

NIH News in Health

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Preventing Diabetes

Small Steps Can Make a Big Difference

Chances are, you know someone who has diabetes. It might even be you. Diabetes is one of the most common disorders in the U.S. It affects about 1 in 9 Americans. Diabetes raises your risk for serious health problems. It can damage the eyes, kidneys, nerves, and heart, and it is linked to some types of cancer.

Now, what if you learned that there's a low-cost, scientifically proven way to greatly reduce your chances of getting type 2 diabetes, the most common type? Would you give it a try?

More than two decades ago, a landmark NIH-supported study, called the Diabetes Prevention Program (DPP), released its results. It found that people at high risk for diabetes were much less likely to get the disorder if they lost a little weight through healthy eating and physical activity. Their risk of getting diabetes dropped by nearly 60% compared to people who did not aim to make healthy changes.

For those over age 60, the results were even more striking. Their risk of getting diabetes dropped by 71% when they made healthy changes. The benefits were so clear that the study ended a year early, after just



three years. Participants in the comparison group were encouraged to also make the healthy changes to reduce their diabetes risk.

DPP has had a lasting influence on medical care in the U.S. and around the world. Since its initial results were reported, lifestyle change programs based on the findings have become widely available across the country.

A 10-year follow-up study showed that people in the original treatment group delayed diabetes by about four years. A later study found benefits even 22 years after the study began, with people in the lifestyle-change group having about a 25% reduced risk of developing diabetes.

“Even though the initial treatments lasted only three years, participants did have longer-term health benefits,” says Dr. William Knowler, an NIH diabetes expert.

NIH-supported researchers continue to study new and proven ways to help people prevent or

delay type 2 diabetes. But we already know that taking steps to prevent or manage diabetes can lower your risk of developing diabetes-related health problems.

Are You at Risk? •

Diabetes is a disease that occurs when your blood glucose, also called blood sugar, is too high. Glucose is your body's main source of energy. Normally, a **hormone** made by the pancreas called insulin helps glucose get into your

cells to be used for energy. If you have diabetes, your body doesn't make enough insulin or use insulin properly. Glucose then stays in your blood and doesn't reach your cells.

Anyone can get type 2 diabetes, even children. But certain factors can raise your risk. You're more likely to develop type 2 diabetes if you are at least 35 years old or have a family history of diabetes. Black Americans, Hispanic/Latino Americans, American Indians, and Asian Americans are also at higher risk.

People who are overweight or have obesity and people who don't get enough physical activity are also

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Definitions

Hormone

A substance produced in one part of the body to signal another part to react a certain way.

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more likely to develop the disease. But these are changeable factors.

About 1 in 3 American adults has a condition called prediabetes. It occurs when your blood sugar is higher than normal, but not yet high enough to be called diabetes. Most people with prediabetes don't realize they have it. That's because prediabetes tends to have few symptoms, and many people don't get screened.

"We can diagnose prediabetes and diabetes with a very simple blood test known as a hemoglobin A1C. You don't need to fast to do this test," says Dr. Tannaz Moin, a physician and diabetes researcher at the University of California, Los Angeles. The A1C test reflects your average levels of blood sugar over the past three months.

"Prediabetes is viewed as a very strong risk factor for type 2 diabetes. But not everyone with prediabetes goes on to develop type 2 diabetes," Moin adds. "That's why it's important to be screened and talk with your medical providers about your risk factors and things that you can do to prevent type 2 diabetes if you're at risk."

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A Role for Medications • Although making healthy lifestyle changes has proven effective for preventing diabetes, it doesn't work for everyone. For those people, medications may help.

NIH's DPP study looked at whether the diabetes drug metformin might also prevent or delay diabetes onset. It found that the drug could reduce the risk of developing diabetes by about 30%. For some patients, a combination of metformin and lifestyle changes might be best.

In recent years, a class of drugs called GLP-1 drugs has become widely available for weight management and diabetes treatment. These drugs have proven effective at reducing weight and keeping blood glucose in check. Some studies hint that they might also help to prevent or delay diabetes.

"Body weight is an important factor that determines the risk of getting type 2 diabetes. So the potential here is great," says Knowler. "But the problem is, as with any new drugs, it takes many years to know how effective and safe they will be. And a huge problem with any kind of weight loss is sustaining it, not achieving it."

