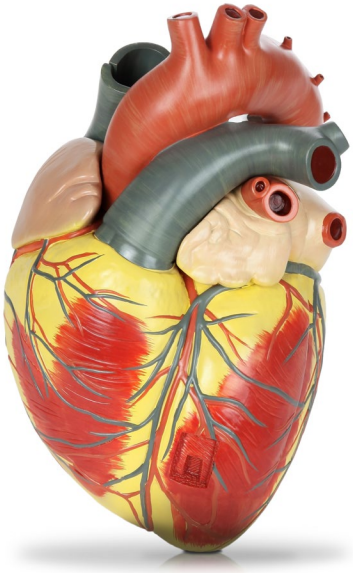
Teach Back: Macrovascular Complications: Cardiovascular System

Ask: “Can diabetes harm the arteries of the heart and the brain? What happens when the arteries of the heart or the brain are damaged?” Explore how much the participants know about complications that affect the heart and the brain. Make concepts clear and then ask: “How can these problems be prevented?” Make a list on the flip chart or board and explain prevention measures.

The Heart and the Brain

High glucose in the blood harms the arteries. If there is also high cholesterol, as is often the case in persons with diabetes, the arteries become narrower inside and can become obstructed. The large arteries that are most affected by diabetes are usually those that irrigate the heart and the brain, but the arteries of the legs can also be affected.



People with diabetes have a higher risk (2 to 4 times) of developing cardiovascular (heart and blood vessels) diseases than the average person. However, controlling blood glucose levels, cholesterol, and blood pressure, and not smoking reduces the risk of these complications.

- Damage to the blood vessels that irrigate the heart may cause:
  - **Chest pain** (known as Angina), which can be transient. **However**, it can also signal the beginning of a myocardial infarction (heart attack)
  - **Myocardial infarction** is serious damage to the heart muscle and, depending on its size or the part of the heart it affects, may lead to death.
- Damage to the blood vessels in the brain may cause:
  - **Stroke:** the flow of blood and oxygen to the brain is blocked by the occluded arteries. These brain injuries may cause paralysis to parts of the body requiring a long period of rehabilitation. In other cases, this complication may cause death.
- Damage to the blood vessels in the legs may cause:
  - **Claudication:** Poor circulation manifested by cold feet, muscle spasms, pain when walking, or incapacity to walk.
  - These conditions may become complicated with poor wound healing, skin infections, blisters or ulcers on the feet that do not heal and that may lead to bone infections and amputations

How can we prevent cardiovascular complications?

There are many actions we can take to prevent these complications in people with diabetes:

- The first step is to control diabetes. It is highly recommended to use all the strategies for the control of diabetes, including eating healthy foods and exercising.
- Maintain LDL cholesterol lower than 100 mg/dl. It is recommended to consult a dietitian for an appropriate meal plan and a doctor to obtain lipid lowering prescriptions (See module 5, fats or lipids).
- If a person with diabetes smokes, they increase the risk of cardiovascular damage. It is recommended that people with diabetes quit smoking. If necessary, the patient should consult a physician for help or be referred to the Quitline program to quit smoking.
- If a person with diabetes has hypertension, they has a greater risk of cardiovascular disease and death. It is important to receive antihypertensive treatment.
- A doctor may recommend that people with diabetes take low doses of aspirin, which may prevent heart attacks. People with diabetes should ask their doctors if long-term use of aspirin to prevent cardiovascular complications is appropriate for them.
- A person with diabetes who has already had cardiovascular complications must follow their doctor's instructions carefully and take medication as indicated.

What are the signs of a heart attack?

The signs of a heart attack may include:

- A sensation of pressure and pain on the chest that lasts only a few minutes. The pain appears and disappears.
- Pain extends to the back, neck, and arms.
- Discomfort in the chest, fainting or weakening sensation, excessive sweat, nausea, or shortness of breath.

Not all these symptoms happen during heart attacks, especially if the nerves have been affected by diabetes.

What should you do if you think you (or someone you know) are (is) suffering a heart attack or a stroke?

- **Call 911.** Call an ambulance. Do not waste time, and do not wait until a family member or friend can take you to the hospital. Every minute counts.
- Do not walk, and do not force the affected person to walk.
- Consider learning CPR (cardiopulmonary resuscitation) in case someone close to you has a heart attack. Consider having somebody in your family learn as well.

High Blood Pressure (Hypertension)

Ask: “Do you know your blood pressure? Why is it important to control blood pressure?” Explain the importance of controlling blood pressure.

Blood pressure is the force that pushes the blood against the arterial walls. The normal blood pressure value for an adult without diabetes should be at or below 120/80 mm Hg. Blood pressure is generally expressed by two numbers, for example 120 and 80, and the units of measurement are millimeters of mercury. The first number refers to the pressure when the heart contracts and pumps blood out. At this moment, the heartbeat can be heard. This is called the systolic pressure. In between beats, the arteries are more relaxed but are tense enough to allow the flow of blood through the body. This is the second value, and it is called diastolic pressure.

The recommended blood pressure values for people with diabetes are below 130/80 mm Hg to be considered under control. The goal for those with diabetic nephropathy may be less than 125/75 mm Hg.

Hypertension is the clinical term for blood pressure values of 140/90 mm Hg or above. Hypertension is very common among people with diabetes; about 50% of people with diabetes have high blood pressure. Like diabetes, hypertension cannot be cured, but it can be managed and kept under control. Any person with diabetes and blood pressure above 130/80 mm Hg faces a greater risk of cardiovascular, kidney and eye complications.

Hypertension may not produce any symptoms; that is why it is called the **silent enemy**. It may be discovered through a simple routine blood pressure test. Only the doctor can decide whether your blood pressure is too high and whether medication is necessary. However, it is good to know how to get one’s blood pressure, do it once a month and later confirm it at medical checkups.

Recommendations for the prevention and treatment of high blood pressure:

- Control diabetes. If diabetes worsens, so will the hypertension.
- Take your blood pressure regularly.
- Avoid weight gain through careful healthy eating. Permanent weight reduction, even if small, can help lower high blood pressure (see module 5).
- Exercise regularly (see module 4).
- Reduce salt in the food, little by little, until it is completely eliminated from the diet. Educate the rest of the family to do the same because children are also at risk of hypertension.

- Quit smoking if you smoke. Tobacco damages blood vessels and worsens hypertension.
- Include stress reduction strategies like meditation, yoga, relaxation prayer in your daily routine.
- Take medications as indicated, every day at the appropriate time. If any medications cause discomfort, they must not be suspended. Instead, a change of medication may be necessary, and the person should ask the doctor. Medicines for hypertension are successful in reducing high blood pressure.

Ask participants, “Has anyone been diagnosed with hypertension?” If someone has hypertension, ask him or her to talk about their experience, tell the others how to control it, what the doctor said, and what medication they take. Allow questions and discussion.

Group Activity: Taking blood pressure
Duration: 15 minutes

Purpose:
Familiarize participants with the blood pressure test.

Steps to follow:
1). Give a brief explanation of how to take blood pressure. If any of the participants know how to do it, ask him or her for help with explaining.

2). Take each participant’s blood pressure.

3). Ask them to write down the results.

4). If someone has high blood pressure, refer him or her to a doctor.

If anyone’s blood pressure is extremely high (above or equal to 200/110 mm Hg) the person should be sent to the emergency room.