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NIH MedlinePlus

FALL 2015

the magazine



Cindy McCain

Wife of Sen. John McCain speaks from experience in support of migraine research and education.

**Straight talk
about ...**

Migraines

Back-to-School Health

Help your kids improve their eating and physical activity habits.

Health Care Tailored to You

Precision Medicine Initiative aims to revolutionize how we improve health and treat disease.

Delirium: Where Am I?

The challenges of understanding and managing hospital-based delirium.

2015 AWARDS GALA



In September 16, 2015, the Friends of the National Library of Medicine held its annual Awards Gala in Washington, D.C., to celebrate advances in public health, medicine, and health communications as well as the individuals and organizations dedicated to these causes. The 2015 Gala brought together representatives from the public, professional, and business sectors in health care to show their support for the National Library of Medicine.

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

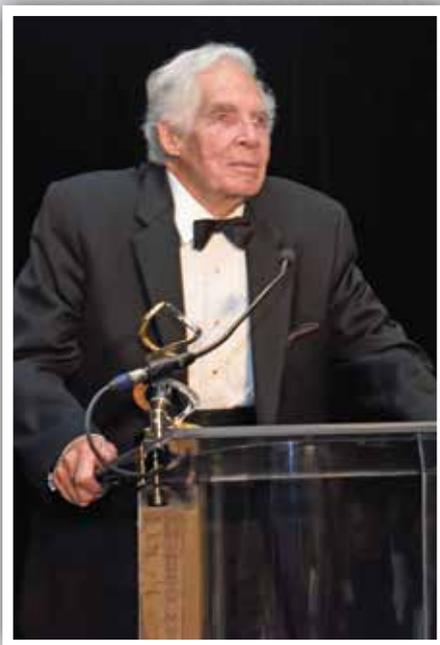
Awards and Awardees



(From L) Congressman Kevin Yoder (Kansas) receives the 2015 *Paul Rogers Award for Public Service* from Debra Lappin, JD, Principal, FaegreBD Consulting, who has served as an advisor to CDC and NIH, for his efforts to increase public access to NIH-funded research.



(From L) Kathleen McCormick, PhD, RN, is presented the 2015 *Nursing Informatics Award* for leadership and contribution to the field of nursing informatics worldwide by Roy L. Simpson, DNP, RN, Vice President of Nursing Informatics at Cerner Corporation.



Donald A.B. Lindberg, MD, received the 2015 *Distinguished Health Communications Award* for consistent and sustained distinction in communicating biomedical and health information to the public.



(From L) Walter Koroshetz, MD, Director of the National Institute of Neurological Disorders and Stroke, presented Mahlon DeLong, MD, with the 2015 *Distinguished Medical Science Award* in recognition of his efforts to develop deep brain stimulation—an effective treatment for those suffering from Parkinson's disease.



(From L) FNLN Board of Directors President Barbara Redman, PhD, RN, presents the 2015 *Michael E. DeBakey Library Services Outreach Award* to Claudia DeShay, PhD, MLS, for her exemplary contributions to medical education and librarianship in her community.

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Photos: Cover: Daniel Vermillion; Cover Inset: Matt Le; (Top) Matt Le, (Center) iStock, (Bottom) South Carolina Area Health Education Consortium

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Straight Talk About

MIGRAINES

Cindy McCain Speaks Out on Living with Migraines

Photo: Daniel Vermillion



For more than 20 years, she has also been one of the over 1 in 10 Americans who face the often-debilitating intense pain of migraine headaches. The wife of U.S. Senator John McCain, she has dealt with the problems of migraines while very much in the public eye. Now she is working to raise public awareness and understanding of migraines and increase support for research. Recently, Cindy McCain spoke with **NIH MedlinePlus** magazine to discuss migraines.

When did you first start getting migraines, and how long did it take you to get a diagnosis of migraine?

I realized something was way wrong by the time I turned 40, and the intensity and the number of headaches increased. I had had headaches before that, but it took until I was probably 45 before I got a real diagnosis that I was having migraines.

I encountered, as many women do, doctors who said, "Yeah, go home and have a drink," or "You're just stressed out," or any number of things. I heard many things coming out of physicians' mouths, and it took me a while to get a real solid diagnosis.

Can you describe how it feels when you get a migraine?

Yes, I've described it publicly before as, for me, like an axe in my forehead. Obviously, it's a very intense pain, and I get an optical portion, too. I sometimes have an optical migraine that causes me to go temporarily blind in one eye. Not all the time though. Sometimes the optical form of the migraine is like looking through the wrong end of

a telescope, where things are getting smaller and smaller.

I don't have a sound issue. I do have light intensity problem, but sound doesn't bother me that much.

"I've described it publicly before as, for me, like an axe in my forehead."

Are there specific triggers that cause your migraines?

There are certain triggers. If I even breathe a vapor from a red wine, I get a migraine. But the older I get, that's not quite as much of a trigger. Chocolate can sometimes set one off, although fortunately not very often. Perfume is what will *really* send me over the edge with a migraine.

How do you manage your migraines?

Like everybody, I have a certain way I do it now. All migraines are very individual, and what works for me may not work for somebody else. I have a fairly good management system. If I get a particularly nasty migraine, I can pretty well manage it at home.

The older I get, the migraines seem to be taming down. I still get them but not with the frequency I did. With migraines, you learn that some days you're not going to be able to do anything.

What is the message you'd like to send to others who have migraines?

What I tell people who ask about migraines is I have great faith in what's going on at the National Institutes of Health and other research.

As migraine sufferers, we have been offered many, many kinds of drugs, but there were not drugs specifically designed for migraines. They are something developed for other conditions, but happen to help with migraines.

I, like millions of others, am looking for a cure that is not something developed for a different problem—something designed specifically for migraines. Something that addresses how we suffer and the variations in the way we suffer.

I know you've spoken about the stigma attached to migraines. What are your thoughts on that and suggestions on how to combat it?

Oh, the stigma is the *worst*. It begins with the physician who tells you you're just a stressed woman. Also, for me, my life is very public, and all of a sudden I can't make a public appearance because of a migraine. People are very fast to think, "Well, it's something else" or "She's just weak." Of course, none of that's true. Many others have encountered the same thing. There is a stigma to it, because there's a lack of understanding about what a migraine is.

People have said to me, "Well, it's just a headache." I say "Oh, no." It's much more than that. They have the idea that you can plow through this, and you can't do it.

Migraines are the leading cause of lost work time and performance around the world. And there's no cure for it. There's really nothing for it yet.

I do tell people who contact me that if you don't like what you heard from one doctor, just press on and find a doctor who will listen to you. And actually understand what's going on.

I think the best thing to combat the stigma is articles like this one. And talking about it. There are many people out there who suffer and are afraid to talk about it because, for instance, they're afraid they'll lose their job. The more we talk about it, then the better the understanding.



Photo: The Halo Trust

▲ Cindy McCain has spent a lifetime as an advocate for children and chair of a major business, traveling across this country and around the world. Her humanitarian work took her to Mozambique (above), where she met with women who demine minefields left over from war.

Find Out More

- ✓ National Institute of Neurological Disorders and Stroke
www.ninds.nih.gov
- ✓ medlineplus.gov Search Migraines
- ✓ National Center for Complementary and Integrative Health
<https://nccih.nih.gov/>
- ✓ American Migraine Foundation
www.americanmigrainefoundation.org
- ✓ American Headache Society Committee for Headache Education
www.achenet.org
- ✓ Migraine Research Foundation
www.migraineresearchfoundation.org
- ✓ National Headache Foundation
www.headaches.org

What Is Migraine?

If you suffer from migraine headaches, you're not alone. About 12 percent of the U.S. population experience migraines, according to the National Institute of Neurological Disorders and Stroke (NINDS) at NIH.

Migraines involve recurrent attacks of moderate to severe pain that is throbbing or pulsing and often strikes one side of the head. Untreated attacks last from 4 to 72 hours. Other common symptoms are increased sensitivity to light, noise, and odors; and nausea and vomiting. Routine physical activity, movement, or even coughing or sneezing can worsen the headache pain.

Migraines occur most frequently in the morning, especially upon waking. Some people have migraines at predictable times, such as before menstruation or on weekends following a stressful week of work or a change in sleep schedule. Many people feel exhausted or weak following a migraine.

Who Gets Migraines?

Migraines occur in both children and adults, but affect adult women three times more often than men. There is evidence that migraines are genetic, with most migraine sufferers having a family history of the disorder. They also frequently occur in people who have other medical conditions.

Depression, anxiety, bipolar disorder, sleep disorders, and epilepsy are more common in individuals with migraine than in the general population. Migraine sufferers who have pre-migraine symptoms referred to as an aura have a slightly increased risk of having a stroke.

Migraine in women may be related to changes in hormones. The headaches may begin at the start of the first menstrual cycle or during pregnancy. Most women see improvement after menopause, although surgical removal of the ovaries usually worsens migraines.

Women with migraine who take oral contraceptives may experience changes in the frequency and severity of attacks, while women who do not suffer from headaches may develop migraines as a side effect of oral contraceptives.

