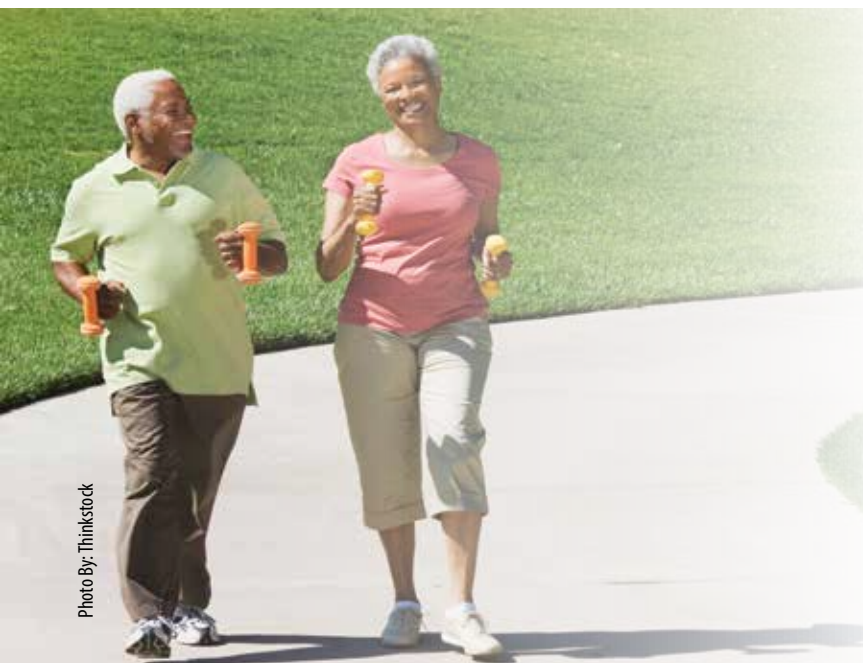




Photo By: Thinkstock

Step 3: Manage Your Diabetes

Many people avoid the long-term problems of diabetes by taking good care of themselves. Work with your health care team to reach your ABC goals (A1C, Blood Pressure, Cholesterol): Use this self-care plan.

- Use your diabetes meal plan. If you do not have one, ask your health care team about one.
 - Make healthy food choices such as fruits and vegetables, fish, lean meats, chicken or turkey without the skin, dry peas or beans, whole grains, and low-fat or skim milk and cheese.
 - Keep fish and lean meat and poultry portion to about 3 ounces (or the size of a deck of cards). Bake, broil, or grill it.
 - Eat foods that have less fat and salt.
 - Eat foods with more fiber such as whole-grain cereals, breads, crackers, rice, or pasta.
- Get 30 to 60 minutes of physical activity on most days of the week. Brisk walking is a great way to move more.
- Stay at a healthy weight by using your meal plan and moving more.
- Ask for help if you feel down. A mental health counselor, support group, member of the clergy, friend, or family member who will listen to your concerns may help you feel better.
- Learn to cope with stress. Stress can raise your blood glucose (blood sugar). While it is hard to remove stress from your life, you can learn to handle it.
- Stop smoking. Ask for help to quit.
- Take medicines even when you feel good. Ask your doctor if you need aspirin to prevent a heart attack or stroke. Tell your doctor if you cannot afford your medicines or if you have any side effects.
- Check your feet every day for cuts, blisters, red spots, and swelling. Call your health care team right away about any sores that do not go away.
- Brush your teeth and floss every day to avoid problems with your mouth, teeth, or gums.
- Check your blood glucose (blood sugar). You may want to test it one or more times a day.
- Check your blood pressure if your doctor advises.
- Report any changes in your eyesight to your doctor.
- Talk with your health care team about your blood glucose targets. Ask how and when to test your blood glucose and how to use the results to manage your diabetes.

Discuss how your self-care plan is working for you each time you visit your health care team.

Step 4: Get Routine Care to Avoid Problems

See your health care team at least twice a year to find and treat any problems early. Ask what steps you can take to reach your goals.

If you have diabetes...

...at each visit be sure you have a:

- blood pressure check
- foot check
- weight check
- review of your self-care plan shown in Step 3

...two times each year get:

- A1C test—it may be checked more often if it is over 7

...once each year be sure you have a:

- cholesterol test
- triglyceride test—a type of blood fat
- complete foot exam
- dental exam to check teeth and gums—tell your dentist you have diabetes
- dilated eye exam to check for eye problems
- flu shot
- urine and a blood test to check for kidney problems

...at least once get a:

- Pneumonia shot

Actions you could take.

- Ask your health care team about these and other tests you may need. Ask what the results mean.
- Write down the date and time of your next visit.
- If you have Medicare, ask your health care team if Medicare will cover some of the costs for
 - learning about healthy eating and diabetes self-care
 - special shoes, if you need them
 - medical supplies
 - diabetes medicines

Diabetes and Heart Health

If you have diabetes, it is important to take care of your heart. Learn about how diabetes affects your heart and tips for lowering your risk for heart disease and other heart problems.

People with diabetes should be aware of their heart health. Having diabetes makes heart attack and stroke more likely—but it doesn't have to. Research has shown that people with diabetes can lower their risk for heart disease and other heart problems by managing the ABCs of diabetes—A1C, Blood Pressure, Cholesterol—and stopping smoking. The NDEP provides educational resources for people with diabetes and health care professionals to raise awareness of the effect of diabetes on heart health.



