

# NIH News in Health

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## Weighty Issues for Kids Taking Aim at Childhood Obesity

Kids face a lot of challenges as they grow up: Learning how to make and keep friends, get homework done and have fun while staying safe. But children today are now confronting a growing, oversized problem that puts them at risk for a host of life-long medical conditions. That problem is childhood obesity.

Kids won't be able to tackle this one on their own. Fortunately, there's a lot that families and communities can do to help reduce childhood obesity.

Obesity rates have nearly tripled among youth over the past 3 decades. Today, about 1 in 3 children and teens in the U.S. is considered overweight or obese.

Excess weight boosts the chances of developing heart disease, stroke, type 2 diabetes, asthma, liver disease and several types of cancer. Other conditions linked to obesity—such as high blood pressure and high blood cholesterol—are increasingly diagnosed during childhood.

Sadly, medical issues are not the only problems these kids face. Obese children and teens may also struggle with social discrimination, low self-esteem and depression. They are more likely to become obese adults and face continuing troubles.

The main causes of excess weight in childhood are similar to those in adults. Obesity has a strong genetic component, and our in-the-car, computer-bound, food-everywhere society contributes to the problem for an increasing number of people



of all ages. But you can help to counteract these influences by creating an environment for your child that encourages healthy eating and physical activity. That effort begins at home.

"Adults can help shape the environment that children interact with by providing opportunities to eat healthy foods—such as vegetables, fruits and whole grains—and limiting sugar-sweetened beverages and fast food," says Dr. Layla Esposito, who oversees some of NIH's research into childhood obesity. "It's also important to limit screen time on TVs, computers and video games, and provide opportunities for physical activity."

"Newer studies are showing that getting adequate sleep may also be important for weight management," Esposito adds.

Experts agree that our weight is affected by how our environment is structured. Known as the "built environment," it includes not only your home but also everything in your neighborhood and community, including how the roads, parks and food sources are laid out. Experts say built environments don't just affect physical activity; they also affect the foods we choose and how much time we spend inside.

Although it's important for individuals and families to commit to eating healthy and being active, the broader community can

also play a role. Kids move among many different environments, all of which shape and affect their decisions about food and activity. Parents, caregivers, schools, governments, community groups and religious organizations can also help by working to develop supportive, healthful environments to encourage these life-long choices.

"I think a lot of people have the sense that it's about willpower and things that are completely in people's control," says Dr. Stephen Daniels, a

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pediatrician and researcher at the University of Colorado School of Medicine. "If that were the case, we wouldn't have the obesity epidemic that we're having. We live in an



### Wise Choices Have a Healthy Weight

Childhood is the ideal time to encourage healthy habits that kids can practice the rest of their lives:

- Avoid high-calorie foods that are low in nutritional value.
- Make fruits and vegetables part of every meal.
- Check the Nutrition Facts Label to compare foods.
- Enjoy smaller portions of food both at home and at restaurants.
- Substitute water or low-fat milk for sweetened beverages.
- Plan and schedule time for the whole family to be physically active.
- Give kids toys that encourage physical activity, such as balls, kites and jump ropes.
- Limit screen time (television/computer) to no more than 2 hours per day.
- Take advantage of the many resources NIH has to offer. See the accompanying link for more tips and advice.

environment that is not structured to improve diet and activity choices."

For example, many communities don't have grocery stores, which can mean reduced access to fresh and nutritious foods. In some neighborhoods, the packaged, processed snack foods offered at convenience stores and corner markets are the only choices available.

Some communities don't have safe playgrounds or sidewalks, so children are forced to spend their free time indoors. Sitting instead of moving makes it that much harder to maintain a healthy weight.

Among NIH's many ongoing studies in this area are 2 major new research efforts to curb the nation's childhood obesity epidemic. One will evaluate the successes of long-term approaches designed to prevent or treat childhood obesity. The other will examine the efforts communities have been making to reduce childhood obesity.