Migraine Triggers

A number of environmental influences can trigger a migraine, and their effects vary from person to person. Triggers include sudden changes in weather or environment, too much or not enough sleep, strong odors or fumes, emotion, stress, overexertion, loud or sudden noises, motion sickness, low blood sugar, skipped meals, missed medications, tobacco smoke, depression, anxiety, head trauma, alcohol, some medications, hormonal changes, and bright or flashing lights.

In some 50 percent of migraine sufferers, foods or ingredients can trigger headaches. These include aspartame, caffeine (or caffeine withdrawal), wine and other types of alcohol, chocolate, aged cheeses, monosodium glutamate, some fruits and nuts, fermented or pickled goods, yeast, and cured or processed meats. Keeping a diet and lifestyle journal will help identify triggers.

Types of Migraine

The two major types of migraine are:

Migraine without aura, or common migraine, is the more prevalent form of migraine. Symptoms include headache pain that occurs without warning and is usually felt on one side of the head, along with nausea, confusion, blurred vision, mood changes, fatigue, and increased sensitivity to light, sound, or noise.

Migraine with aura, previously called classic migraine, includes visual disturbances and other neurological symptoms that appear about 10 to 60 minutes before the onset of the headache and usually last no more than an hour. Individuals may temporarily lose part or all of their vision. The aura may occur without headache pain, which can strike at any time. Other classic symptoms include trouble speaking; an abnormal sensation, numbness, or muscle weakness on one side of the body; a tingling sensation in the hands or face, and confusion. Nausea, loss of appetite, and increased sensitivity to light, sound, or noise may precede the headache.

There are other forms of reoccurring headaches that are less common than the two major types. Discuss your headaches thoroughly with your healthcare provider.

Phases of Migraine

Migraine is divided into four phases, all of which may be present during the attack:

- 1. Premonitory symptoms** occur up to 48 hours prior to developing a migraine. These include food cravings, unexplained mood changes (depression or euphoria), uncontrollable yawning, fluid retention, or increased urination.
- 2. Aura.** Some people will see flashing or bright lights or what looks like heat waves immediately prior to or during the migraine, while others may experience muscle weakness or the sensation of being touched or grabbed.
- 3. Headache.** A migraine usually starts gradually and builds in intensity. It is possible to have migraine without head pain.
- 4. Postdrome** (following the headache). Individuals are often exhausted or confused following a migraine. The postdrome period may last up to a day before people feel back to normal.

"I get an aura prior to my migraine"

Comfort measures help Pamela Duvick manage migraines

Since she was in her early 30s, Pamela Duvick, 53, of Charlotte, N.C., has had migraines.

"I get an aura prior to my migraines," she says. "Typically, my vision is affected. I will get blind spots in my field of vision and it will last for approximately 15 or 20 minutes."

Her speech can be affected as well. "Sometimes it is difficult to speak during this time; difficult to find the words to say," she says.

"Shortly after the aura dissipates," says Duvick, "I will feel a headache begin."

If it's a particularly bad migraine, she adds, it will be accompanied by nausea and sensitivity to light.

When her migraines first started, Duvick says it seemed they were more related to changes in barometric pressure, since she had been diagnosed with vasomotor rhinitis. "Another trigger in my 30s was tension and stress," she says. "As I have entered perimenopause/menopause, I feel like the migraines are more often triggered by hormonal shifts in addition to stress and weather changes."

Duvick says diet is also a factor, as she sometimes gets a migraine after consuming red wine or aged cheeses.

"Besides being very frightening, due to the auras, it can really disrupt your life," she says. "The discomfort is severe and you have to take measures immediately to try and relieve the symptoms, which are simply miserable—it isn't the type of headache that you can 'work through.'"

Duvick manages her migraines with comfort measures and over-the-counter pain relievers, such as Aleve and Motrin.

"In addition to massage, I have a head wrap that has gel packs, which you can refrigerate or heat in the microwave," she says. "It is very soothing and tends to help tremendously."

She adds, "Closing my eyes and making sure I'm in a calm, low-light environment is another comfort measure that helps."

Managing the condition day-to-day can be a challenge for Duvick. "Unfortunately, since [my symptoms] are weather-, stress-, and hormone-related, those aspects are hard to manage," she says. "I recently visited my ENT doctor and he prescribed a nasal spray called Olopatadine, which makes my sinuses less reactive to barometric changes. That has been quite helpful."

Duvick says she has also stopped using artificial sweeteners, and has cut back on her consumption of aged cheeses and red wine.

"Cutting back on my caffeine intake and [practicing] meditation has been helpful in managing the stress of daily living and menopause," she adds.

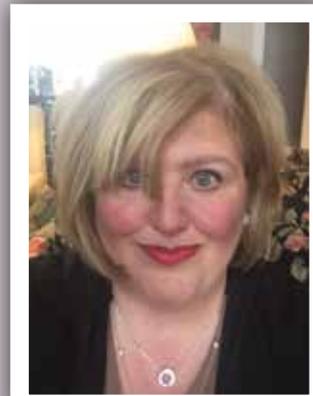


Photo: Pamela Duvick

Migraine Treatment

Migraine treatment is aimed at relieving symptoms and preventing additional attacks. Quick steps to ease symptoms may include napping or resting with eyes closed in a quiet, darkened room; placing a cool cloth or ice pack on the forehead, and drinking lots of fluid, particularly if the migraine is accompanied by vomiting. Small amounts of caffeine may help relieve symptoms during a migraine's early stages.

Drug therapy for migraine is divided into acute and preventive treatment. Acute or "abortive" medications are taken as soon as symptoms occur to relieve pain and restore function. Preventive treatment involves taking medicines daily to reduce the frequency and severity of future attacks or keep them from happening. Other non-pharmacological measures such as relaxation techniques and regular eating and sleeping schedules also help. The U.S. Food and Drug Administration (FDA) has approved a variety of drugs for these treatment methods. Headache drug use should be monitored by a physician, since some drugs may cause side effects.

What Research Is Being Done?

Several studies either conducted or supported by the National Institute of Neurological Disorders and Stroke (NINDS) are revealing much about the migraine process and may lead to new treatments or perhaps ways to block debilitating headache pain. Studies by other investigators are adding insight to headache etiology and treatment.

The molecular basis for migraine headaches and the aura associated with certain migraines is uncertain. One multi-faceted research study is examining how migraine with aura may affect metabolism and neurophysiological function. Investigators are also studying if particular regions of the visual cortex are unusually susceptible to the events in the brain that cause the aura.

Social and other factors may impact headache. Researchers are examining how race and psychiatric conditions are related to headache severity, quality of life, the ability to reliably follow a treatment program, and treatment response in people with migraines, tension-type headache, substance abuse headache, or cluster headache.

Genetics may contribute to a predisposition for migraines. Most migraine sufferers have a family member with migraine. Researchers are studying the activity of different genes to see if they make some people more likely to have migraines.

A major focus of headache research is the development of new drugs and other treatment options. Several drug studies seek to identify new drugs to treat various headache disorders and to find safer, more effective doses for medications already being used. Other research is aimed at identifying receptors or drug targets to stop the process of migraine aura in the brain.

Nondrug Options to Manage Migraine Pain



Photo: NCCIH

► Dr. Josephine P. Briggs is Director of the National Center for Complementary and Integrative Health.

Dr. Josephine P. Briggs discusses complementary migraine treatments

Pain, in all of its forms, from migraines to chronic low-back pain, is a condition that can defy our best efforts to control it. This is why we at the National Center for Complementary and Integrative Health (NCCIH), part of the National Institutes of Health (NIH), are supporting researchers across the country and here in our own laboratories to illuminate how our brains process and cope with pain and to identify nondrug—mind and body and natural product—approaches to pain management.

We know that many Americans experience the pain of migraines, about 12 percent of the U.S. population, according to the NIH's National Institute of Neurological Disorders and Stroke. While there are prescriptions and over-the-counter medications that can help treat or prevent migraines, many who suffer from migraines may also explore complementary therapies. In fact, research is showing some promise for mind and body approaches in helping people cope with migraine pain and for dietary supplements that may aid in easing or preventing migraines.

After you have read the wealth of information about migraines in this issue of *NIH MedlinePlus* magazine, I invite you to visit the NCCIH website at <https://nccih.nih.gov/health/pain> and explore our resources on pain and complementary approaches.

Migraine 101 Quiz

Not sure of the facts when it comes to headaches and migraines? Test your knowledge with this quick quiz.

True/False

A migraine headache usually begins with a visual disturbance called an aura (spots, dots, or even zigzag lines).

True/False

All migraines involve only one side of the head.

True/False

There is a cure for migraine headaches.

Multiple Choice

Dietary triggers for migraines include:

- A. Chocolate
- B. Cheese
- C. Food additives, such as MSG
- D. Alcohol
- E. A, B, and C
- F. A, B, C, and D

True/False

Migraines sometimes run in families.

True/False

A bad headache is usually a sign of a brain tumor.