Photo By: Thinkstock

Accelerating Medicines Partnership

(AMP—Part 3 of 4)

Type 2 Diabetes

The NIH, pharmaceutical companies, and nonprofit organizations have together created the Accelerating Medicines Partnership (AMP) to develop new models

for identifying and validating promising biological targets for new diagnostics and drug development. The partners have designed a project plan to address relevant challenges for type 2 diabetes.

Read Part 1 on lupus in MedlinePlus magazine, Spring 2014 issue: www.nlm.nih.gov/medlineplus/magazine/

Read Part 2 on rheumatoid arthritis in MedlinePlus magazine,

Summer 2014 issue: www.nlm.nih.gov/medlineplus/magazine/





Photo By: Dr. Teresa Woodruff

▲ Dr. Teresa Woodruff (far right) directs the Oncofertility Consortium, based at the Feinberg School of Medicine at Northwestern University. With her are some of the Consortium's cancer survivor members.

Oncofertility

*A New Medical Specialty
Helping Young Cancer
Patients Have Children*

“Oncofertility” is a new term that addresses an old problem: the fertility needs of young cancer patients. The word itself was coined through NIH-sponsored research.

Ten years ago, the idea of having children after cancer would not have been thought of at all. Today, due to the impressive rise in cancer survivors, this is an issue that women increasingly want addressed.

The ability to easily preserve male sperm prior to cancer treatment has provided hope at the time of diagnosis and families later in life.

However, women and girls faced with a cancer diagnosis have lacked the fertility preservation options that men were given. Loss of ovarian function in young women can cause several secondary health problems, including increased risk for cardiovascular disease and osteoporosis.

But beyond the physical challenges, loss of ovarian functioning can alter a woman's confidence in relationships, her ability to reach

desired family and financial plans, and may even alter her feelings of femininity and sense of self.

Today, there is a globally connected network of specialists ready to manage the specific needs of young cancer patients. This Oncofertility Consortium National Physicians Cooperative shares data and best practices and ensures patients are provided rapid information, the most up-to-date options, and treatment plans that are coordinated with cancer care.

“For certain cancers, treatments have become so successful that survivors can now focus on life after cancer,” says Alan E. Guttmacher, MD, director of the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD). “And for many, the ability

to have biological children is a major quality of life issue. NICHD has played a significant role in advancing the field of fertility preservation by supporting research on new technologies, which have helped

increase survivors' likelihood of having biological children."

Now, thousands of women have been provided fertility options, and babies have been born to healthy mothers who have fought cancer and now face a future that includes family.

Established through an Interdisciplinary Roadmap Grant from the NIH, the Oncofertility Consortium represents a group of oncologists, reproductive endocrinologists, and scientists, bioengineers, bioethicists, allied health professions, and many others developing new strategies for fertility preservation for female cancer survivors (<http://oncofertility.northwestern.edu>).

"Researchers are making terrific progress in fine-tuning reproductive

technologies that will give patients more options," says Charisee Lamar, PhD, director of the fertility research programs at the NICHD. "This research will improve the lives not only of cancer survivors, but also of others who experience infertility due to certain genetic factors, as well as other chronic illnesses."

To offer hope of fertility to women with cancer and other sterilizing conditions, the Consortium helps patients address an array of complex issues.

Among these challenges, young women with cancer have not reached their peak economic status. The higher-than-normal hospitalizations, follow-up visits, and inability to be insured have great consequences on decision-making and quality of life concerns.

Even if a risk factor for infertility can be assessed:

- How does the patient, or indeed the parent of a small child, make sense of that information?
- How do they navigate the ethical and legal issues surrounding consent and assent?
- How do patients, families, and healthcare staff come together and make a treatment decision?
- What are the long-term consequences of infertility for young women diagnosed with cancer?

Indeed, when we asked adult survivors of childhood cancer and their parents about fertility, they told us, "... it was very upsetting when I was told at the onset of treatment that ... my ability to conceive may or may not be affected. So, even at 15 I was still very upset about that ..."; "I didn't want to continue with treatment after they told me that I had ovarian failure. You know it was ... it was very traumatic."

The NIH-supported research, clinical networks and patient decision aids created this new field of oncofertility and a new way to think about science—from bench to bedside to babies.

"... I knew in my bones that something was wrong ..."

—Colleen Cira, cancer survivor & mom

When I was 15 years old and first diagnosed with Hodgkin's lymphoma, I was nowhere near thinking about being a parent. Despite that, I vividly remember being told by my oncologist that having chemotherapy and radiation may make it difficult to have children, and I wouldn't know if that were true or not until I started trying.

While I don't remember having a significant emotional reaction to that information at the time, I know that when I approached my decision to have children with my husband just three years ago, I carried with me a tremendous amount of skepticism about my ability to bear children because I am a cancer survivor. Today, I have the most adorable, curious, and sweetest little 19-month-old I could ever dream of. But he didn't come easy.

Just a few months into "trying" with no results, I knew in my bones that something was wrong and that the standard "wait a year" advice was not going to fly for me because of my history. Thank God for the Survivors Taking Action & Responsibility (STAR) program at Northwestern University, because they immediately put me in touch with Kristin Smith at Northwestern University's Oncofertility Clinic.

Within a matter of weeks, I learned that chemo and/or radiation had killed off practically all of my eggs; I was almost 100 percent infertile. As a result, the typical first-line fertility treatments were not going to work for me. My treatment team told me that we immediately needed to start preparing for intrauterine insemination (IUI) because if IUI was not successful, they wanted to start in vitro fertilization (IVF) immediately—they didn't know how big the window was between 97-to-100 percent infertile.

