



Diabetes Self-Management Education and Support



Module 2
Monitoring
Revised July 2024

VA



U.S. Department of Veterans Affairs
Veterans Health Administration



U.S. Department of Defense

In This Module You Will:

- Explain why A1C, blood pressure (BP) and lipids are important to monitor for cardiovascular health.
- Understand that personal targets should be set with your provider or health care team.
- Recognize symptoms and solutions for low blood glucose.
- Identify the clinical tests that are used to monitor kidney health.
- Understand that monitoring is key to self-managing diabetes.



Know Your Diabetes ABCs

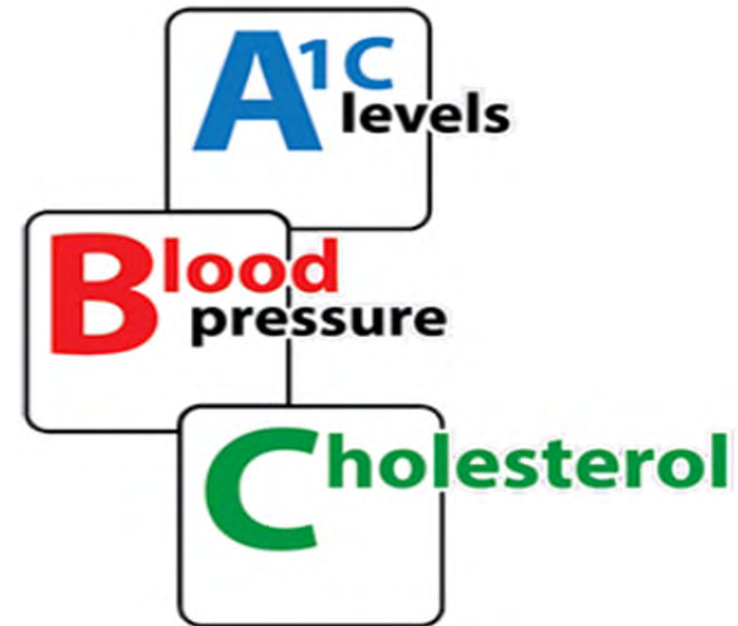
Adults with diabetes are more likely to have heart disease, stroke, and amputations than those without diabetes. By managing your ABCs (A1C, blood pressure and cholesterol) you reduce your risk for diabetes complications including kidney disease, blindness, limb amputation, and hypoglycemia (low blood glucose).

A1C: an average of your blood glucose over a 3-month period. An A1C lower than 8.5% significantly decreases risk for complications. This is discussed more in detail in **Module 7–Reducing Risks**. Talk to your provider or health care team about your A1C target or goal.

Blood Pressure (BP): the pressure exerted by the blood on the walls of the blood vessels and arteries. Talk to your provider or health care team about your blood pressure target or goal. To lower blood pressure:

- Decrease salt in your diet and limit or avoid alcohol. We will discuss more in **Module 5–Healthy Eating**.
- Stop smoking.
- Maintain a reasonable weight.
- Manage stress. This will be reviewed in **Module 3–Healthy Coping**.
- Take medications as prescribed. We will discuss more in **Module 4–Taking Medications**.
- Stay physically active. We will cover this topic in **Module 6–Being Active**.

Cholesterol (Lipids): a waxy substance needed to build cells, make vitamins and other hormones; however, too much cholesterol can be a problem. Talk to your provider or health care team about your lipid targets or goals.



My Targets:

A1c: _____

Blood Pressure: _____

LDL or “Lousy” Cholesterol: _____

HDL or “Healthy” Cholesterol: _____

Triglycerides: _____

Monitoring Your Blood Glucose

Your blood glucose monitor is a useful tool to help you manage your diabetes. It gives you a measure of the glucose in your body at a specific time.

What Can I Learn About My Blood Glucose?

You might notice a pattern. If you look at all your results, you might find that your blood glucose is higher before dinner or lowest after you eat breakfast. If a pattern is discovered, you and your provider or health care team can discuss treatment solutions.