Answer Key

1. **False.** In most cases of migraine, there is no aura.
2. **False.** A typical migraine sometimes involve the whole head instead of only one side.
3. **False.** Migraine headaches can be treated with medication, but there is no cure.
4. **F.**
5. **True.** Although many sufferers have a family history of migraine, the exact hereditary nature of this condition is still unknown. People who get migraines are thought to have an inherited abnormality in the regulation of blood vessels.
6. **False.** Headaches can serve as a warning sign of more serious disorders, but there are many causes. See your doctor if your headaches aren't relieved by standard treatments.

Sources: Patient Education Institute, National Institute of Neurological Disorders and Stroke



Back-to-School Health

Helping Your Child Form Healthy Habits



Use these tips to help your kids improve eating and physical activity habits for a healthier school year.

Parents play a big part in shaping children's habits on eating and physical activity. When parents eat foods that are lower in fat and added sugars and high in fiber, children learn to like these foods as well. If your child does not like a new food right away, don't be upset. Children often need to see a new food many times before they will try it. Parents have an effect on children's physical activity habits as well. Continue reading to learn about specific actions you can take to help your child develop healthy habits.

Be a role model

A powerful example for your child is to be active yourself. You can set a good example by going for a walk or bike ride instead of watching TV, playing a video game, or surfing the Internet. Playing ball or jumping rope with your children shows them that being active is fun.

Talk about being healthy

Take the time to talk to your children about how a certain food or physical activity may help them. For example, when going for your daily walk, bring your children with you and let them pick the route. Discuss how walking helps you feel

better and is a fun way to spend time together. It also offsets calories eaten and inactive time spent in front of TV screens or computers. Use your children's food choices as teaching moments. Speak up when you see unhealthy eating habits. Direct children to healthier options or say, "You can have a little of that, but not too much." Talk to them about why an overly salty or heavily sugared snack is not the best choice. You can also praise your children when they choose a healthy item like fruit or yogurt. Use comments like these:

- "Great choice!"
- "You're giving your body what it needs with that snack!"
- "I like those too."

With physical activity, try upbeat phrases like these to keep your child excited:

- "You run so fast, I can hardly keep up!"
- "You are building a strong, healthy heart!"
- "Let's walk 10 more minutes to make us stronger."

Believe in the power to change

Know that eating healthy and moving more are the basics of being fit. Work together as a family to form healthy habits.

Healthy Eating

What should my child eat?

Just like adults, children need to eat a wide variety of foods. Every 5 years, the U.S. federal government releases a set of guidelines on healthy eating. The guidelines suggest balancing calories with physical activity. The guidelines also recommend improving eating habits to promote health, reduce the risk of disease, and reduce overweight and obesity. The guidelines encourage Americans ages 2 years and older to eat a variety of healthy foods. Suggested items include the following:

- Fruits, vegetables, unsalted nuts and seeds, and whole grains
- Fat-free or low-fat milk and milk products
- Lean meats, poultry, seafood, beans and peas, soy products, and eggs

The guidelines also suggest reducing salt (sodium), refined grains, added sugars, and solid fats (like lard, butter, and margarine). Added sugars and solid fats often occur in pizzas, sodas, sugar-sweetened drinks, desserts like cookies or cake, and fast foods. These foods are the main sources of high fat and sugar among children and teens. Another important guideline is to make sure your children eat breakfast to spark the energy they need to focus in school.

Not eating breakfast is often linked to overweight and obesity, especially in children and teens.



How can I help my child eat better?



Use less fat, salt, and sugar

Some tips to consider:

- Cook with fewer solid fats. Use olive or canola oil instead of butter or margarine. Bake or roast instead of frying. You can get a crunchy texture with "oven-frying" recipes that involve little or no oil.
- Choose and prepare foods with less salt. Keep the saltshaker off the table. Have fruits and vegetables on hand for snacks instead of salty snacks like chips.
- Limit the amount of sugar your child eats. Choose cereals with low sugar or with dried fruits as the source of sugar.
- Reshape the plate
- Make half of what is on your child's plate fruits and vegetables.
- Avoid oversized portions.

The MyPlate icon and web address are provided courtesy of the U.S. Department of Agriculture.

Four For Fitness

Experts note that most Americans don't get enough potassium, calcium, vitamin D, and dietary fiber. Calcium builds strong bones and teeth. Potassium helps lower blood pressure and reduces bone loss. Vitamin D supports bone health. Dietary fiber promotes normal digestion and may help reduce the risk of heart disease, obesity, and type 2 diabetes.

Here are some ways you can boost your children's intake of these nutrients.

- Dish up more fruit for breakfast, snacks, and desserts. Add dark green, red, and orange vegetables to stews and soups. Add beans (black, kidney, pinto), peas, and lentils to casseroles and salads.
- Serve more low-fat milk and milk products. If your child cannot digest much lactose, serve lactose-free products or fat-free milk and yogurt. (Lactose is the sugar in milk that may cause some people stomach pain and bloating when they drink milk or eat milk products.) Your child can also try soy or rice drinks enriched with calcium or vitamin D.
- Be active with your child outside in the sunlight to improve vitamin D levels naturally. Serve fresh, frozen, or canned salmon, shrimp, and light tuna (not albacore). For young children, you may serve fish in small portions totaling up to 12 ounces each week.
- Replace at least half of the refined grains (breads, pasta, rice) your child eats with whole-grain foods. Eat more bran. Check Nutrition Facts labels to find products high in dietary fiber. Look at the ingredients list to be sure that whole grains are one of the first items.

Physical Activity

How does physical activity help my child?

Like adults, children should be physically active most, if not all, days of the week. Experts suggest at least 60 minutes of moderate physical activity daily for most children. Walking fast, bicycling, jumping rope, and playing basketball, soccer, or hopscotch are all good ways for children to be active. Parents play a big role in helping kids to get up and get moving.

How can I help my child be more active?

- Be a role model for your children. If they see you being physically active and having fun, they are more likely to be active and stay active.
- Involve the whole family in activities like hiking, biking, dancing, or playing basketball.
- Focus on fun. You can do a lot of walking during trips to the zoo or park.
- Include children in family activities like walking the dog, washing the car, or mowing the lawn.
- Sign your children up for after-school programs or lessons in a sport they enjoy.
- Team up with your children to play sports or dance video games that get everyone moving.



Reduce inactive screen time

Sitting while using computers, hand-held devices, or TVs for hours at a time may reduce your child's active playtime. Limit your child's screen time watching TV, playing inactive computer and video games, or listening to music on hand-held devices while sitting down. Tips to reduce your child's screen time include these:

- Do not use screen time as a way to reward your child.
- Set up a family game night and turn off all the screens in your home.
- Eat meals together as a family. Do not eat in front of a screen.
- Limit TV time and remove TVs from your child's bedroom.

What should I do if my child is overweight or obese?

Children who are overweight are more likely to become adults who are overweight. These children may develop type 2 diabetes and other serious health problems. Weight problems can also lead to stress, sadness, and low self-esteem in children. Because children grow at different rates at different times, it is not always easy to tell if a child is overweight. For example, it is normal for boys to have a growth spurt in weight and catch up in height later. Ask your health care provider to measure your children to tell you if they are in a healthy range for their age and gender. If your provider tells you that your child is overweight, you can help.

How can I help my overweight child?

- Do not put your child on a diet to lose weight unless your health care provider tells you to.
- Avoid putting severe limits on what your child eats. Doing so may interfere with her or his growth.
- Accept and love your child at any weight. Doing so will boost self-esteem.
- Involve the whole family in healthy eating and physical activity habits.
- Help your child find ways other than food to handle setbacks or mark successes.
- Talk with your health care provider if you are concerned about your child's eating habits or weight.

Remember, you play the biggest role in your children's lives. You can help your children learn healthy eating and physical activity habits to follow for the rest of their lives.

Excerpted from *Helping Your Child: Tips for Parents*, which is part of the *Healthy Eating & Physical Activity Across Your Lifespan Series* from the *Weight-control Information Network (WIN)*. The series offers health tips for readers at various life stages, including adulthood, pregnancy, parenthood, and later life. The entire series is also available in Spanish. To download and share this and other WIN materials, visit www.niddk.nih.gov/health-information/health-communication-programs/win/Pages/community-groups-organizations.aspx



Find Out More

- ✓ School Health: www.medlineplus.gov/schoolhealth.html
- ✓ Healthy Back to School Habits: <https://www.nhlbi.nih.gov/health/educational/wecan/downloads/tip-back-to-school.pdf>
- ✓ Child Nutrition: <https://www.nlm.nih.gov/medlineplus/childnutrition.html>
- ✓ Secrets to Making School Lunches Kids Won't Want to Trade: <http://www.nhlbi.nih.gov/health/educational/wecan/news-events/matte14.htm>
- ✓ Secrets to Making Healthy and Fun School Lunches: <http://www.nhlbi.nih.gov/health/educational/wecan/downloads/tip-school-lunches.pdf>

Understanding & Managing Head Lice



Head lice are tiny wingless insects that infest the hair on your head, as well as the eyebrows and eyelashes. Tiny louse eggs called nits are tightly attached to individual hairs and live close to the scalp, where they may be difficult to see.