In a matter of a month, I began taking medication, giving myself two shots every day and going to the infertility clinic constantly. To complicate the picture, the insurance that my husband and I had did not cover the treatments or procedures. It was an exhausting time for my husband and myself, physically, emotionally, and financially. I was terrified about the possibility of the treatments not working ... about not ever having the opportunity to be someone's biological mom. What I feel so incredibly lucky to say is that there is a happy ending. After one IUI attempt, I became pregnant with Lincoln.

A small part of me feels silly even writing this because now I know so many people who have struggled to have children. People who try for years, who cannot identify the cause for their infertility, who try procedure after procedure with no results. It is with this perspective that I feel so incredibly blessed to have the luck we did with IUI and the beautiful baby boy it allowed us to create.

Find out more at: <http://blog.oncofertility.northwestern.edu>



Photo By: NICHD

▲ Alan E. Guttmacher, MD, director of the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD).



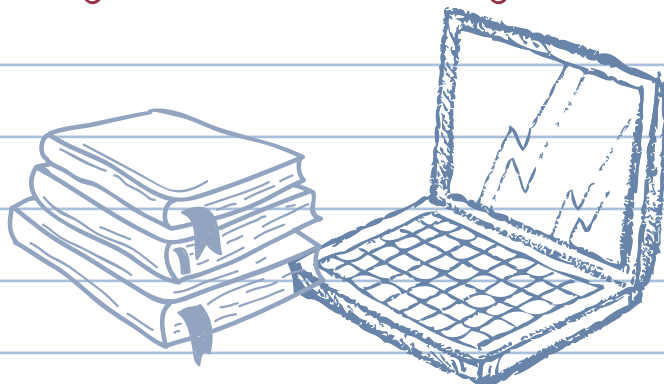
Photo By: Thinkstock



Health Tips

Your child spends more time at school than anywhere else except home. Make sure your school-aged children are ready for a healthy school year before and while they attend.

Whether you're a parent or educator, use these resources and tips to prepare for and work through common challenges, such as getting vaccinated, getting enough sleep and exercise, and eating healthy lunches and snacks.



Check-Ups and Immunizations

It's a good idea to take your child in for a physical and eye exam before school starts. If your child will be participating in a sports activity, your family doctor may have to sign a release form to permit your child to participate.

Most schools require that your child's immunization shots be up-to-date. Remember, that each state has different immunization requirements. Let your healthcare provider know if you have any questions or concerns about the vaccines your child is scheduled to receive.

School entry may require documentation of immunization records. Find out what your child's school requires and bring any school forms for your healthcare provider to fill out and sign. Be sure to keep your own copy of any records. Failure to keep immunizations up-to-date could prevent your child from attending school.



Vaccines Stop Illness

To prevent the spread of disease, it is more important than ever to vaccinate your child. In the United States, vaccines have reduced or eliminated many infectious diseases that once routinely killed or harmed many infants, children, and adults. However, the viruses and bacteria that cause vaccine-preventable disease and death still exist and can be passed on to people who are not protected by vaccines.

Some diseases (like polio and diphtheria) are becoming very rare in the United States. Of course, they are becoming rare largely because we have been vaccinating against them. Unless we can completely eliminate the disease, it is important to keep immunizing. Even if there are only a few cases of disease today, if we take away the protection given by vaccination, more and more people will be infected and will spread disease to others.

We don't vaccinate just to protect our children. We also vaccinate to protect our grandchildren and their grandchildren. With one disease, smallpox, we eradicated the disease. Our children don't have to get smallpox shots any more because the disease no longer exists. If we keep vaccinating now, parents in the future may be able to trust that diseases like polio and meningitis won't infect, cripple, or kill children.



Which Vaccines Do Kids Need, and When?

- **Tdap:** A booster to protect against tetanus, diphtheria, and pertussis (whooping cough). Recommended for preteens (11-12), as well as any teens (13-18) who haven't gotten this shot yet.
- **Meningococcal conjugate vaccine (MCV4):** Protects against meningococcal disease. First dose is recommended at age 11 or 12 followed by a booster (2nd shot) at age 16-18.
- **Human papillomavirus (HPV) vaccine:** Protects against the types of HPV that cause most cervical cancers. HPV vaccine is given in three doses over a 6-month period to boys and girls starting at 11-12 years old.
- **Influenza (flu) vaccine:** Protects against different strains of seasonal influenza. A yearly dose is recommended for everyone 6 months and older.
- Also, check to confirm that your teen has received all recommended childhood vaccines, or if they need to catch up on any vaccines they have not yet received.

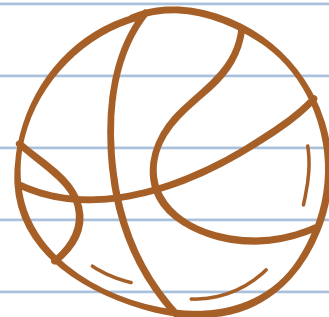
6 “Bests” About Kids’ Exercise

At least one hour of physical activity a day helps kids to:

- ✓ **Feel less stressed**
- ✓ **Feel better about themselves**
- ✓ **Feel readier to learn in school**
- ✓ **Keep a healthy weight**
- ✓ **Build sturdy muscles, bones, and joints**
- ✓ **Sleep better at night**

More time in front of the TV means less time playing and running. So parents should limit TV, video game time, and computer time. They should set a good example by being physically active themselves.

Exercising together can be fun for everyone. Some easy ways for kids to stay active include walking or biking to school, jumping rope, going to the playground, and participating in organized sports programs.



