Did you know?

High blood sugar can damage blood vessels all over the body and cause:

**DIABETIC EYE DISEASE**
High blood sugar causes small blood vessels in the eye to become swollen.

**HEART ATTACK**
Blood vessels clogged with plaque can lead to heart attack.

**KIDNEY PROBLEMS**
May start when plaque constricts blood flow to the renal arteries.

**PAD**
Uncontrolled, elevated blood sugar can lead to narrowed blood vessels and peripheral artery disease (PAD), which can cause leg pain. If not treated, lack of oxygen and blood flow in the extremities can lead to amputation.

**FOOT ULCERS**
Lack of oxygen-rich blood in the feet, plus a small wound, can lead to skin ulcers. Some diabetics can’t feel their feet and won’t know they’re in trouble.

**STAY HEALTHY**
- See your physician regularly
- Consult with specialists such as vascular surgeons
- Check feet every day
- Follow up on vision changes and chest pain (immediately)
- Don’t smoke; it makes vascular disease worse

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People who live with diabetes know they have a lot of health management to do – monitor their blood sugar, stay alert for eye problems and monitor for foot infections.

But some may not understand that many of the most common complications of diabetes stem from one primary issue: the havoc that high blood sugar, also called hyperglycemia, causes for the body's blood vessels. Because blood brings oxygen to every living cell in the body, when blood vessels aren't working properly, the body suffers.

"Diabetes is one of the strongest risk factors for any form of vascular disease, both symptomatic and asymptomatic," explained Dr. Gregory Moneta, a member of the Society for Vascular Surgery (SVS) and professor and chief of vascular surgery at Oregon Health and Science University Knight Cardiovascular Institute. "Those with diabetes should have regular doctor visits and tests, and may need to see specialists such as ophthalmologists, vascular surgeons and podiatrists for checkups."

In conjunction with National Diabetes Awareness Month in November, here is how six vascular complications are aggravated by diabetes:

**Diabetic eye disease.** Diabetes' effect on the vascular system is what causes diabetic eye disease. The tiny blood vessels in the retina become swollen, which blocks the oxygen supply to the retina. If the condition becomes severe, it can cause blindness.

**What to do:** Be alert for changes in vision. Have a dilated eye exam at least annually.

**Peripheral artery (or arterial) disease**, also known as PAD, occurs when plaque builds up in the arteries and reduces blood flow to the feet and legs. Fairly common among elderly Americans, PAD is even more likely among those with diabetes, which increases plaque buildup. An early indicator can be intermittent claudication, which is leg pain that comes on with walking and goes away with rest.

**What to do:** A daily walk is often the first prescription, as long as there are no other health problems, such as an ulcer on the foot. Walking increases blood flow to the legs and feet and also can eventually decrease leg pain. Before starting to exercise, be sure to discuss it with a physician. Patients who have PAD symptoms should have regular checkups with a vascular surgeon.

**Foot ulcers and peripheral neuropathy.** While diabetic foot ulcers can be a result or complication of PAD, they can also be caused by peripheral neuropathy, or lack of sensation in the feet, which is also caused by diabetes. These patients would not feel pain if they get an open sore on their foot. Sores that are left untreated are dangerous for those with diabetes.

**What to do:** Ulcers can be prevented with frequent foot checks and proper diabetic footwear. Diabetics with foot ulcers should be evaluated by an amputation prevention or limb salvage team that includes a vascular surgeon and a podiatrist.

**Smoking complications.** Cigarette smoking damages everyone's blood vessels, but for those with diabetes, there is a significant increase in risk. Tobacco smoke causes inflammation, which causes plaque buildup. Smoking also damages blood vessel walls and contributes to bad cholesterol numbers.

**What to do:** It can be hard to quit smoking, but for diabetics it is a must. Those who cannot quit on their own can call a smokers' hotline, join a support group or ask a physician for advice. Try www.cdc.gov/tips, www.lung.org/stop-smoking or call 1-800-QUIT-NOW (1-800-784-8669).

**Heart attack.** Patients with diabetes are at higher risk of heart attack as diabetes also affects the arteries supplying blood to the heart. Patients with diabetes and heart disease may not have typical symptoms of heart disease like exercise or activity induced chest pain (angina) warning of a heart attack.

**What to do:** Prevention is the best course of action. Maintain weight, blood sugar and cholesterol levels, and report chest pain, exercise intolerance or shortness of breath to a doctor. Follow the doctor's advice to reduce cholesterol
Renovascular conditions. Diabetes affects the blood vessels of the kidneys and can lead to kidney failure and the need for dialysis or a kidney transplant. Kidney failure may have no symptoms until it is advanced and not reversible.

What to do: Prevention again is the best course of action. Good blood sugar and blood pressure control can reduce the risk of diabetes-associated kidney failure. See a doctor regularly for blood tests, which can detect kidney failure in its early stages. Early on, kidney problems may be treatable with medications that could prevent kidney failure and the need for dialysis.

Learn more about diabetes and vascular disease, or visit the Society for Vascular Surgery Patient Resources website.

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