Lice are easily spread, especially among school-aged children. Lice cannot jump or fly but are spread by direct head-to-head physical contact, sharing clothing, such as hats or bedding, and sharing combs or brushes with someone who has head lice. Having head lice does not mean you have poor cleanliness. Head lice do not carry diseases.

Sources: National Library of Medicine, Centers for Disease Control and Prevention, American Academy of Dermatology, American Academy of Pediatrics

Signs and Symptoms

- Extremely itchy scalp
- Small red bumps on the scalp or neck
- Tiny white nits on the hair close to the scalp that are difficult to remove
- Crawling sensation on the head

Lice are easier to see in bright light and by parting the hair to see close to the scalp. They are also easier to see near the ears and the nape of the neck.

Head lice are extremely contagious. Close contact or sharing personal belongings, such as hats or hairbrushes, puts people at risk. Children ages 3-11 and their families get head lice most often. Personal hygiene has nothing to do with getting head lice. Head lice do not spread disease.

Treatment

Treatment for head lice is recommended for people with an active infestation. All household members and other close contacts should be checked. Anyone who has an active infestation should be treated. All infested people and their bedmates should be treated at the same time.

Over-the-counter lotions and shampoos that contain pyrethrin—a common synthetic chemical used as an insecticide—or one-percent permethrin are often the first choice. The package directions should be followed exactly. These products may continue to kill lice for two weeks after treatment; many clinicians recommend a second treatment seven to nine days after the first.

Side effects of permethrin may include burning or stinging, itching, red skin, or numbness. Prescription-strength five-percent permethrin, malathion lotion, or benzyl alcohol lotion may be needed. Lice are becoming resistant to permethrin, so the other medications may be used.

There is no clear scientific evidence that lice can be suffocated by home remedies, such as mayonnaise or olive oil, but they may be suffocated by Cetaphil cleanser. Tea tree oil is another helpful natural remedy.

It is very important that the nits are removed. This can be difficult because they cling tightly to the hair. Special nit combs are available at drugstores. You should do a second combing seven to 10 days after the first. Nits may live for two weeks.

Hats, scarves, coats, and bedding should be washed in hot water and dried in a hot dryer for at least 20 minutes. Combs and brushes should be washed and the room of the infected person should be vacuumed.

Prevention

Children should be cautioned not to share hats, combs, or brushes with others. Policies regarding school attendance for children with head lice vary.



Find Out More

- ✓ MedlinePlus
<https://www.nlm.nih.gov/medlineplus/lice.html>
- ✓ US National Library of Medicine
<https://www.nlm.nih.gov/medlineplus/ency/article/000840.htm>
- ✓ Centers for Disease Control and Prevention
www.cdc.gov/parasites/lice/
- ✓ American Academy of Dermatology
<https://www.aad.org/dermatology-a-to-z/diseases-and-treatments/e---h/head-lice>
- ✓ American Academy of Pediatrics Health Children
[www.healthychildren.org/English/Pages/default.aspx?Search 'lice'](http://www.healthychildren.org/English/Pages/default.aspx?Search='lice')



"WHERE AM I?"

The overlooked danger of delirium in hospitals

In his mid-80s, **Jerry** (not his real name) moved to an assisted living facility soon after his wife passed away. He had been diagnosed with heart failure several years earlier, making lifestyle changes to slow its progression. In the final months of his wife's life, his daughter observed that he showed signs of mild dementia doctors later associated with his heart failure.

At the assisted living facility, he experienced shortness of breath and acute lower-extremity edema that resulted in a series of hospital admissions for treatment with an intravenous diuretic. While in the hospital, his mild dementia almost immediately switched to delirium. He was agitated, wandered the halls, and alternated between believing he was in a hotel or had been mistakenly admitted to the hospital. The third time he was admitted, his daughter noted a nurse had given him a detailed handwritten note explaining who he was, where he was, why he was there, and how he was benefiting from being there. The note helped curb his agitation but he remained deeply confused.

Each time he was discharged back to the assisted living facility, his delirium quickly retreated.

In another more severe case, **Alice** (not her real name) noticed something was definitely wrong with her dad and took him to the hospital to be examined by a neurologist and a geriatrician, following an inconclusive visit with his primary care doctor. Her father, who had a mild form of dementia, had begun to

suddenly exhibit behavior changes. "We noticed Dad had begun to alternate unpredictably between incidents of a startling and unusual agitation and confusion, followed by extended periods of unusually heavy sleeping," she says.

Within less than 24 hours of hospitalization, her father, who had capably walked into the hospital, had a serious fall and sustained multiple hip fractures that required emergency hip replacement surgery to repair. He would wind up staying in the hospital for 11 months.

"Although Dad showed some confusion immediately following surgery, it seemed minimal and relatable to his circumstance. Dad was able to interact normally with us and his nurses for a day or so," she recalls. "But by about his second night after surgery, a highly anxious state of agitated non-stop yelling and confusion started. It was alarming and traumatizing, and our family's efforts at his bedside failed to comfort and coax him into a restful calm."

These cycles of agitation, contrasted by cycles of nearly comatose sleep, continued intermittently for his entire hospitalization. Shortly after their father's surgery, Alice and her sister rapidly educated themselves on delirium and became powerful advocates for their father's care—something she strongly advises all families of delirium patients to do.

DIGGING INTO THE MYSTERIES OF DELIRIUM

NIH MedlinePlus recently spoke with Marie A. Bernard, MD, Deputy Director of the National Institute on Aging and a recognized expert on delirium.

How is delirium distinguished from dementia?

Delirium is an acute change in cognitive function, primarily characterized by confusion and which may wax and wane—whereas dementia is a progressive decline in cognitive function that occurs over months and years.

Does delirium affect older Americans more often than their younger counterparts? Why?

It does. It appears to be that because older adults have more in the way of chronic conditions, hospitalizations, and medications, older adults tend to get delirium more often than younger adults—although younger adults are subject to developing delirium as well.

Some people affected by delirium experience its effects for weeks after the first occurrence. Why is this?

That's part of the mystery of the syndrome. We don't fully understand what's happening in the basic neuroscience of delirium. It's part of what our scientists are interested in figuring out.

Delirium often affects patients in a hospitalization situation, particularly where a patient has been heavily sedated. What is the connection between sedation, hospitalization, and delirium?

Again, we're not totally clear on what the neurological underpinnings of delirium are. There are some basic changes in the neurotransmitters that occur—changes to the serotonin system, changes to the cholinergic system. Neuroinflammation has been proposed as a possible mechanism for vulnerability to delirium. However, we have not yet established if neuroinflammation is a pre-existing state that makes one vulnerable to delirium in the presence of sedative medications and anesthesia, or if neuroinflammation may be a consequence of sedative effects on the aging brain. In the hospital, you get lots of different medications that can interact and affect the brain, and you're also off your normal schedule—frequently awakened, for example, for blood pressure readings and other needs, and that lack of sleep can contribute to delirium. Additionally, when in the hospital, patients are often on multiple medications that can potentially interact or have a direct effect on cognition. Put all those factors together and it puts one at particular risk for developing delirium.

Why is it important that we diagnose delirium and treat it more effectively?

What's been found is that delirium is a very common occurrence—a third or more of older adults in the hospital experience

delirium. The challenge is that delirium can be a waxing and waning sort of thing, so that the same patient can be fine one hour and behaving erratically in the next. Whether it's a delirium episode that's difficult to manage or one where the patient is quiet, it's an issue. Delirium is linked to longer hospital stays, complications, and higher mortality.

NIA is supporting research into delirium. What do we hope to learn from this research?

We want to get a much better understanding of its underlying cause. If we can figure that out, then we'll be much more effective in treating it and preventing it. We don't have truly good means of treating it once it's developed. Through our research, we hope to get a better handle on all of those things.

Can hospitalization delirium be prevented? What should we be doing to address the problem of delirium in the hospital setting?

We simply need to be aware that it's a risk, so we need to do a baseline assessment of a patient's cognitive status. We need to try to maintain as normal a schedule as possible—interruptions during the night do not help. We also want to keep people in the hospital as short a time as possible. We need to keep them well hydrated while they're in the hospital, limit interacting medications and particularly sedatives and other centrally acting medications, and we need to make sure that glasses and hearing aids are accessible.

