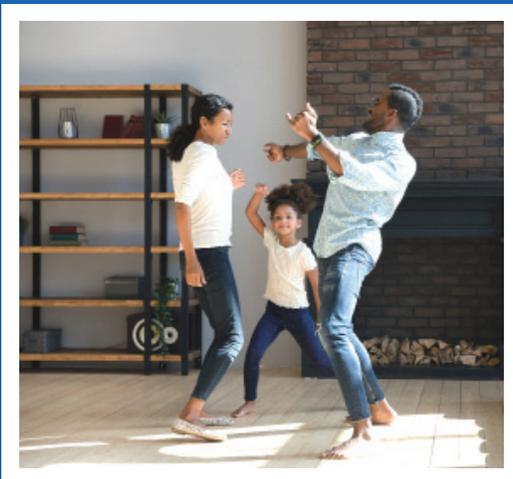


Diabetes and heart disease: what is the connection?



Research suggests a strong link between diabetes and heart disease. The conditions share many of the same risk factors, including obesity, high blood pressure, and high cholesterol.

Research has discovered specific biological mechanisms that are associated with diabetes that increase the risk of heart disease.

Heart disease and stroke are the leading causes of death in people with diabetes. This information is according to

the [National Institute of Diabetes and Digestive and Kidney Diseases](#).

Undeniably, adults with diabetes are *two to four times* more inclined to die from heart disease than adults without diabetes. High blood sugar levels in people with diabetes may damage blood vessels, increase inflammation, and disrupt the normal blood flow in the heart.

Therefore, it's very important for people with diabetes to minimize heart disease risk by controlling their



blood sugar, blood pressure, and cholesterol levels, eating a healthy diet, getting regular exercise, and taking the doctor's prescribed medications.

What is heart disease?

Heart disease refers to a group of conditions that affect the heart. It is the leading cause of death in the United States. In fact, it is responsible for approximately one in every four deaths. This is according to the [Centers for Disease Control and Prevention \(CDC\)](#).

The most common type of heart disease is coronary artery disease. It develops over time as the arteries that supply blood to the heart fill up with plaque, along with cholesterol and other substances.

Plaque causes the arteries to harden and narrow. This is known as [atherosclerosis](#).

Narrowing of the arteries will diminish blood supply to the heart, starving it of oxygen and nutrients. This causes the heart muscle to weaken over time, increasing a person's risk of [heart failure](#), [heart attack](#), and other heart issues.

What is the connection?

According to the American Heart Association (AHA), adults with diabetes have a [two to four times](#) greater possibility to die heart disease than those without diabetes.

People with diabetes regularly have many of the same risk factors associated with heart disease, including:

- **having high blood pressure (hypertension):** the AHA also say that having both hypertension and diabetes doubles a person's risk of heart disease
- **having unhealthy cholesterol and triglyceride levels:** this contributes to a buildup of plaque in the arteries and is a major factor in developing insulin resistance
- **having obesity, having a body mass index (BMI) over 30:**

weight loss in people who have both obesity and diabetes can lower cardiovascular risk and increase insulin sensitivity

- **not getting enough physical activity:** exercise helps:
 - maintain a moderate body weight
 - reduce blood pressure
 - support healthy blood sugar levels and lower A1C levels
 - reduce risk of type 2 diabetes, heart attack, and stroke
- **eating an unhealthy diet:** diets associated with both heart disease and diabetes are high in:
 - refined grains
 - added sugars
 - salt
 - saturated and trans fats
 - [processed foods](#)

How diabetes affects the heart

High sugar levels in the blood of people with uncontrolled diabetes can damage blood vessels over time. It can also damage nerves throughout the body, including those that control the heart and blood vessels.

[Studies](#) suggest high blood sugar may increase inflammation in the blood vessels and can disrupt regular blood flow in the heart. Long-term inflammation in the arteries results in a buildup of cholesterol and plaque. This means that the heart has to work harder to pump blood.

The longer a person has uncontrolled diabetes, the higher their risk of heart disease. Managing your blood sugar levels reduces a person's risk of complications.

[Research in mice](#) also suggests that people with diabetes may have lower levels of two enzymes that work to control the production of nitric oxide. Nitric oxide is a gas that can relax the blood vessels.