Getting Enough ZZZZ's

Nodding off in school may not be the only outcome for otherwise healthy teens who don't get enough sleep. A study funded by the National Heart, Lung, and Blood Institute (NHLBI) links poor sleep in teens (ages 13 to 16 years old) to higher blood pressure.

Researchers found that teens who got less than 6½ hours sleep were 2½ times more likely to have elevated blood pressure than teens who slept longer. Also, teens who had trouble falling asleep or staying asleep were 3½ times more likely to have high blood pressure or pre-high blood pressure than teens who slept well. These results are similar to findings from other studies in adults. High blood pressure, if left untreated, can increase the risk of stroke and heart diseases later in life.

- ✓ **Sleep Facts:** School-aged children and teens need at least nine hours of sleep a night. Adults need seven to eight hours of sleep a night.
- ✓ **Sleep Tips:** Set a sleep schedule, going to bed and waking up the same times each day. Keep room temperature on the cool side. A TV or computer in the bedroom can be a distraction.





10 Healthy Breakfast and Lunch Tips

Remember that nutrition is an important factor in academic performance. Studies have shown that children who eat healthful, balanced breakfasts and lunches are more alert throughout the school day and earn higher grades than those who have an unhealthy diet.

Making food choices for a healthy lifestyle for you and your child can be as simple as using these 10 tips. Use the ideas in this list to balance your calories, to choose foods to eat more often, and to cut back on foods to eat less often.

- 1. Balance Calories:** Find out how many calories you need for a day as a first step in managing your weight. Go to www.ChooseMyPlate.gov to find your calorie level. Being physically active also helps you balance calories.
- 2. Enjoy Your Food, But Eat Less:** Take the time to fully enjoy your food as you eat it. Eating too fast or when your attention is elsewhere may lead to eating too many calories. Pay attention to hunger and fullness cues before, during, and after meals. Use them to recognize when to eat and when you've had enough.
- 3. Avoid Oversized Portions:** Use a smaller plate, bowl, and glass. Portion out foods before you eat. When eating out, choose a smaller-size option, share a dish, or take home part of your meal.
- 4. Foods to Eat More Often:** Eat more vegetables, fruits, whole grains, and fat-free or 1% milk and dairy products. These foods have the nutrients you need for health—including potassium, calcium, vitamin D, and fiber. Make them the basis for meals and snacks.
- 5. Make Half Your Plate Fruits and Vegetables:** Choose red, orange, and dark-green vegetables like tomatoes, sweet potatoes, and broccoli, along with other vegetables for your meals. Add fruit to meals as part of main or side dishes or as dessert.
- 6. Switch to Fat-Free or Low-Fat (1%) Milk:** They have the same amount of calcium and other essential nutrients as whole milk, but fewer calories and less saturated fat.
- 7. Make Half Your Grains Whole Grains:** To eat more whole grains, substitute a whole-grain product for a refined product—such as eating whole-wheat bread instead of white bread or brown rice instead of white rice.
- 8. Foods to Eat Less Often:** Cut back on foods high in solid fats, added sugars, and salt. They include cakes, cookies, ice cream, candies, sweetened drinks, pizza, and fatty meats like ribs, sausages, bacon, and hot dogs. Use these foods as occasional treats, not everyday foods.
- 9. Compare Sodium in Foods:** Use the Nutrition Facts label to choose lower sodium versions of foods like soup, bread, and frozen meals. Select canned foods labeled "low sodium," "reduced sodium," or "no salt added."
- 10. Drink Water Instead of Sugary Drinks:** Cut calories by drinking water or unsweetened beverages. Soda, energy drinks, and sports drinks are a major source of added sugar, and calories, in American diets.

—Source: ChooseMyPlate.gov and National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)



Meet the Bionic Man

“Bionic Man” Showcases Medical Research

The National Institute of Biomedical Imaging and Bioengineering (NIBIB) recently launched the “Bionic Man,” an interactive web tool showcasing the latest research advances in biotechnology.

It features fourteen technologies being developed by NIBIB-supported researchers. Examples include a powered prosthetic leg that helps users achieve a more natural gait, a wireless brain-computer interface that lets people with paralyzed legs and arms control computer devices or robotic limbs using only their thoughts, and a micro-patch that delivers vaccines painlessly and doesn't need refrigeration.

The bionic man can be found at www.nibib.nih.gov/science-education/bionic-man. For more info, videos, and other resources on biotechnology and medical imaging, visit www.nibib.nih.gov

Flexible Electrodes Record Brain's Activity

Flexible electrode array records brain activity from the surface of the brain and could be used to control robotic arms or provide real-time information about brain states.