Fast Facts

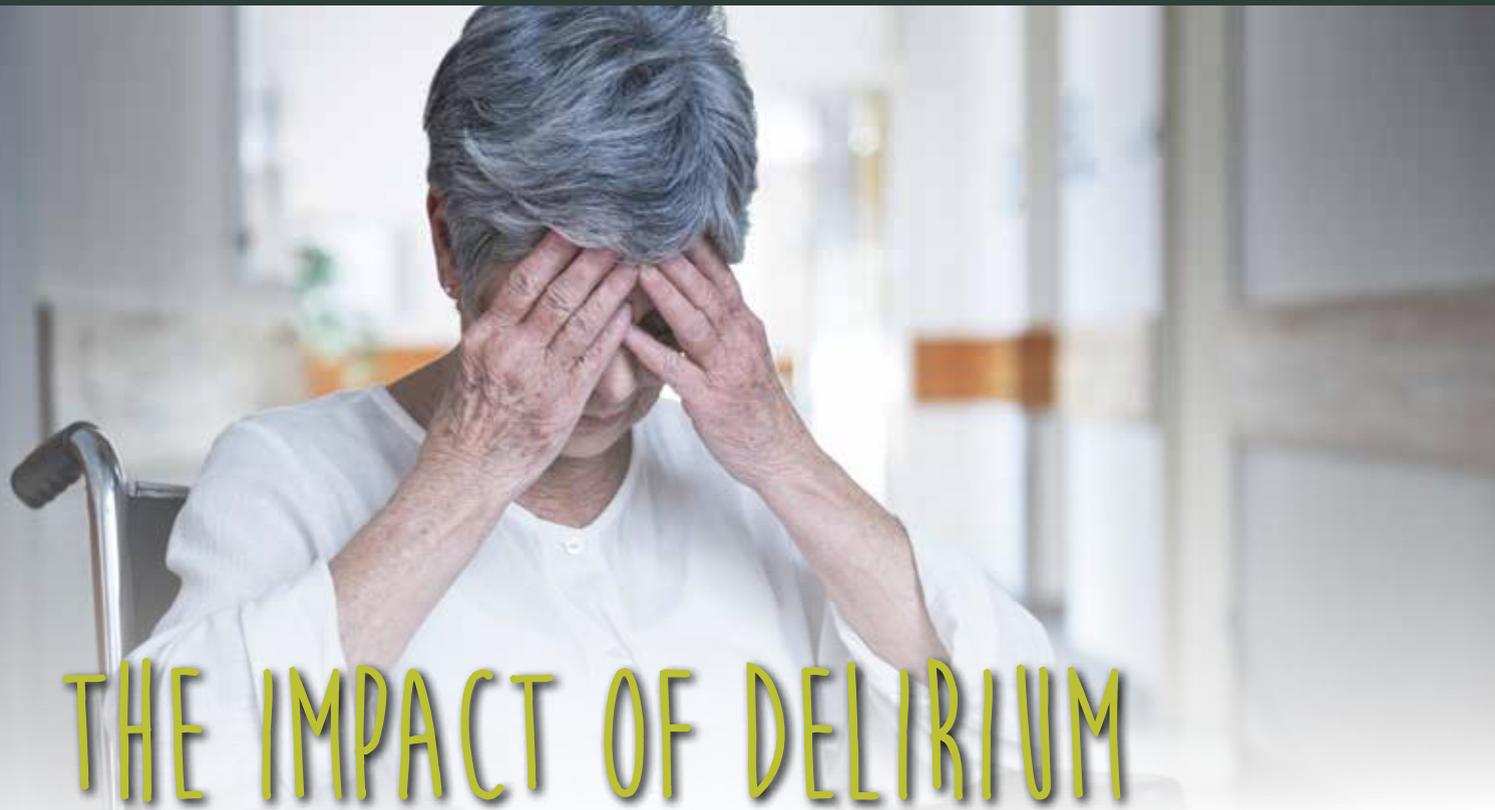
- ✓ More than 7 million hospitalized Americans suffer from delirium each year.
- ✓ Among hospitalized patients who survived their delirium episode, the rates of persistent delirium at discharge are 45%, 1 month 33%, 3 months 26%, and 6 months 21%.
- ✓ More than 60% of patients with delirium are not recognized by the health care system.

Source: American Delirium Society, www.americandeliriumsociety.org



Photo: NIA

▲ Marie A. Bernard, MD, Deputy Director of the National Institute on Aging and a recognized expert on delirium



THE IMPACT OF DELIRIUM

Ill and hospitalized older people can experience sudden episodes of delirium, a state of confusion and disorientation that can last hours, days, or weeks. People with delirium may not be able to think clearly, pay attention, or be aware of their surroundings.

For centuries considered a transient and reversible condition, delirium in older people is still viewed by many to be a normal consequence of surgery, chronic disease, illness, or infection.

There is mounting evidence, however, that delirium may be associated with increased risk for dementia and may contribute to morbidity and death. One recent study found that in a group of 553 people age 85 and older, those with a history of delirium

had an eight-fold increase in risk for developing dementia. The researchers also found that among the participants with dementia, delirium was associated with an acceleration of dementia severity, loss of independent functioning, and higher mortality. These findings showed that delirium is a strong risk factor for dementia and cognitive decline in the oldest old.

Symptoms

Delirium often involves a quick change between mental states (for example, from lethargy to agitation and back to lethargy) Symptoms may include:

- Fluctuating alertness (usually more alert in the morning, less at night)
- Hallucinations and delusions
- Variable levels of consciousness or awareness
- Disrupted sleep patterns, drowsiness
- Confusion (disorientation) about time or place
- Declines in short-term memory and recall
- Disorganized thinking, talking in a way that doesn't make sense
- Emotional changes: anger, agitation, depression, irritability, overexcitement
- Incontinence
- Problem concentrating

Contributing Factors

A number of medical and physical conditions may play a role in the onset of delirium, especially in older people:

- Use of pain medication or sedatives, or sedative drug withdrawal
- Drug or alcohol abuse
- Dehydration
- Electrolyte or other body chemical disturbances
- Infections such as urinary tract infections or pneumonia
- Poisons
- Recent surgery
- Disrupted and/or insufficient sleep

Treatment

Treatment depends on the condition of the patient, the level of pain, the medical history, and a variety of other considerations. The goal of treatment is to manage the symptoms. The person may need to stay in the hospital for a short time. Some examples of ways to manage symptoms include:

- Allowing older people to sleep undisturbed between 10 p.m. and 6 a.m. so that their normal sleep cycle is less disrupted.
- Stopping or changing medications that may contribute to delirium to try to improve mental function. After asking about your medical history to establish a "baseline," for example, your doctor may discuss medicines and substances that can worsen confusion, such as alcohol.
- Using low doses of medicines that control aggression or agitation, and adjusting the dose. These are usually started as needed.
- Behavior modification to control unacceptable or dangerous behaviors.
- Reality orientation to reduce disorientation. Reality orientation can include calendars, clocks, and anything that stimulates the senses to the present surroundings.
- Ensuring the patient has a hearing aid, glasses, or other devices necessary to aid communication.

Disorders that contribute to delirium should be treated.

These may include:

- Anemia
- Decreased oxygen (hypoxia)
- Heart failure
- High carbon dioxide levels (hypercapnia)
- Infections
- Kidney failure
- Liver failure
- Nutritional disorders
- Psychiatric conditions (such as depression)
- Thyroid disorders

Outlook (Prognosis)

Cognitive dysfunction due to delirium in the setting of dementia may be reversible by treating the underlying acute illness. Full recovery is common, but depends on the underlying cause of the delirium. It may take several weeks for cognitive function to return to normal. However, more and more clinical data suggests that delirium may persist for weeks and even months.

Possible Complications

- Loss of ability to function or care for self
- Loss of ability to interact
- Increased likelihood of hospital acquired infections, longer hospital stays, and nursing home placements
- Side effects of medications used to treat the disorder



When to Contact a Medical Professional

Call your health care provider if there is a rapid change in mental status.

Prevention

Treating the conditions that may produce delirium can reduce its risk. In hospitalized patients, avoiding sedatives, prompt treatment of metabolic disorders and infections, and using reality orientation programs may reduce the risk of delirium in those at high risk.

Find Out More

- The National Institute on Aging is currently conducting clinical-trial research into delirium. You can learn more about that research at www.nia.nih.gov/alzheimers/clinical-trials or ClinicalTrials.gov
- MedlinePlus.gov
www.nlm.nih.gov/medlineplus/delirium.html
- The American Delirium Society has more information on delirium, including tips for caregivers and loved ones. Visit www.americandeliriumsociety.org
- The Hospital Elder Life Program (HELP) for Delirium also features information for delirium patients and their families at www.hospitalelderlifeprogram.org



Photos: NIH

▲ NIH researchers and fellow scientists working on precision medicine efforts gather on the NIH campus in Bethesda, Md.

Precision Medicine: Health Care Tailored to You

In his State of the Union address this year, President Obama announced that he's launching the Precision Medicine Initiative (PMI)—a new research effort to revolutionize how we improve health and treat disease. Until now, most medical treatments have been designed for the “average patient.” As a result of this “one-size-fits-all” approach, treatments can be very successful for some patients but not for others.

Precision medicine, on the other hand, is an innovative approach that takes into account individual differences in people's genes, environments, and lifestyles. It gives medical professionals the resources they need to target the specific treatments of the illnesses we encounter, further develops our scientific and medical research, and keeps our families healthier.

“We have an incredible opportunity to advance research and make new medical breakthroughs through precision medicine, which tailors disease prevention and treatment to individuals based on genetics, environment, and lifestyle,” says Department of Health and Human Services Secretary Sylvia M. Burwell.

Advances in precision medicine have already led to powerful new discoveries and several new treatments that are tailored to specific characteristics, such as a person's genetic makeup, or the genetic profile of an individual's tumor. This is helping transform the way we can treat diseases such as cancer:

Patients with breast, lung, and colorectal cancers, as well as melanomas and leukemias, for instance, routinely undergo molecular testing as part of patient care, enabling physicians to select treatments that improve chances of survival and reduce exposure to adverse effects.