Because GLP-1 drugs are still relatively new, it's not entirely clear how outcomes will change if people stop taking the drugs. And possible side effects of long-term use are still uncertain.

Healthy Changes That Last •

"Making lifestyle changes is hard. So it's important to get the support you need to make the changes last," says Dr. Joshua J. Joseph, a physician and diabetes researcher at Ohio State University. "You can get that support through programs like the CDC's National Diabetes Prevention Program (NDPP)."

NDPP is based on the findings of NIH's DPP study. It aims to help people make long-term lifestyle

changes that prevent or delay diabetes (see the Wise Choices box).

Local hospitals, health departments, libraries, senior centers, and faith-based organizations may also offer programs or seminars to help prevent type 2 diabetes. For physical activity, look for activities that you enjoy. Experts recommend brisk walking for a low-cost activity. Working out with others can be motivating for some people. Consider group classes like Zumba or Pilates.

"It's important to think of diabetes prevention throughout the lifespan. So, it's just as critical to work with children on healthy eating and healthy behaviors as it is to work with older people," Joseph explains. "If we work across the life course, it could lead to large reductions in the development of diabetes in the U.S. and around the world." ■



Wise Choices

Aim to Prevent Diabetes

- **Maintain a healthy weight.** If you are overweight, set a weight-loss goal. Start by aiming to lose at least 5% of your current weight.
- **Get moving.** Get at least 30 minutes of physical activity 5 days a week.
- **Eat healthy.** Find tips for healthy eating at www.myplate.gov.
- **Get support.** CDC's National Diabetes Prevention Program (NDPP) offers year-long programs nationwide. Participants work with a lifestyle coach in person or online to build healthy habits that last. It's free to eligible participants. Find an NDPP near you at www.cdc.gov/diabetes-prevention/lifestyle-change-program/find-a-program.html.



Web Links

For more about preventing diabetes, see "Find More Information" in the online article: newsinhealth.nih.gov/2024/11/preventing-diabetes

Feeling SAD?

Identifying and Treating Seasonal Affective Disorder

Many people get the “winter blues,” a mild sadness as the days get colder and shorter. But some people experience clinical depression with the seasons. This is called seasonal affective disorder, or SAD.

Symptoms of SAD usually start in the late fall or early winter. Episodes generally last around five months, easing up when the next season comes. Some people experience SAD in the summer. This is known as summer-pattern SAD. It is much less common.

Researchers don’t know the exact causes of SAD. But Dr. Kelly Rohan, a psychologist at the University of Vermont, says that genetics, brain chemistry, and an out-of-phase biological clock could all play a role.

“The environmental triggers of SAD include shorter days for triggering winter-pattern SAD and excessive heat and humidity for prompting summer-pattern SAD,” Rohan says.

SAD tends to begin in young adulthood and is more common in women than men. People living further north of Earth’s equator are at higher risk for experiencing SAD. So are those with a family history of or who themselves have a pre-existing mental illness, like depression or bipolar disorder.

Symptoms of SAD are similar to those of depression (see the Wise Choices box), but they only appear seasonally. If you’re experiencing symptoms, certain activities may help provide some relief. These include engaging in hobbies, going out in the sunlight, and spending time with friends and family. Eating healthy and getting enough physical activity can also help lift your mood. But if you have symptoms that last for two weeks or longer, you may need to talk with your doctor.



Another treatment option for SAD is antidepressant medications. These can change how the brain produces and uses chemicals involved in mood and stress. They can be used alone or together with other treatments.

“Talk to your doctor,” says Rohan. “The right treatment or combination of treatments could improve your quality of life in the affected season.” ■

Treatment options for SAD include a type of talk therapy called cognitive-behavioral therapy (CBT), light therapy, and antidepressant medications. But the combination of treatments that work for each person can differ because different factors can contribute to symptoms.

Light therapy addresses issues caused by the lack of light and later dawns during winter. These changes can disrupt the body’s biological clock.

CBT addresses the psychological factors underlying SAD. It can help change the thoughts and habits that worsen the condition. CBT and light therapy have been shown to be quite effective. But light therapy can be difficult for some people to continue. It must be done daily.