Image By: Joseph Hippensteel, University of Wisconsin

Photo By: Richard Weir, University of Colorado, Denver



Implantable Sensors for Prosthesis Control

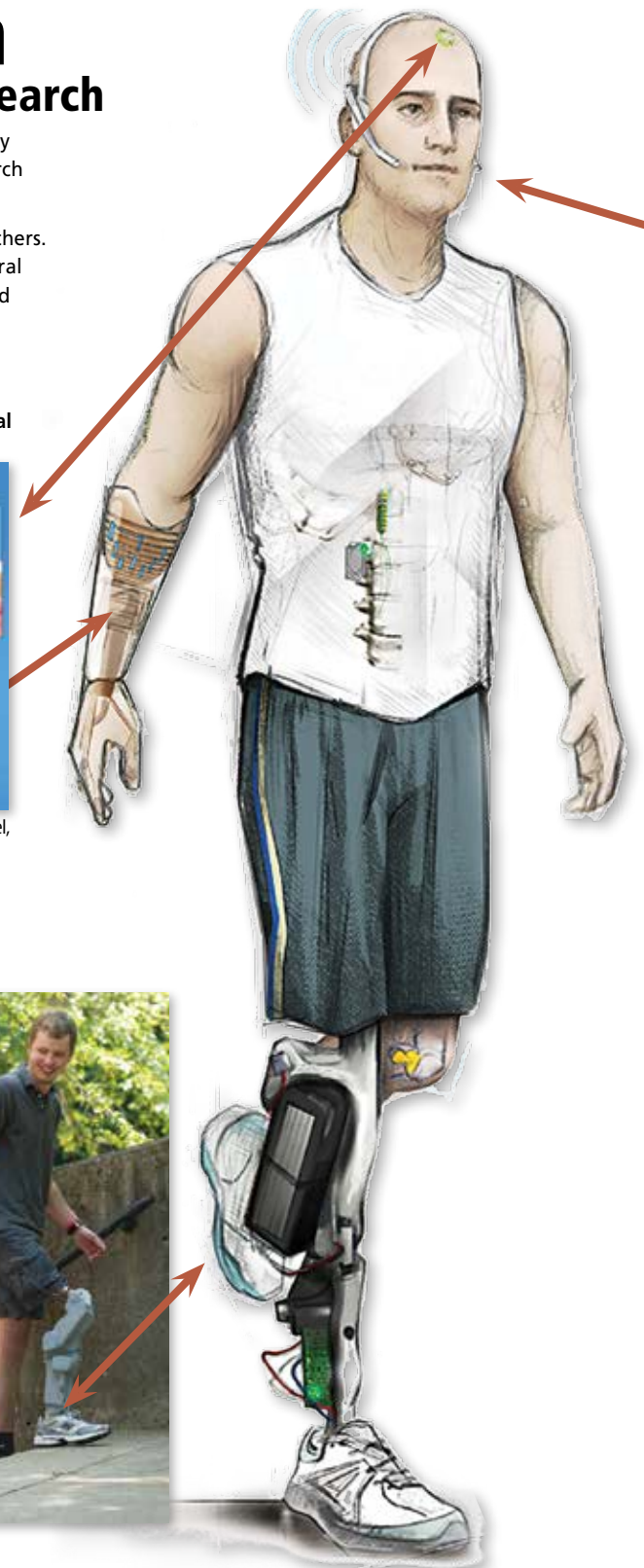
Implantable myoelectric (electrical properties of muscle) sensors detect nerve signals above a missing limb. These signals can then be used to move a prosthesis in a more natural way, such as enabling individual finger control.

Photo By: John Russell, Vanderbilt University



Robotic Leg Prosthesis

This powered robotic prosthesis senses a person's next move and provides powered assistance to achieve a more natural gait.



Tongue Drive System

Tongue Drive System helps individuals with severe paralysis navigate their environment using only tongue movements.



Photos By: Maysam Ghovanloo, Georgia Institute of Technology



Other Innovative Advances

Cartilage Regeneration

A light sensitive biogel and biological adhesive help new cartilage grow and become functional.

Blood Clot Emulator

A blood clot emulator can be used to optimize ventricular assist devices to reduce the risk of blood clots.

Artificial Kidney

An artificial kidney could be used in place of kidney dialysis for treatment of end-stage kidney disease.

Microneedle Patch

This microneedle patch delivers vaccines painlessly and doesn't require refrigeration.

Interstitial Pressure Sensor

Interstitial pressure sensor could help doctors determine optimal times for delivering chemotherapy/radiation to cancer patients.

Glucose-Sensing Contacts

Glucose-sensing contacts could provide a non-invasive solution for continuous blood sugar monitoring.

Wireless Brain-Computer Interface

The wireless brain-computer interface records and transmits brain activity wirelessly and could allow people with paralysis to use their thoughts to control robotic arms or other devices.

Synthetic Tissue Adhesive

A synthetic glue modeled after an adhesive found in nature could be used to repair tissues in the body.

Opening the Blood Brain Barrier with Ultrasound

Focused ultrasound could be used to temporarily open the blood brain barrier to let gene therapy treatments reach the brain.

Spinal Stimulation for Paralysis

Electrical stimulation of the spinal cord is being used in individuals with paralysis to help restore voluntary movement and other functions.

Find out more

- ✓ The Bionic Man at the National Institute of Biomedical Imaging and Bioengineering (NIBIB) www.nibib.nih.gov/science-education/bionic-man
- ✓ Info, videos, and other resources on biotechnology and medical imaging www.nibib.nih.gov
- ✓ National Center for Biotechnology Information (NCBI) www.ncbi.nlm.nih.gov/



Photo By: NIBIB

“The NIBIB Bionic Man showcases some amazing technological advances. It is designed to teach us about the inventive ways in which scientists and engineers have developed methods for improved detection and treatment of a variety of illnesses. All of these innovative advances have been supported by public funding and provide specific examples of the public's return on investment in biomedical research. Our overarching goal is to have a transformative impact on the health and well-being of the nation.”

—Roderic I. Pettigrew, Ph.D., M.D., is Director of the NIH's National Institute of Biomedical Imaging and Bioengineering (NIBIB).

THE VISIBLE HUMANS

Twenty years ago, the National Library of Medicine (NLM) did something that had never been done before. And the world still benefits from it.

NLM created a library of digital images representing the complete anatomy of a man and a woman who donated their bodies to science. Those two live on as the Visible Humans.