Rather than focusing only on the behaviors of individuals, these new studies look at existing long-term interventions and consider many different levels of influence, including community youth organizations, schools, home and families.

"The focus is now on multilevel approaches. It's not only the individual, but the family, the physician, schools and the larger community," says NIH's Dr. Charlotte Pratt, who helps manage the new studies. "We have learned of things that work in a single environment, but children do not only live at home."

It's important for parents, teachers,



### Web Links

For more information about childhood obesity, see our links online:  
<http://newsinhealth.nih.gov/issue/Oct2011/Feature1>

and communities to feel empowered in this fight for the health of a generation and to be role models of healthful behaviors.

"Parents have a really important voice that policymakers need to hear," says Esposito. She encourages parents and communities to consider what they need for change, and then to ask for it. Think about what is being marketed to your kids, if you want more walkable streets or parks, or if you need access to healthier foods or farmer's markets.

You might try making a list of the improvements you could make in your community. Then get together with your neighbors and local leaders to discuss how you can make those ideas a reality. Consider talking to your local school board or PTA about food offerings or advertising in school.

Many communities have started by improving access to and maintenance of local parks; requesting safe and usable bike paths and sidewalks; asking for healthier meals and more physical activity at school; and exploring how to address a lack of nutritious food options and grocery stores.

While you're working to create a healthy environment, keep in mind that your own behaviors set a powerful example for your children. If parents aren't making healthy changes and choices for themselves, then it's hard to expect children to understand what's best and make wise choices for themselves.

NIH has many resources to help you and your children get on the path to a healthier lifestyle. Be sure to check out the links on our website. ■

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

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# Community Immunity

## How Vaccines Protect Us All

Parents know that kids are vulnerable to a host of infectious diseases. Research supported by NIH and others proves that the benefits of vaccines in preventing illness and death greatly outweigh the risks.

The list of childhood diseases can be overwhelming: measles, mumps, rubella, diphtheria, pertussis, polio, meningitis, influenza and rotavirus. In the era before vaccines, many children in the U.S. died or became disabled from these diseases. Many still do in countries and regions with lower vaccination rates.

With all the international travel in the world these days, it's important to keep vaccines, or immunizations, up to date. Here's just one example of what might happen if you don't. By 2000, immunization had practically wiped out measles in the U.S. But a measles outbreak in 2005 was traced to one unvaccinated U.S. resident infected during a visit to Europe. The returning traveler in-

fectured American children who hadn't been vaccinated because of safety concerns—despite study after study showing that childhood vaccines are safe and effective.

A major epidemic didn't emerge that time. That's because enough people in the surrounding communities had already been vaccinated against measles.

"The important concept," says Dr. Marc Lipsitch of the Harvard School of Public Health, "is that vaccinating people protects not only them, but others in the community. If I'm protected, I can protect others."

This type of protection is known as "community immunity" or "herd immunity." When enough of the community is immunized against a contagious disease, most other members are protected from infection because there's little opportunity for the disease to spread.

Newborns, pregnant women or people whose immune systems are weakened may not be eligible for certain vaccines. Yet even they will get some protection because the spread of contagious disease is contained.

"Epidemiologists think of infections as chain reactions, whose speed depends on contagiousness," says Lipsitch. "The more contagious the disease, the more vaccination is required. The data tells us that herd immunity works."

Using mathematical formulas and computer programs, NIH-funded scientists like Lipsitch have developed models to determine what proportion of the population has to be vaccinated to eliminate the spread of disease. As one example, a worldwide vaccination campaign completely



eliminated, or eradicated, smallpox in the 1970s. So many people were immunized that the virus couldn't sustain itself.

More recently, infant vaccination against *Haemophilus influenzae* type b (Hib, which can cause meningitis) lowered the risk of disease in the whole population. Before the vaccine, Hib struck about 1 in 200 children younger than age 5. It killed many and often left survivors with permanent brain damage. After the Hib vaccine was introduced in the mid-1980s, the incidence of Hib dropped by 99%.