These findings could in the course of time, lead to new drugs for heart disease and diabetes aimed at preventing vascular damage. For now, however, more research is necessary.



Best diet for heart disease and diabetes

Eating for diabetes and heart disease prevention involves choosing foods that reduce your blood pressure, overall cholesterol, low-density lipoprotein (LDL) cholesterol, fasting blood sugar levels, and triglycerides.

In general, foods that are best for managing heart disease and diabetes are:

— low in:

- sodium
- cholesterol
- saturated fats (and free of trans fats)

— high in:

- antioxidants
- vitamins
- minerals
- fiber

When grocery shopping, try to choose plenty of fresh, whole foods. Also, try to limit processed or packaged foods, which may be high in salt or sugar.

Some examples of good food choices include:

- fresh fruits
- fresh vegetables
- low fat dairy
- brown rice
- legumes, such as chickpeas or lentils
- whole grain bread or pasta
- [healthy fats](#), such as those in olive oil, avocados, nuts, and seeds
- lean protein, such as skinless chicken, lentils, eggs, and fish

A registered dietitian can offer advice to manage weight and eat healthily for heart disease and diabetes.



Testing for heart disease

There is no single test that diagnoses heart disease. A doctor will likely conduct a variety of tests to understand a person's overall metabolic health. These tests may include:

- **blood tests:** these check total cholesterol, LDL cholesterol, high-density lipoprotein cholesterol, and triglycerides (a type of fat in the blood)
- **echocardiograms:** use sound waves to produce images of the heart to see how well blood moves through it
- **transesophageal echocardiography (TEE):** this also uses sound waves to get a picture of the heart. With TEE, a doctor can assess a person's heart valves and check for blood clots
- **electrocardiograms (EKG):** these measure electrical activity of the heartbeat to look for any irregularities. With an EKG, a doctor can understand if a person's heart is working too hard or if they've recently had a heart attack
- **CT or CAT scans:** these use a computer to produce cross-sectional images of the heart
- **stress tests:** can assess the heart's response to exercise



How to take care of the heart with diabetes

Managing your blood sugar, blood pressure, and cholesterol levels is the most important way for a person with diabetes to take care of their heart. They can generally achieve this through diet, medication, exercise, and alternative lifestyle modifications.

Diet is essential in managing blood sugar levels. A person should try to focus on eating lots of fresh fruits, vegetables, whole grains, legumes, lean protein, and low-fat milk. They should also try to limit processed, sugary, and fatty foods.

Medication is also recommended for some people. In [clinical trials](#), many newer diabetes medications have significantly reduced the risk of heart disease and stroke.

For people with type 2 diabetes who are at higher risk of heart disease, the recently updated [American Diabetes Association guidelines](#) recommend that doctors should prescribe sodium-glucose cotransporter 2 inhibitors, such as empagliflozin ([Jardiance](#)), or glucagon-like peptide 1 receptor agonists, such as liraglutide (Victoza).

A doctor may recommend medications such as aspirin to reduce blood pressure, lower cholesterol, and prevent blood clots.

It is critical for those who currently smoke to stop smoking.

For your overall heart health, the [AHA](#) recommend getting at least 150 minutes of moderate intensity aerobic activity or 75 minutes of vigorous aerobic activity per week.

Moderate intensity aerobic activity includes such activities as:

- **brisk walking**
- **dancing**
- **tennis**
- **cycling at a speed slower than 10 miles per hour (mph)**

Examples of vigorous activities include:

- **hiking uphill**
- **jogging**
- **cycling at a speed faster than 10 mph**
- **swimming laps**

People should aim to do a full-body muscle-strengthening activity, such as weight lifting or pilates, at least two days per week.



Overall, a person should try to spend less time sitting. Over time, the goal is to increase the amount and intensity of physical activity.

The takeaway

There is a strong link between diabetes and heart disease. These conditions share common risk factors, including high blood pressure, high cholesterol, obesity, and more.

Over time, uncontrollable high blood sugar can damage the blood vessels and nerves that control the heart.

People with diabetes can significantly reduce their risk of heart disease by losing weight (if they have obesity or overweight), increasing physical activity, eating fresh, healthy foods, and taking prescribed medications.