"The Visible Human images give a unique and detailed look inside the body," says Michael J. Ackerman, PhD, a biomedical engineer at NLM who led the development of the Visible Human Project. "People around the world can and do use the images in a

Photo s By: Fran Sandridge, National Library of Medicine



▲ These artful works were created using the Visible Human Project data. The two human-sized plexiglass books detailing the human body were created by the Exploratorium in San Francisco and are on display in the National Library of Medicine Visitor Center.

► The hand and arm images were created from Visible Human Project data around 2000, shown in contrast to similar images drawn by Leonardo DaVinci around 1500.

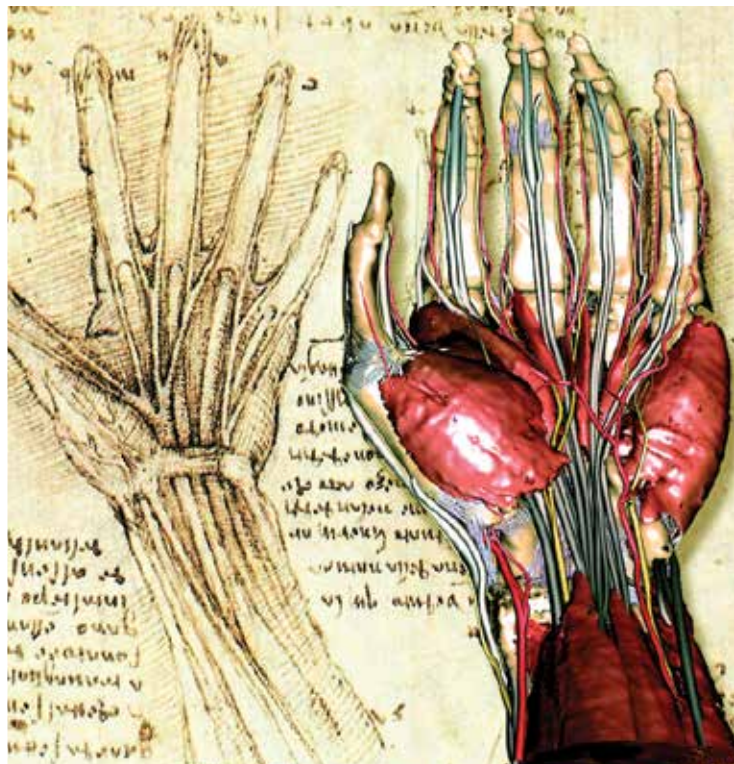


Photo s By: Karl Hoehne, University Medical Center, Hamburg

variety of ways. They have been used to help students learn anatomy; or to develop products like artificial limbs; or to create tools to help surgeons rehearse operations. They've even been used in artwork.

"The Visible Humans were introduced in 1994," Ackerman adds. Since then, more than 3,600 licenses to use the Visible Humans have been granted to people in more than 60 countries."

Anouk Stein, MD, for example, developed apps that help students from middle school to medical school, as well as patients, learn anatomy. Her iAnatomy app won a 2011 NLM app development challenge.

She says the images provide "exquisite detail" and stand the test of time. The fact that the enormous dataset is free to use is another plus. "It allowed me to experiment, to be creative," she explains. "I was grateful it was there."

