

## Simple Steps to Preventing Diabetes

If type 2 diabetes were an infectious disease, passed from one person to another, public health officials would say we're in the midst of an epidemic. This difficult disease is striking an ever-growing number of adults, and with the rising rates of childhood obesity, it has become more common in youth.

The good news is that prediabetes and type 2 diabetes are largely preventable. About 9 in 10 cases in the U.S. can be avoided by making lifestyle changes. These same changes can also lower the chances of developing heart disease and some cancers. The key to prevention can be boiled down to five words: Stay lean and stay active.

### What if I already have diabetes?

Guidelines for preventing or lowering your risk of developing type 2 diabetes are also appropriate if you currently have a diabetes diagnosis. Achieving a healthy weight, eating a balanced carbohydrate-controlled diet, and getting regular exercise all help to improve blood glucose control. If you are taking insulin medication, you may need more or less carbohydrate at a meal or snack to ensure a healthy blood glucose range. There may also be special dietary needs for exercise, such as bringing a snack so that your blood glucose does not drop too low. For specific guidance on scenarios such as these, refer to your diabetes care team who are the best resources for managing your type of diabetes.

### Control your weight

Excess weight is the single most important cause of type 2 diabetes. Being overweight increases the chances of developing type 2 diabetes seven-fold. Being obese makes you 20 to 40 times more likely to develop diabetes than someone with a healthy weight. Losing weight can help if your weight is above the healthy-weight range. Losing 7-10% of your current weight can cut your chances of developing type 2 diabetes in half.

### Get moving—and turn off the television

Inactivity promotes type 2 diabetes. Working your muscles more often and making them work harder improves their ability to use insulin and absorb glucose. This puts less stress on your insulin-making cells. So trade some of your sit-time for fit-time.

Long bouts of hot, sweaty exercise aren't necessary to reap this benefit. Findings from the Nurses' Health Study and Health Professionals Follow-up Study suggest that walking briskly for a half hour every day reduces the risk of developing type 2 diabetes by 30%. More recently, Health Study reported similar diabetes-prevention benefits for brisk walking of more than 5 hours per week. This amount of exercise has a variety of other benefits as well. And even greater cardiovascular and other advantages can be attained by more, and more intense, exercise.

Television-watching appears to be an especially-detrimental form of inactivity: Every two hours you spend watching TV instead of pursuing something more active increases the chances of developing diabetes by 20%; it also increases the risk of heart disease (15%) and early death (13%). The more television people watch, the more likely they are to be overweight or obese, and this seems to explain part of the TV viewing-diabetes link. The unhealthy diet patterns associated with TV watching may also explain some of this relationship.

### Tune Up Your Diet

Four dietary changes can have a big impact on the risk of type 2 diabetes. Choose whole grains and whole grain products over refined grains and other highly processed carbohydrates.

There is convincing evidence that diets rich in whole grains protect against diabetes, whereas diets rich in refined carbohydrates lead to increased risk. Health Studies researchers looked at the whole grain consumption of more than 160,000 women whose health and dietary habits were followed for up to 18 years. Women who averaged 2-3 servings of whole grains a day were 30% less likely to have developed type 2 diabetes than those who rarely ate whole grains. When the researchers combined

these results with those of several other large studies, they found that eating an extra two servings of whole grains a day decreased the risk of type 2 diabetes by 21%.

Whole grains don't contain a magical nutrient that fights diabetes and improves health. It's the entire package—elements intact and working together—that's important. The bran and fiber in whole grains make it more difficult for digestive enzymes to break down the starches into glucose. This leads to lower, slower increases in blood sugar and insulin, and a lower glycemic index. As a result, they stress the body's insulin-making machinery less, and so may help prevent type 2 diabetes. Whole grains are also rich in essential vitamins, minerals, and phytochemicals that may help reduce the risk of diabetes.

In contrast, white bread, white rice, mashed potatoes, donuts, bagels, and many breakfast cereals have what's called a high glycemic index and glycemic load. That means they cause sustained spikes in blood sugar and insulin levels, which in turn may lead to increased diabetes risk. In China, for example, where white rice is a staple, the Shanghai Women's Health Study found that women whose diets had the highest glycemic index had a 21% higher risk of developing type 2 diabetes, compared with women whose diets had the lowest glycemic index.

More recent findings from Health Professionals Follow-Up Study suggest that swapping whole grains for white rice could help lower diabetes risk: Researchers found that women and men who ate the most white rice—five or more servings a week—had a 17% higher risk of diabetes than those who ate white rice less than one time a month. People who ate the most brown rice—two or more servings a week—had an 11% lower risk of diabetes than those who rarely ate brown rice. Researchers estimate that swapping whole grains in place of even some white rice could lower diabetes risk by 36%.

Skip the sugary drinks, and choose water, coffee, or tea instead

Like refined grains, sugary beverages have a high glycemic load, and drinking more of this sugary stuff is associated with increased risk of diabetes. According to Health Study, women who drank one or more sugar-sweetened beverages per day had an 83% higher risk of type 2 diabetes, compared with women who drank less than one sugar-sweetened beverage per month.

Combining the Health Study results with those from seven other studies found a similar link between sugary beverage consumption and type 2 diabetes. For every additional 12-ounce serving of sugary beverage that people drank each day, their risk of type 2 diabetes rose 25%. Studies also suggest that fruit drinks—powdered drinks, fortified fruit drinks, or juices—are not the healthy choice that food advertisements often portray them to be. According to Health study, who drank two or more servings of fruit drinks a day had a 31% higher risk of type 2 diabetes, compared with women who drank less than one serving a month.