“Many factors have converged to make now the right time to begin this ambitious project,” says NIH Director Francis S. Collins, MD, PhD. “Americans are engaging in improving their health and participating in health research more than ever before, electronic health records have been widely adopted, genomic analysis costs have dropped significantly, data science has become increasingly sophisticated and health technologies have become mobile. We have to seize this moment to invest in these promising scientific opportunities to help Americans live healthier lives.”



▲ NIH Director Francis S. Collins, MD, PhD

NIH Precision Medicine Initiative

Far too many diseases do not have a proven means of prevention or effective treatments. Precision medicine is an emerging approach for disease treatment and prevention that takes into account individual variability in genes, environment, and lifestyle for each person.

The concept of precision medicine—prevention and treatment strategies that take individual variability into account—is not new; blood typing, for instance, has been used to guide blood transfusions for more than a century. But the prospect of applying this concept broadly has been dramatically improved by the recent development of large-scale biologic databases (such as the human genome sequence), powerful methods for characterizing patients (such as proteomics, metabolomics, genomics, diverse cellular assays, and even mobile health technology), and computational tools for analyzing large sets of data.

Two Main Components

The PMI has two main components: a near-term focus on cancers and a longer-term aim to generate knowledge applicable to the whole range of health and disease. Both are now within reach because of advances in basic research, including molecular biology, genomics, and bioinformatics. Furthermore, the initiative taps into converging trends of increased connectivity, through social media and mobile devices, and Americans' growing desire to be active partners in medical research.

Precision medicine's more individualized, molecular approach to cancer will enrich and modify, but not replace, the successful staples of oncology—prevention, diagnostics, some screening methods, and effective treatments—while providing a strong framework for accelerating the adoption of precision medicine in other spheres. The most obvious of those spheres are inherited genetic disorders and infectious diseases, but there is promise for many other diseases and environmental responses.

Objectives of the Initiative:

- **More and better treatments for cancer:** The National Cancer Institute will accelerate the design and testing of effective, tailored treatments for cancer by expanding genetically based clinical cancer trials, exploring fundamental aspects of cancer biology, and establishing a national "cancer knowledge network" that will generate and share new knowledge to fuel scientific discovery and guide treatment decisions.
- **Creation of a voluntary national research cohort:** NIH, in collaboration with other agencies and stakeholders, will launch a national, patient-powered research cohort of one million or more Americans who volunteer to participate in research. Participants will be involved in the design of the Initiative and will have the opportunity to contribute diverse sources of data—including medical records; profiles of the patient's genes, metabolites (chemical makeup), and microorganisms

Connections to Precision Medicine

Precision medicine is already saving lives. Read the stories of some of the people who have benefited from this new approach:

William Elder Jr.

William Elder Jr. was diagnosed with cystic fibrosis (CF) at the age of 8, when the life expectancy for CF patients was very low. Now at 27, Bill is alive thanks to Kalydeco, a treatment of a particular form for his CF and a remarkable drug that treats the underlying cause of his CF, rather than the symptoms.



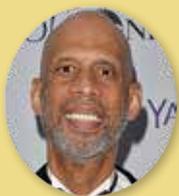
At a congressional briefing in 2013, Bill told members of the U.S. Senate that just knowing that there were individuals who were researching his condition gave him hope and the strength to continue his treatments and work to be healthier every day. Bill described waking up in the middle of the night after taking his new treatment for the first time. "I sat on the floor of my room for a while slowly breathing in and out through my nose, and then I realized that was it. I had never been able to easily breathe out of my nose before. This was something profound," he says. He recalls telling his parents, "For the first time in my life, I truly believe that I will live long enough to be a grandfather."



Keith Yamamoto

Keith Yamamoto has dedicated his life to medicine and research. Well-known for his molecular biology and biochemistry research, Keith leads a major precision medicine effort at the University of California, San Francisco (UCSF). He continues to be a leader in the precision medicine field.

Keith currently serves as the Vice Chancellor for Research and Executive Vice Dean of the School of Medicine at UCSF. He also continues to teach, allowing younger generations to learn from his research. While promoting up-and-coming methods for targeting the specific treatments needed to help patients, Keith also chaired the 2011 National Academies Report on Precision Medicine.



Kareem Abdul-Jabbar

Six-time NBA Most Valuable Player, Kareem Abdul-Jabbar was diagnosed with a form of leukemia in 2008. Known to be lethal, leukemia is a cancer of the blood and bone marrow. It caused the basketball great to slow down, fall ill, and worry. A few years later, he credits precision medicine for helping him to be well today.



Emily Whitehead

At age six, Emily Whitehead was the first pediatric patient to be treated with a new kind of cancer immunotherapy and was cancer free only 28 days later. “If you didn’t know what happened to her, and you saw her now, you would have no idea what she has been through,” says Emily’s mom.

Her parents decided to enroll her in a pioneering cancer immunotherapy trial at the Children’s Hospital of Philadelphia. Emily’s T-cells were collected from her blood and re-engineered in the lab to recognize a protein found only on the surface of leukemia cells. Those T-cells were then infused back into Emily’s blood, where they circulated throughout her body on a mission to seek and destroy her leukemia. Knowing how to turn these T-cells into what Emily called “ninja warriors” required big investments in basic biomedical research. In fact, *Science Magazine* named it a 2013 Breakthrough of the Year—Emily’s family couldn’t agree more.

in and on the body; environmental and lifestyle data; patient-generated information; and personal device and sensor data. Privacy will be rigorously protected.

- **Commitment to protecting privacy:** To ensure from the start rigorous privacy protections, a multi-stakeholder process will solicit input from patient groups, bioethicists, privacy, and civil liberties advocates, technologists, and other experts in order to identify and address any legal and technical issues related to the privacy and security of data in the context of precision medicine.
- **Regulatory modernization:** The Initiative will include reviewing current regulations to determine whether changes are needed to support the development of this new research and care model, including its critical privacy and participant protection framework.
- **Public-private partnerships:** Strong partnerships will be forged among existing research cohorts, patient groups, and the private sector to develop the infrastructure that will be needed to expand cancer genomics, and to launch a voluntary million-person cohort.

Near-Term Goals

EXPANDING EFFORTS IN CANCER

The PMI has a near-term focus on cancers because precision medicine focuses mainly on the genes, and cancer is a disease of the genome. Thanks to advances in DNA sequencing and efforts such as The Cancer Genome Atlas, there is better understanding of the molecular changes that drive many cancers.

One immediate goal will be to significantly expand efforts in cancer genomics to create prevention and treatment successes for more cancers. The Initiative will support clinical trials, in partnership with pharmaceutical companies, to test combinations of targeted therapies that are based on a tumor’s molecular signature; develop solutions to drug resistance that commonly limit the effectiveness of targeted therapies; develop approaches that can assess response to therapy, and possible development of resistance, using “liquid biopsies” of blood plasma; and develop new tumor cell models to predict response to drug combinations and to define mechanisms of resistance.

Advance Precision Medicine To All Areas of Health

The PMI will build a comprehensive scientific knowledge base to put precision medicine into practice on a much larger scale. To achieve this goal, the Initiative will:

1. Support a national network of scientists who possess the talent and skills to develop new approaches for answering critical scientific and medical questions.
2. Launch a national cohort study of a million or more Americans to propel our understanding of health and disease. The goal is to set the foundation for a new way of doing research that fosters open, responsible data sharing with the highest regard to patient privacy, and that puts engaged participants at the center.

Each voluntary participant will share their genomic information and biological specimens. This information, along with important clinical data from electronic health records, such as laboratory test results and MRI scans, and lifestyle data, such as calorie consumption and environmental exposures tracked through mobile health devices, will help researchers understand how genomic variations and other health factors affect the development of disease. Through the consent process, participants will control how the information is used in research and shared. As active participants, they also will have access to their own health data, as well as research using their data, to help inform their own health decisions. Through this dynamic community, researchers will be able to advance the information derived from this cohort into new knowledge, approaches, and treatments.

Scale and Scope

What makes the PMI different from other efforts is the recruitment of expertise from multiple sectors, and the anticipated scope of the endeavor. The Initiative will forge strong partnerships with existing cohorts, patient groups, and the private sector to capitalize on work already underway. By expanding on early successes in cancer genomics and partnering with more than a million participants nationwide to establish a national research cohort, the Initiative will set the foundation for new ways of engaging research participants, sharing health data and information, and employing technology advances to mine the information for comprehensive results.

A Role for Everyone

To be most effective and comprehensive, the PMI will engage partners across all communities—scientific, medical, health, and societal—and public as well as private sectors. The Precision Medicine Initiative will invite patients and patient advocacy organizations, academic medical centers, clinicians, scientists from multiple disciplines with creative ideas about how to make this unique opportunity successful, pharmaceutical companies and medical product developers, scientific societies and research coalitions, privacy experts, and medical ethicists.