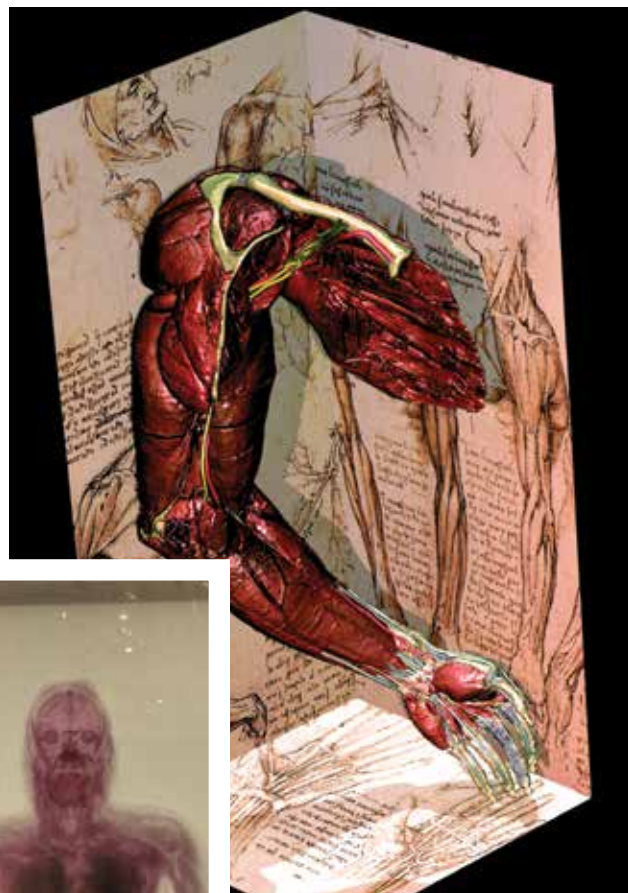


Photo s By: Karl Hoehne, University Medical Center, Hamburg

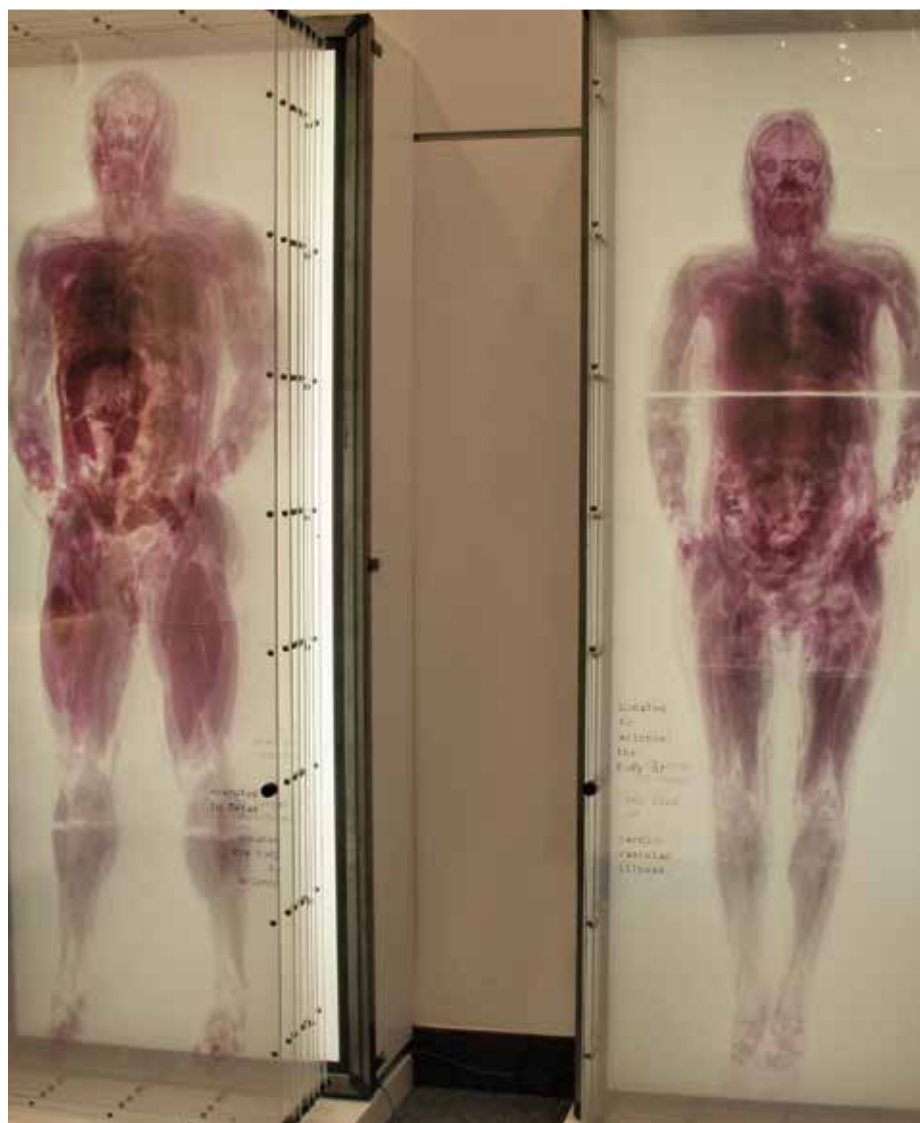


Photo s By: Fran Sandridge, National Library of Medicine

"The Visible Human images give a unique and detailed look inside the body. People around the world can and do use the images in a variety of ways. They have been used to help students learn anatomy; or to develop products like artificial limbs; or to create tools to help surgeons rehearse operations. They've even been used in artwork.

"The Visible Humans were introduced in 1994. Since then, more than 3,600 licenses to use the Visible Humans have been granted to people in more than 60 countries."

—Michael J. Ackerman, PhD, a biomedical engineer at NLM who led the development of the Visible Human Project

Ebola Virus Disease Information

The outbreak of Ebola virus disease in West Africa may have you looking for accurate and updated information. The Ebola topic page on Medlineplus.gov rounds up helpful information from the National Institutes of Health, the Centers for Disease Control and Prevention, and other reliable sources: www.nlm.nih.gov/medlineplus/ebola.html.

Helping Older Smokers Kick the Habit

Quitting smoking at any time in your life will improve your health. That's a key message in a new online resource, *Quitting Smoking for Older Adults*. There's a wealth of information, including tips to handle cravings and withdrawal, facts on smoking and your medicines, and ways to customize your own smoking quit plan. *Quitting Smoking for Older Adults* is the latest topic on NIHSeniorHealth.gov. NIH's National Cancer Institute developed the topic.

"This new topic, which offers a mix of tips and tools geared to the needs and experiences of older smokers, is an important, easy-to-use resource that can benefit those trying to quit for the first time, as well as those who have tried before," says Erik Augustson, PhD. He is the program director of the Tobacco Control Research Branch at the National Cancer Institute.

A Child's Eye View

What is colorblindness? What is an optical illusion? "Ask a Scientist" videos answer those questions and more. The videos are a fun way to help kids learn about their eyes and about careers in science and vision. The videos are the latest addition to the Educational Resources for Children webpage produced by NIH's National Eye Institute: www.nei.nih.gov/kids/.

The webpage includes tips on protecting your eyes while playing sports and activities for elementary and middle school students.

Pictures of Nursing

A new exhibition gives a unique look at nursing.

Pictures of Nursing is a selection of historic postcards with images of nurses from around the world. The postcards date back to the late 1800s and reflect the changes in the way nursing is practiced and perceived. The postcards will be on display at NIH's National Library of Medicine in Bethesda, Maryland, until August 21, 2015.

An online version offers extras. There's a digital gallery with nearly 600 postcards available for download. There are K-12 and higher education resources for use in nursing, history, social studies, and other classes. *Pictures of Nursing* is available at www.nlm.nih.gov/picturesofnursing.