How do sugary drinks lead to this increased risk? Weight gain may explain the link. In Health Study, women who drank more sugary drinks gained more weight than women who cut back on sugary drinks. Several studies show that children and adults who drink soda or other sugar-sweetened beverages are more likely to gain weight than those who don't, and that switching from these to water or unsweetened beverages can reduce weight. Even so, weight gain caused by sugary drinks may not completely explain the increased diabetes risk. There is mounting evidence that sugary drinks contribute to chronic inflammation, high triglycerides, decreased "good" (HDL) cholesterol, and increased insulin resistance, all of which are risk factors for diabetes.

What to drink in place of the sugary stuff? Water is an excellent choice. Coffee and tea are also good calorie-free substitutes for sugared beverages (as long as you don't load them up with sugar and cream). And there's convincing evidence that coffee may help protect against diabetes; emerging research suggests that tea may hold diabetes-prevention benefits as well, but more research is needed.

There's been some controversy over whether artificially sweetened beverages are beneficial for weight control and, by extension, diabetes prevention. Some studies have found that people who regularly drink diet beverages have a higher risk of diabetes than people who rarely drink such beverages, but there could be another explanation for those findings. People often start drinking diet beverages because they have a weight problem or a family history of diabetes; studies that don't adequately account for these other factors may make it wrongly appear as though the diet soda led to the increased diabetes risk. A long-term analysis on data from 40,000 men in the Health Professionals

Follow-up Study found that drinking one 12-ounce serving of diet soda a day did not appear to increase diabetes risk. So, in moderation diet beverages can be a sugary-drink alternative for adults.

#### Choose healthy fats

The types of fats in your diet can also affect the development of diabetes. Healthful fats, such as the polyunsaturated fats found in liquid vegetable oils, nuts, and seeds can help ward off type 2 diabetes. Trans fats do just the opposite. These harmful fats were once found in many kinds of margarine, packaged baked goods, fried foods in most fast-food restaurants, and any product that listed "partially hydrogenated vegetable oil" on the label. Eating polyunsaturated fats from fish—also known as "long chain omega 3" or "marine omega 3" fats—does not protect against diabetes, even though there is much evidence that these marine omega 3 fats help prevent heart disease. If you already have diabetes, eating fish can help protect you against a heart attack or dying from heart disease.

Limit red meat and avoid processed meat; choose nuts, beans, whole grains, poultry, or fish instead  
The evidence is growing stronger that eating red meat (beef, lamb) and processed red meat (bacon, hot dogs, deli meats) increases the risk of diabetes, even among people who consume only small amounts. A meta-analysis combined findings from the Nurses' Health Studies I and II, the Health Professionals Follow-up Study, and six other long-term studies. The researchers looked at data from roughly 440,000 people, about 28,000 of whom developed diabetes during the course of the study. They found that eating just one 3-ounce serving of red meat daily—say, a steak that's about the size of a deck of cards—increased the risk of type 2 diabetes by 20%. Eating even smaller amounts of processed red meat each day—just two slices of bacon, one hot dog, or the like—increased diabetes risk by 51%.

The good news from this study: Swapping out red meat or processed red meat for a healthier protein source, such as nuts, low-fat dairy, poultry, or fish, or for whole grains lowered diabetes risk by up to 35%. Not surprisingly, the greatest risk reductions came from ditching processed red meat.

How meat is cooked may matter too. A study of three large cohorts followed for 12-16 years—including more than 289,000 men and women from the Nurses' Health Studies and the Health Professionals Follow-up Study—found that participants who most frequently ate meats and chicken cooked at high temperatures were 1.5 times more likely to develop type 2 diabetes, compared with those who ate the least. An increased risk of weight gain and developing obesity in the frequent users of high-temperature cooking methods may have contributed to the development of diabetes. Why do these types of meat appear to boost diabetes risk? It may be that the high iron content of red meat diminishes insulin's effectiveness or damages the cells that produce insulin. The high levels of sodium and nitrites (preservatives) in processed red meats may also be to blame. Red and processed meats are a hallmark of the unhealthy "Western" dietary pattern, which seems to trigger diabetes in people who are already at genetic risk.

Furthermore, a related body of research has suggested that plant-based dietary patterns may help lower type 2 diabetes risk, and more specifically, those who adhere to predominantly healthy plant-based diets may have a lower risk of developing type 2 diabetes than those who follow these diets with lower adherence:

A 2019 meta-analysis that included health data from 307,099 participants with 23,544 cases of type 2 diabetes examined adherence to an "overall" predominantly plant-based diet (which could include a mix of healthy plant-based foods such as fruits, vegetables, whole grains, nuts, and legumes, but also less healthy plant-based foods such as potatoes, white flour, and sugar, and modest amounts of animal products). The researchers also looked at "healthful" plant-based diets, which were defined as those emphasizing healthy plant-based foods, with lower consumption of unhealthy plant-based foods. They found that people with the highest adherence to overall predominantly plant-based diets had a 23% lower risk of type 2 diabetes compared to those with weaker adherence to the diets. The researchers also found that the association was strengthened for those who ate healthful plant-based diets

Don't smoke

Add type 2 diabetes to the long list of health problems linked with smoking. Smokers are roughly 50% more likely to develop diabetes than nonsmokers, and heavy smokers have an even higher risk