"Infectious disease eradication is possible," says Lipsitch. Even when a disease—such as measles or Hib—hasn't been completely wiped out, immunizations can reduce disease transmission, so that epidemics become less frequent.

When parents choose to immunize, they're helping more than their own. Make sure your child's immunizations are up to date. And talk with your child's doctor if you have any concerns about vaccine safety. ■



### Wise Choices Why Immunize?

- **Diseases are becoming rare thanks to vaccinations.** Polio, diphtheria, and other diseases are seldom seen in the U.S. because of immunizations.
- **If we stop vaccinating, diseases that are almost unknown would return.** Even if there are only a few cases of a disease today, taking away vaccines would lead to more infected people spreading the disease to others.
- **Vaccinate to protect our future.** Immunization protects not only our children but also our grandchildren and their grandchildren.

*Adapted from the U.S. Centers for Disease Control and Prevention*



### Web Links

For more about the importance of vaccinations, see our links online:  
<http://newsinhealth.nih.gov/issue/Oct2011/Feature2>

# Health Capsules

For links to more information, see these stories online:  
<http://newsinhealth.nih.gov/issue/Oct2011/Capsule1>

## Five Lifestyle Factors Lower Diabetes Risk

A new study found that a combination of 5 healthy lifestyle factors may help reduce the chance of developing type 2 diabetes, even if family history puts you at risk for the disease.

People with diabetes have too high levels of glucose, a type of sugar, in their blood. Over time, high levels of glucose can lead to heart disease, stroke, blindness and other problems.

Several lifestyle factors can reduce your risk for type 2 diabetes, the most common form of the disease. A research team led by Dr. Jared Reis of NIH studied 5 factors: having a healthy diet, keeping an ideal body weight, being physically active, not smoking and minimizing alcohol use.

The team used data collected in the mid-1990s from more than 200,000 older adults. They then looked to see who had developed

diabetes over the next decade.

The analysis showed that the more healthy lifestyle factors adopted, the lower the risk for diabetes. Men with all 5 healthy lifestyle factors had a 72% lower risk for developing diabetes. Women had an 84% lower risk.

A family history of diabetes is strongly linked to type 2 diabetes. But these results show that you may still be able to prevent or delay the disease by leading a healthy lifestyle.

“Not being overweight or obese led to the greatest protection,” Reis says. “However, we found that overweight or obese adults with a greater number of the other healthy lifestyle factors had a lower risk of developing diabetes. This is good news because it suggests that overweight or obese adults can benefit by adopting other healthy lifestyle behaviors.” ■



### Featured Website NIH Intramural Research Program

<http://irp.nih.gov>

Learn about the cutting-edge medical research conducted in NIH's own laboratories. This new website offers profiles of NIH scientists and shows how their wide-ranging investigations can affect human health. Find out about scientific careers, research training, the NIH Clinical Center and more.



## Volunteers Needed for Children's Study

Expecting a baby? You might be able to volunteer for the National Children's Study. This ambitious research project aims to uncover how **genes** and the environment affect children's health. The study will follow children from before birth until age 21. It's the

largest long-term study of children's health ever conducted in the U.S.

Women who are or may become pregnant in the next few years may be eligible to enroll if they live near 1 of the 37 study locations across the country (see [www.nationalchildrensstudy.gov/studylocations](http://www.nationalchildrensstudy.gov/studylocations)). Volunteers will fill out questionnaires about their environment and family health histories. Later, they and their children may be asked to visit clinics at study centers.

By analyzing this information, researchers expect to gain understanding of how the food we eat, the chemicals we're exposed to and other

factors might interact with genes to affect health and growth.

“The National Children's Study is an investment in the future of our nation's children,” says Dr. Alan Guttmacher, director of NIH's Eunice Kennedy Shriver National Institute of Child Health and Human Development. “Through their participation, women and their families can help in the search for information to improve the health, development and well-being of future generations.” ■



### Definitions

#### Genes

Stretches of DNA, a substance you inherit from your parents, that define characteristics such as eye color and your risk for disease.

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