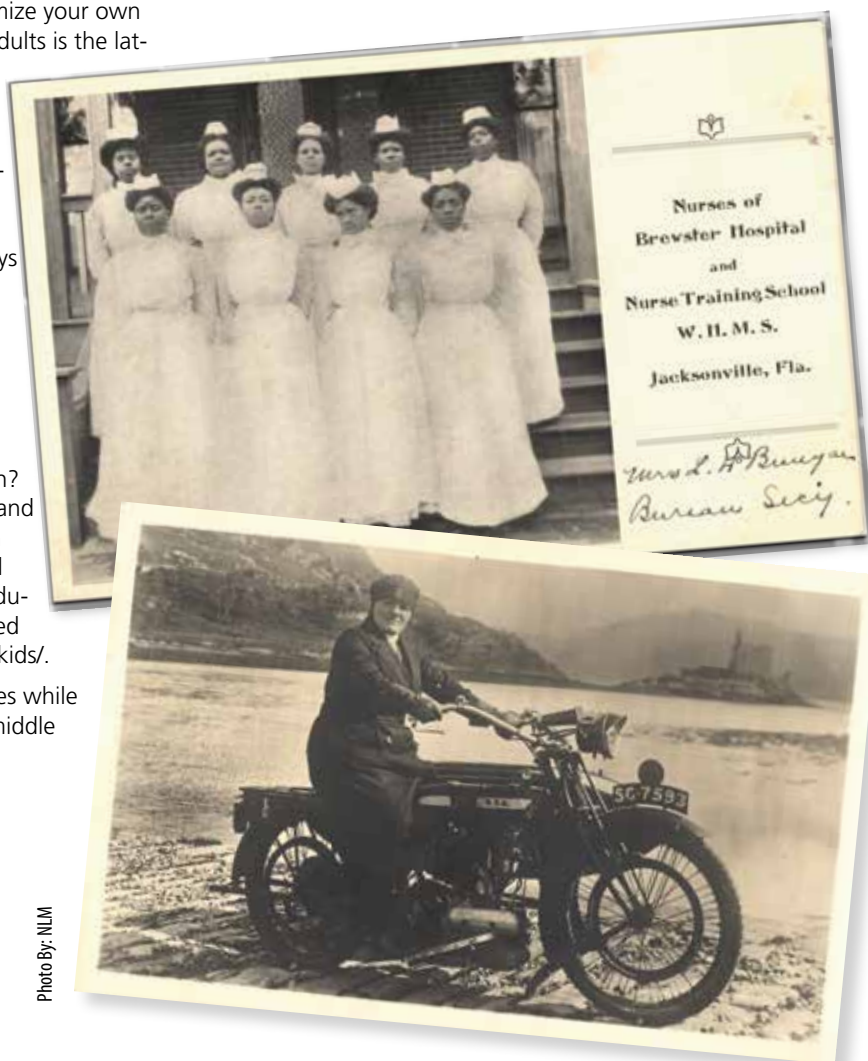


Photo By: NLM

▲ These are two of 2,588 postcards collected by Michael Zwerdling, RN, and acquired by the National Library of Medicine's (NLM) History of Medicine Division. (Top) In 1908, nurses at Brewster Hospital and Nurse Training School in Jacksonville, Florida. (Bottom) Rural visiting nurse Elizabeth McPhee of Scotland in 1926. Photos: NLM

Info to Know

NIH Quickfinder

For more information or to contact any of the following NIH Institutions, 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 on Minority Health and Health Disparities (NIMHD)**
www.nimhd.nih.gov | (301) 402-1366
- **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 for Advancing Translational Research (NCATS)**
www.ncats.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
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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Mark Siegal, National Institute of Alcohol Abuse and Alcoholism

Ann Taubenheim, National Heart, Lung, and Blood Institute

COPD

LEARN MORE BREATHE BETTER®

A program of the National Institutes of Health.



WHEN YOU THINK A LOVED ONE HAS COPD, WHAT CAN YOU SAY? PLENTY.

It's hard to watch someone you love miss out on so many good things in life because of COPD (Chronic Obstructive Pulmonary Disease), don't just watch it happen. Say and do these six things now to help your loved one breathe better and get more out of life.

1) KNOW THE SYMPTOMS OF COPD.

Make note of those you recognize in your loved one. Symptoms can come on so gradually, that people with the disease often don't recognize how their lives are changing due to shortness of breath, wheezing, chronic cough, etc.

2) YOU KNOW THEY'RE MISSING OUT. TALK ABOUT IT.

Discuss with your loved one the good things in life they're missing out on because of their COPD symptoms—like taking walks and playing with grandchildren.

3) ARE DAILY TASKS GETTING HARDER?

Mention to your loved one that you notice how hard it is becoming for them to climb stairs, go grocery shopping, etc. Let them know that this may be related to COPD.

4) SUGGEST AN OFFICE VISIT.

A doctor or health care provider can diagnose COPD with a simple breathing test called spirometry. It's quick, painless—and worth it.

5) ENCOURAGE YOUR LOVED ONE TO BE A GOOD "MANAGER."

Once diagnosed, there are many ways that your loved one and their provider can manage the symptoms of COPD. The earlier a person receives treatment, the better their chances to improve quality of life.

6) OFFER RESOURCES TO HELP.

Go online with them to the National Heart, Lung, and Blood Institute's *COPD Learn More Breathe Better*® campaign Web site copd.nhlbi.nih.gov to learn more about COPD and support group opportunities in their area.



NIH National Heart, Lung,
and Blood Institute

COPD Learn More Breathe Better®
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SIX TIPS FOR TALKING TO LOVED ONES ABOUT COPD