Find Out More

- ✓ NIH Precision Medicine Initiative website: www.nih.gov/precisionmedicine/index.htm
- ✓ White House Precision Medicine Initiative website: www.whitehouse.gov/precision-medicine



Melanie Nix

Melanie Nix's family has a history of breast cancer—a history that Melanie couldn't escape when she tested positive for the BRCA gene mutations linked to breast cancer in 2008. After 16 rounds of chemotherapy and breast reconstruction surgery, she had to have both ovaries removed to further reduce risks of cancer in the future. But Melanie is now cancer free thanks to precision medicine.

Melanie's positive test results for the BRCA gene mutations instantly concerned her medical team. BRCA gene mutations are linked to breast and ovarian cancers. Further tests confirmed that she had triple-negative breast cancer, a very aggressive form of breast cancer that disproportionately affects African-American women. Her best chance for cancer-free survival was to have a bilateral mastectomy. Melanie says that this type of tailored treatment gave her hope. "Precision medicine offers the hope that by the time my daughter is at an age when she considers genetic testing, new, targeted treatments will be available to give her additional choices for preserving her health," she says.



Hugh and Beatrice Rienhoff

Beatrice Rienhoff's eyes were spaced wider than usual, her leg muscles were weak, and she couldn't gain weight. Her father, a trained clinical geneticist, took notice and wanted to help. After six years, he and his team of scientific volunteers identified the cause of her condition.

Beatrice's original medical team had thought her condition resembled Marfan syndrome, a genetic disorder that can cause tears in the human heart. It's typically a fatal syndrome. However, the doctors couldn't fully diagnose Beatrice with Marfan—or any other known disease. Acting as "Super Dad," Hugh led his team to identifying a variant responsible for his daughter's condition and this research gave rise to the description of a whole new syndrome. The team continues to use precision medicine to learn more about the new syndrome and further study genetic variation to help those like his daughter. Today, Beatrice is living a full life.

Precision Medicine In Action

More video stories you can view and forward to others.



"I am totally motivated to support precision medicine because I am one of the early prototype patients whose life was saved by it. I had a whole genome sequence, and a chance encounter with a scientist, and after 23 years of trial and error chemotherapy that I had to suffer through, they, suddenly, with precision medicine, said 'We didn't understand what was wrong with you; now we do.' Months later, I had chemotherapy. Cured my cancer. A kidney transplant. And I'm healthier at age 47 than I was at age 19. That was the power of precision medicine."



 Listen: https://youtu.be/jrPDRi7Ko_s

"Participant engagement is so important because you will find out what is wanted and what the community needs when it comes to precision medicine. I think you will get honest answers, and you will engage them and be able to build trust with them when you are trying to gather the information you are looking for. Community is the way to go."



 Listen: <https://youtu.be/E5RN6PyJNSM>



"I'm personally motivated to support precision medicine because my son has one of the rarest diseases in the world. To me, precision medicine and the Precision Medicine Initiative means a shift in the way we're conducting research and the way we can deliver medical care, so that no disease and no patient is too rare to be left behind."

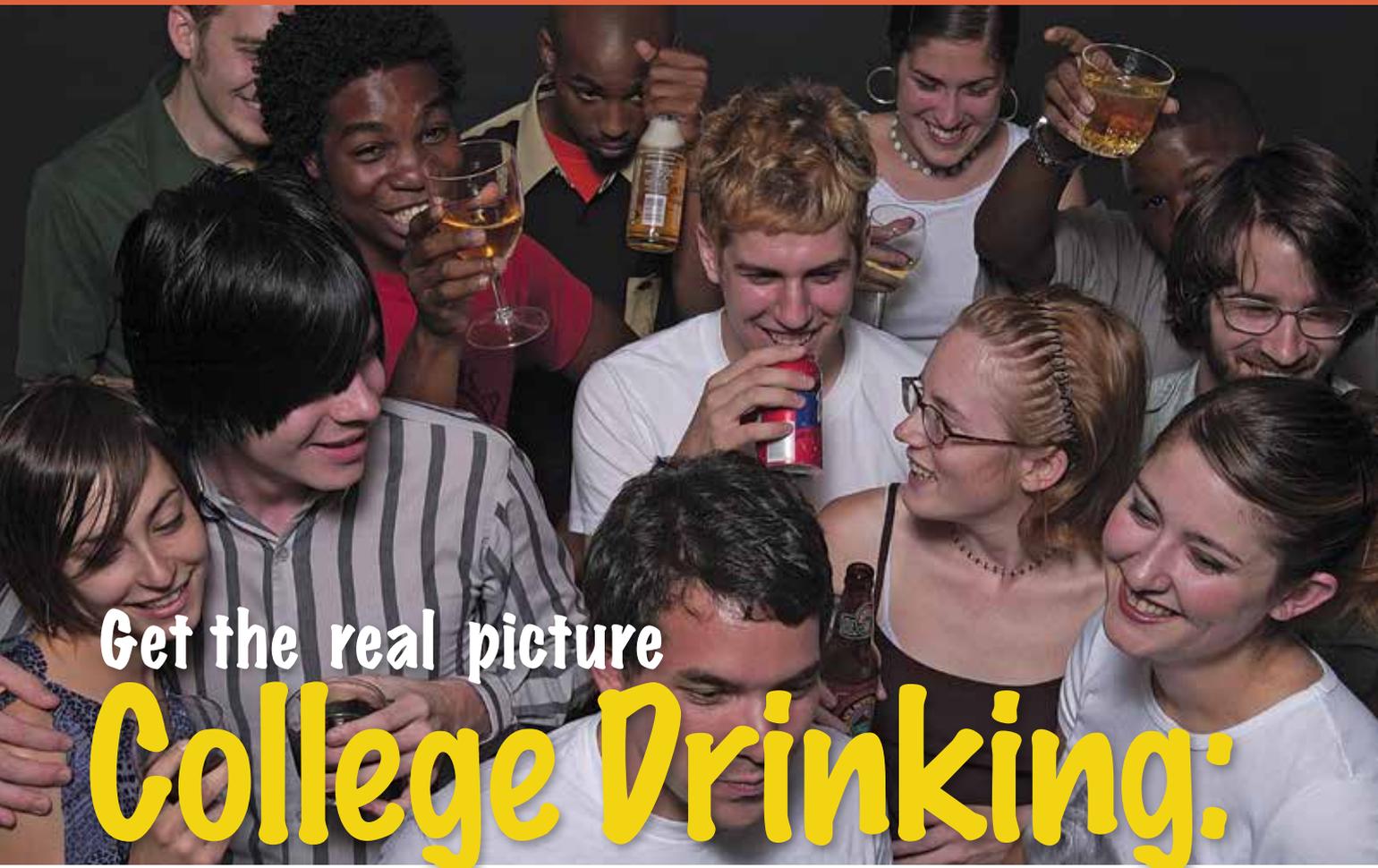


 **Listen:** <https://youtu.be/376Yj-XxIRE>

"I think we are in the most amazing time for medicine today. We have these amazing new drugs that are very targeted for certain cancers that are based on the DNA sequence—something we couldn't even imagine even 15 years ago. We can do this today. But we need to scale. We need to get to more cancers; we've got to get to more diseases. The patients out there who need therapies, and the Precision Medicine Initiative. It's all about getting it to them."



 **Listen:** https://youtu.be/SWEEwbujF_Q



Get the real picture

College Drinking:

Fall Semester—A Time for Students and Parents to Revisit Discussions About College Drinking

As college students arrive on campus this fall, it's a time of new experiences, new friendships, and making memories that will last a lifetime. Unfortunately for many, it is also a time of excessive drinking and dealing with its aftermath—vandalism, violence, sexual aggression, and even death.

According to research summarized in a College Task Force report to the NIAAA, the consequences of excessive drinking by college students are more significant, more destructive, and more costly than many parents realize. And these consequences affect students whether or not they drink.

Statistics from this report, which were updated recently, indicate that drinking by college students aged 18 to 24 contributes to an estimated 1,825 student deaths, 599,000 injuries, and 97,000 cases of sexual assault or date rape each year.

Early Weeks Are Critical

As the fall semester begins, parents can use this important time to help prepare their college-age sons and daughters by talking with them about the consequences of excessive drinking.

Some first-year students who live on campus may be at particular risk for alcohol misuse. During their high school years, those who go on to college tend to drink less than their non-college-bound classmates. However, during subsequent years, the heavy drinking rates of college students surpass those of their non-college peers.



CollegeDrinkingPrevention.gov was created by the National Institute on Alcohol Abuse and Alcoholism (NIAAA). It's your one-stop resource for comprehensive research-based information on issues related to alcohol abuse and binge drinking among college students.

This rapid increase in heavy drinking over a relatively short period of time can contribute to serious difficulties with the transition to college.

Anecdotal evidence suggests that the first 6 weeks of the first semester are critical to a first-year student's academic success. Because many students initiate heavy drinking during these early days of college, the potential exists for excessive alcohol consumption to interfere with successful adaptation to campus life. The transition to college is often difficult, and about one-third of first-year students fail to enroll for their second year.

Parents Can Help

During these crucial early weeks, parents can do a variety of things to stay involved. They can inquire about campus alcohol policies, call their sons and daughters frequently, and ask about roommates and living arrangements.