Rohan’s team has been comparing how long the two treatments’ effects last. Her studies have shown that the antidepressant effects of CBT may last one to two winters longer than light therapy. She’s also learned more about how CBT for SAD works. Specifically, a greater reduction in negative thoughts about the seasons during CBT was associated with the most long-term benefit.



Wise Choices

Symptoms of SAD

If you’re experiencing any of these symptoms for two or more weeks, talk with your health care provider:

- Persistent sad or empty mood.
 - Feelings of hopelessness.
 - Feelings of irritability or worthlessness.
 - Loss of interest in hobbies or activities.
 - Decreased energy.
 - Physical pains without a clear physical cause that don’t go away with treatment.
 - Sleeping too much or too little.
 - Appetite changes, including overeating or poor appetite.
 - Difficulty concentrating.
 - Thoughts of death or suicide.
- If you or someone you know is thinking about hurting themselves, call or text the 988 Suicide & Crisis Lifeline at 988.



Web Links

For more about seasonal affective disorder, see “Find More Information” in the online article: newsinhealth.nih.gov/2024/11/feeling-sad



Health Capsules

For links to more information, please visit our website and see these stories online.

Childhood Obesity Linked to Scarce Food Options

Obesity affects about 1 in 5 kids in the U.S. It's a growing concern. Carrying extra weight can raise a child's risk of future health problems.

Some research has found that living in a neighborhood without grocery stores and healthy food options may raise the risk for obesity. A new study looked at how limited food options at a young age affects future health.

Scientists analyzed data from more than 28,000 kids. They calculated each child's BMI z score at birth and at ages 5, 10, and 15. BMI

(or body mass index) is a ratio of weight to height. BMI z scores are adjusted for age, gender, and expected growth and weight patterns.

In urban areas, neighborhoods were considered food-limited if the nearest supermarket was more than a half-mile away. Rural regions were food-limited if the nearest market was more than 10 miles away.

Growing up in food-limited areas was linked to increased risk of obesity or severe obesity later—more than 50% higher. Kids who lived in food-limited areas early in life

were more likely to have higher BMI scores at ages 5, 10, and 15. This link was strongest for those whose moms lived in food-limited areas during both pregnancy and early childhood.

“Living in neighborhoods with access to healthy foods during these stages may be an important factor in preventing the development of obesity later,” says Harvard University's Dr. Izzuddin Aris. “Our findings support the need for further research on strategies to improve access to healthy food in early life.” ■

Protect Your Hearing

Loud sounds can harm tiny structures in your inner ear. This can lead to noise-induced hearing loss or a condition called tinnitus. Tinnitus can cause buzzing, hissing, or humming in your ears. Hearing loss can happen instantly, or gradually over time. The louder the sound, the more damage it can cause.

You can protect your hearing by moving away from loud sounds or turning down the volume. You can also use hearing protectors, such as earplugs or protective earmuffs.

Consider using hearing protectors if you know you'll be in a loud setting, like concerts, sporting events, or firework displays. Hearing protectors can also help in noisy workplaces or when operating loud machinery, like lawn mowers and drills.

There are different types of hearing protectors. Choose a type that's comfortable and easy for you to use. Most earplugs are inexpensive. Some are made of soft foam. Others, called pre-molded earplugs, can be made of plastic, rubber, or silicone. One

type, called pre-molded high-fidelity earplugs, can be helpful at movies or concerts. They protect hearing without reducing sound quality.

Protective earmuffs are another option. They reduce noise by completely covering both ears. They look like headphones. But earmuffs might not work as well for people who wear glasses, which can create gaps that make the fit less tight.

Learn more about hearing protectors at www.nidcd.nih.gov/health/hearing-protectors. ■



Featured Website

Bones, Joints, Muscles, and Skin

niams.nih.gov/education

Get classroom materials and activities to help kids learn about bones, joints, muscles, and skin. This NIH website is meant for

teachers and students in grades four through six. But everyone can benefit from learning more about these essential body parts.

Educational Resources for Students and Teachers
The Human Body: Bones, Joints, Muscles, and Skin

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NIAMS offers science-based classroom materials and activities for teachers to build accurate, age-appropriate lesson plans about bones, joints, muscles, and skin for students in grades 4, 5, and 6.

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