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Cholesterol and Blood Pressure in Diabetes: Protecting Your Blood Vessels

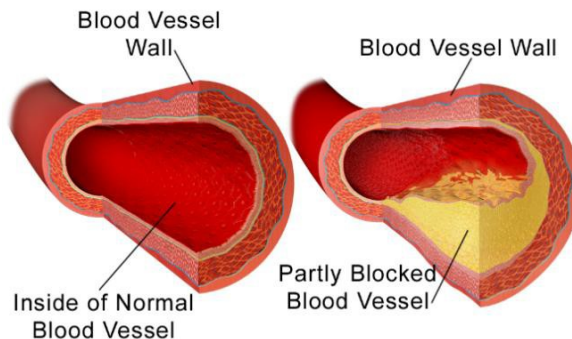
Most adults with Type 1 or Type 2 diabetes are at higher risk for heart disease. This means having narrowed or blocked blood vessels. There are 5 major risk factors that you can work on to keep your blood vessels healthy:

- 1) Blood pressure
- 2) Cholesterol and triglycerides (lipids)
- 3) Blood sugar
- 4) Smoking
- 5) Weight management

Blood vessels

Your blood vessels are your arteries and veins. They act like pipes in your body and carry nutrients and oxygen-rich blood to your organs. If these vessels are put under stress and inflammation over years, they can become stiff, blocked, and cause organ damage.

A blocked artery to your heart (coronary artery) causes a heart attack. A blocked blood vessel in the brain causes a stroke. Damage to the smaller blood vessels in your eyes or kidneys can cause vision problems or kidney damage needing dialysis. Damage to the vessels going to the nerves in your hands and feet can cause numbness, tingling, or poor sensation (neuropathy). Damage to the vessels in your feet can cause foot ulcers and



Normal and Partly Blocked Blood Vessel

Image source: Blausen.com staff. "[Blausen gallery 2014](#)". *Wikiversity Journal of Medicine*. DOI:10.15347/wjm/2014.010. ISSN 20018762.

Blood pressure (BP)

High BP is a major risk factor for blocked arteries. As people get older, blood vessels get stiffer. The pressure inside the vessels goes up with time.

- Diabetes Canada guidelines recommend a BP target of **less than 130/80 mm Hg** for people with diabetes.
- It's important to take your BP properly so that you have the most accurate readings. Taking your BP at home can help your healthcare team track your blood pressure more accurately.

Why BP may go up normally

- Stress
- Smoking
- Cold temperatures
- Exercise
- Full stomach
- Full bladder
- Caffeine
- Pain
- Certain medicines, particularly cold/flu medicines.

Avoid any of the above for at least half an hour before taking your blood pressure. If you need help choosing a home blood pressure monitor, please ask your healthcare provider or visit:

[Home Blood Pressure Monitors Endorsed by Hypertension Canada](#)

Always follow the instructions that come with your blood pressure monitor.

Monitoring your blood pressure at home

- 1) Find a quiet place to take your blood pressure.
- 2) Roll up the sleeve on your left arm. Remove any tight-sleeved clothing, if needed. (It's best to take your blood pressure from your left arm if you're right-handed. You can use the other arm if your healthcare provider has told you to.)
- 3) Rest in a chair next to a table for 5 to 10 minutes. (Your left arm should rest comfortably at heart level on the table, or be raised on some items on the table to the level of your heart.)
- 4) Sit up straight with your back against the chair. Keep your legs uncrossed and your feet on the floor.
- 5) Rest your forearm on the table with your palm facing up.
- 6) Measure and record your blood pressure twice in the morning, and twice in the evening for 1 week.
- 7) Show your numbers to your doctor.

Tip: Take a picture of the numbers if you have a smart phone.

When to measure your blood pressure

- After any changes in your medicines or dosing of medicines.
- When you have new symptoms or don't feel well (e.g., if you're dizzy).
- The week before seeing your healthcare provider.
- When your healthcare provider tells you to.

Cholesterol

Cholesterol is a waxy material in your blood. Your liver makes most of it, but some of it comes from the food you eat. Our bodies need some cholesterol to stay healthy. High levels of cholesterol can build up over years and block blood vessels.

2 main types of cholesterol in your blood

- 1) **Healthy cholesterol** — High density lipoprotein (**HDL**) cholesterol: HDL moves some cholesterol out of your blood, so it can be removed from your body.

Higher blood levels of **HDL** are **healthy** for your heart.

- 2) **Bad cholesterol** — Low density lipoprotein (**LDL**) cholesterol: LDL leaves cholesterol in the walls of blood vessels. Over time, the vessels can become blocked and may cause a heart attack or stroke.

Lower blood levels of **LDL** are **healthy** for your heart.

People with diabetes have a higher risk of heart disease, even if their LDL cholesterol (“bad” cholesterol) is within normal range. The risk is even higher if the LDL cholesterol is above the normal range.

Adults with diabetes should have their cholesterol tested every 1 to 3 years, or less often after starting cholesterol medicines.

LDL targets for people with diabetes: **2.0 mmol/L or less**

Total cholesterol to HDL ratio targets: **Less than 4.0 mmol/L**

Triglycerides

Triglycerides are a type of fat in your blood. They’re made in your body from the sugar, fat, and alcohol you eat and drink. High blood levels of triglycerides increase your risk for heart attack or stroke. Reducing sugar and white carbohydrates (white bread, white rice, potatoes, white pasta) as well as saturated fats can help to lower your triglycerides.

Resource: A Healthy Lifestyle to Improve Cholesterol and Triglycerides (Nutrition Services)

Vascular Protection Checklist

Ask your doctor about the ABCDEs to lower your risk of heart attack and stroke:

A: A1C – Sugar control target is usually 7% or less.

- ✓ Bring blood sugar records with you. They can be written down or printed from your blood sugar meter.
- ✓ Always remember to tell your healthcare team about low blood sugar.

B: BP – Blood pressure control (less than 130/80 mmHg).

- ✓ Bring your blood pressure records.
- ✓ For at least 1 week before your appointment, measure and record your blood pressure twice in the morning.

C: Cholesterol – LDL cholesterol should be less than or equal to 2.0 mmol/L.

- ✓ Tell your healthcare team if you stop or change your cholesterol medicines.

D: Drugs to protect your heart, such as blood pressure pills (ACE inhibitors or ARBs), cholesterol-lowering pills (statins), ASA (Aspirin), or other medicines.

- ✓ Bring a list of all your medicines.
- ✓ Ask your pharmacist to print off an updated medicine list before your appointment.
- ✓ Take your blood pressure pills the way they were prescribed.
- ✓ If your blood pressure results are normal, do **not** stop taking medicines unless your healthcare provider tells you to. We measure your blood pressure while you're taking medicine to see if it's working.
- ✓ Tell your team if you don't follow the dosing instructions and why. This will help them adjust your medicine properly.
- ✓ Tell your team which medicines need to be refilled.

E: Exercise – Regular exercise, which includes:

- ✓ Healthy diet
- ✓ Getting to and maintaining a healthy body weight

S: Stop smoking and manage stress. Remember to keep talking to your healthcare team about:

- ✓ Smoking
- ✓ Mood and stress
- ✓ Sexual function

This page was adapted by the Edmonton Zone Diabetes Resource Working Group with permission from Diabetes Canada*. Protect Your Heart... Do Your Part!! Do you have Diabetes? Ask your healthcare professional about the ABCDEs to REDUCE your risk of heart attack and stroke. <http://guidelines.diabetes.ca/vascularprotection/patientabcde April 2013>. Accessed September 2017.

*The Canadian Diabetes Association is the registered owner of the name Diabetes Canada.