They should also discuss the penalties for underage drinking as well as how alcohol use can lead to date rape, violence, and academic failure.

Changing the Culture of College Drinking

The tradition of drinking has developed into a kind of culture—beliefs and customs—entrenched in every level of college students' environments.

Customs handed down through generations of college drinkers reinforce students' expectation that alcohol is a necessary ingredient for social success. These beliefs and the expectations they engender exert a powerful influence over students' behavior toward alcohol.

Customs that promote college drinking also are embedded in numerous levels of students' environments. The walls of college sports arenas carry advertisements from alcohol industry sponsors. Alumni carry on the alcohol tradition, perhaps less flamboyantly than during their college years, at sports events and alumni social functions. Communities permit establishments near campus to serve or sell alcohol, and these establishments depend on the college clientele for their financial success.

Students derive their expectations of alcohol from their environment and from each other, as they face the insecurity of establishing themselves in a new social milieu. Environmental and peer influences combine to create a culture of drinking. This culture actively promotes drinking, or passively promotes it, through tolerance, or even tacit approval, of college drinking as a rite of passage.

Resources Are Available

For parents who want to talk to their college-age sons and daughters about the consequences of college drinking, a variety of helpful resources are available from NIAAA. A special guide for parents offers research-based information, including the need to stay involved during freshman year and how to get assistance if faced with an alcohol-related crisis.

Copies of all Task Force materials, including the parents' guide, may be ordered at <http://www.collegedrinkingprevention.gov/niaacollegematerials/parentbrochure.aspx> or by contacting the

NIAAA Publications Distribution Center, P.O. Box 10686, Rockville, MD 20849-0686.

A new resource to help college officials address harmful and underage student drinking, CollegeAIM, is now available. The centerpiece of CollegeAIM is a comprehensive and easy-to-use matrix-based tool that will help inform college staff about alcohol interventions and guide college staff to evidence-based interventions. CollegeAIM resources are available at <http://www.collegedrinkingprevention.gov/CollegeAIM>.

"Despite our collective efforts to address it, high-risk drinking remains a significant and persistent problem on U.S. campuses," says George Koob, PhD, NIAAA Director. "While college officials have numerous options for alcohol interventions, they are not all equally effective. College AIM can help schools choose wisely among available strategies, boosting their chances for success and helping them improve the health and safety of their students."



Photo: NIAAA

George Koob, PhD,
NIAAA Director

HIGH-RISK DRINKING AMONG COLLEGE STUDENTS



—Source: collegedrinkingprevention.gov

Teaching children how to find and understand good health information will help them make informed healthy lifestyle decisions that will carry into adulthood.

To that end, students from three South Carolina high schools are experimenting with imaginative ways to engage and increase health information among high school and middle school students, especially where the need is greatest, in the minority and economically disadvantaged communities in the state.

The National Library of Medicine (NLM) is supporting this new "Health Information Literacy Project," developed by the South Carolina Area Health Education Consortium (AHEC) and the Medical University of South Carolina (MUSC).

"The South Carolina AHEC is always looking for creative, innovative, and fun ways for our students to learn," says Angelica Ellman Christie, Director, Health Careers Program, Medical University of South Carolina. "This opportunity allowed the participating students to gain insight into topics that are relevant to them while strengthening their personal understanding and use of reliable health information resources."

The students learned to use the health information resources of the NLM to create the comic book contents, and gained valuable experience accessing these tools to continually improve their health literacy and answer other health-related questions they or their parents will have in the future.

Creating the comic books was not only a fun exercise, but with the help of faculty advisors, the students also developed new verbal and writing skills, critical thinking, teamwork communication, and leadership abilities.

The student teams came from three high schools: Lowcountry Leadership Charter School, North Charleston High School, and Colleton County High School. They worked this past academic year on creating unique comic books that are visually appealing, tell the stories of students like them in words and pictures that are easily understandable, and that educate student readers about important health experiences they confront in their daily lives or that have recently been in the news.

The student teams researched their topics, conducted investigative interviews with health professionals, developed the characters and storyline for their comic books, and compiled photos and videos to create the final products using a commercial software product.

Kids Create Healthy Comics

Fresh, innovative approach to health literacy



▲ A page from *Choosing the Way on reducing childhood obesity*



▲ Students from the Lowcountry AHEC Health Careers Program at Colleton County High School.

This project helped young people gain insight into health topics that are relevant to them, learn how to identify reliable health information resources, and educate their peers.

The four comic books are:

- ***The Expert Investigator*** explores the impact of prevention and infection control during the threat of an Ebola outbreak.
- ***Coast in Crisis 72-hour Aftermath*** tells about the importance of personal disaster preparedness and the role of local emergency response teams following a large-scale natural disaster.
- ***Choosing the Way*** is a frank discussion of the childhood obesity problem and the role that choices in diet and exercise play in reducing risks related to obesity, heart disease, and other associated illnesses.
- ***Prescription Strength*** addresses the risks associated with anabolic steroid use in athletes.

Photos: Elizabeth Anne Thompson, MUSC

Find Out More

- ✓ MedlinePlus: Health Literacy
<https://www.nlm.nih.gov/medlineplus/healthliteracy.html>
- ✓ NIH: Health Literacy
<http://www.nih.gov/clearcommunication/healthliteracy.htm>
- ✓ ClinicalTrials.gov and Health Literacy
<https://clinicaltrials.gov/search/open/term=%22health+literacy%22>



Downloadable copies of the four comic books are available at <http://www.scahec.net/hcp/comic/currenteditions.html>, along with links to information resources and learning supplements that will be utilized by teachers working with middle-school children in the fall semester.

Death Rate from Coronary Heart Disease Has Dropped 38 Percent in a Decade

From 2003 to 2013, the death rate from coronary heart disease (CHD) fell about 38 percent, according to the American Heart Association, citing data from the Centers for Disease Control and Prevention. CHD is a disease in which a waxy substance called plaque builds up inside the coronary arteries. These arteries supply oxygen-rich blood to your heart muscle. The National Heart, Lung, and Blood Institute (NHLBI), the primary federal agency that funds heart research, says this decline has come about because of better control of cholesterol and blood pressure, reduced smoking rates, improved medical treatments, and faster care of people in the throes of a heart attack. "It may not be long before cardiovascular disease is no longer the leading cause of death" in the United States, observes Dr. Michael Lauer, director of the Division of Cardiovascular Sciences at NHLBI.



NIH Body Weight Planner Added to USDA SuperTracker Food and Activity Tool

A new, science-based technology provides users greater customizing to help reach and stay at a healthy weight.

The U.S. Department of Agriculture (USDA) and NIH have partnered to add the NIH Body Weight Planner, <http://www.niddk.nih.gov/health-information/health-topics/weight-control/body-weight-planner/Pages/bwp.aspx>, to USDA's SuperTracker online tool as a goal-setting resource to help people achieve and maintain a healthy weight.

More than two-thirds of American adults are overweight or obese. Maintaining a healthy weight can help prevent complications related to overweight and obesity such as heart disease, type 2 diabetes and certain types of cancer, some of the leading causes of preventable death.

"NIH's collaboration with USDA allows the public to quickly reap the benefits of the latest medical research results," says NIDDK Director Griffin P. Rodgers, MD. "Sharing resources and expertise lets us get out important information as efficiently as possible, empowering people to take charge of their weight and their health."



Promising Method for Early Detection of Pancreatic Cancer

Nearly 50,000 Americans will be diagnosed with pancreatic cancer in 2015, according to NIH's National Cancer Institute (NCI). Among the patients treated for pancreatic cancer, five year survival rates are 10-fold higher if the disease is identified in an early stage than in an advanced stage, with distant sites of disease (27.1 percent vs 2.4 percent). Because the disease is very difficult to detect early enough for effective treatment, most pancreatic cancer patients are diagnosed with advanced disease and fewer than 10 percent are expected to survive five years or longer.

One method of spotting cancer early enough to improve patient outcomes and survival is to find biomarkers—substances in the body that signal the presence of a disease. A team of scientists led by Raghu Kalluri, MD, PhD, of the University of Texas MD Anderson Cancer Center searched for biomarkers on tiny, fluid-filled sacs called exosomes. Exosomes are released by cells and circulate in blood. The research, which was partially funded by NCI, was published in *Nature* on July 9, 2015.

The scientists compared exosomes from a human cancer cell line and several noncancerous cell lines. They tested a variety of biomarkers and found 48 that were unique to the cancer exosomes. One, called Glypican-1 or GPC1, was found at high levels in exosomes from pancreatic and breast cancer cells. The scientists were also able to detect higher levels of exosomes with GPC1 in blood samples of patients with pancreatic cancer, an important first step toward possible use of GPC1 as a biomarker for pancreatic cancer.

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 Integrative Health (NCCIH)**
www.nccih.nih.gov | 1-888-644-6226
- **National Center for Advancing Translational Sciences (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

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Get the Real Picture About College Drinking.

Learn more at
CollegeDrinkingPrevention.gov



1,825
DEATHS



97,000
**SEXUAL
ASSAULTS**

696,000
ASSAULTS



NIH National Institute
on Alcohol Abuse
and Alcoholism