How Do I Monitor My Blood Glucose?

You will be taught how to use a blood glucose monitor. Each monitor also comes with a detailed instruction book.

Follow the steps in the **Glucose Monitoring Tips** on the next page.

If you are having any problems with your monitor or need more help, refer to the manual or call the toll-free number located on the back of the monitor.

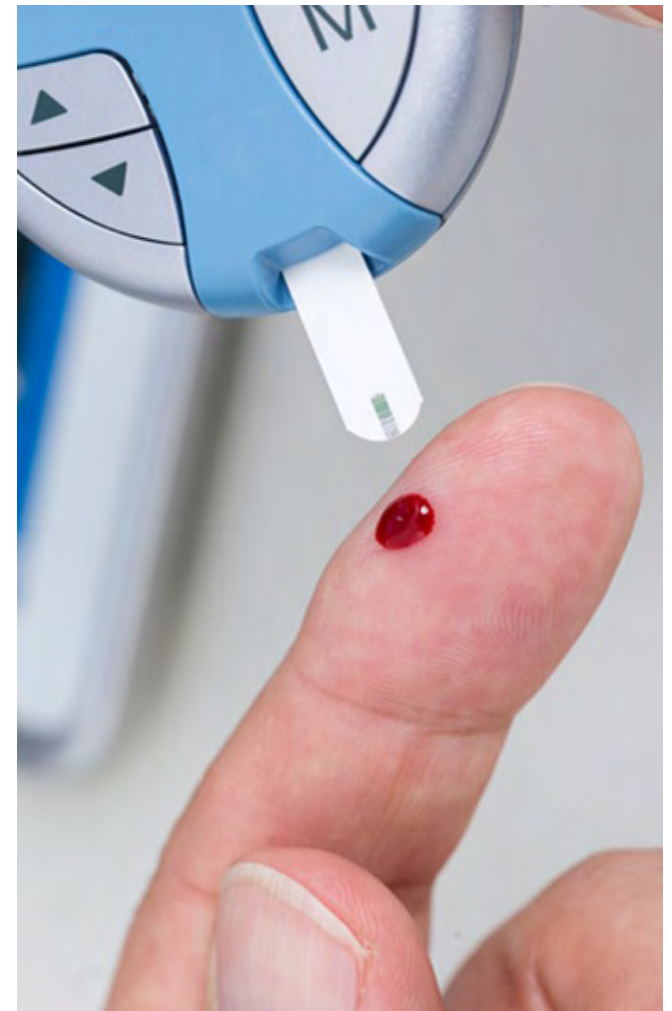


What Should My Blood Glucose Be?

Discuss your glucose targets with your provider or health care team

Glucose Monitoring Tips

- Wash your hands with warm soapy water (alcohol wipe is not recommended) to clean the surface and to promote blood flow.
- To reduce pain, prick the sides of the tips of your fingers. **Avoid the center pads.**
- Do not reuse lancets.
- Rotate test sites between all fingers.
- Teach family members how to check your glucose if you are unable to do so.
- Keep a logbook of your blood glucose readings and bring it to each provider visit OR bring your glucose meter with you to your appointments. Your provider or health care team may be able to download the information directly from your device.
- For meter problems, refer to the manual or call the telephone number on the back of the meter.
- Be familiar with error codes (found in manual).
- Batteries can be easily replaced.
- Make sure to store your strips properly; protect from extreme heat, cold, humidity, and air.
- Do not use expired test strips.



General Glucose Targets

A1c Goal	Less than 7%	7-8%	8-8.5%
Fasting	80-130	90-150	100-180
After Meal	Less than 180	N/A	N/A
Bedtime	90-150	100-180	110-200

An A1C reflects your average blood glucose over the past 3 months. For most, the target A1C is 7-8.5%. Discuss your targets with your provider or health care team.



My blood glucose target is: _____ to _____

I will check my blood glucose _____ times each day.

I will check my blood glucose at _____ a.m./p.m.

What is a Continuous Glucose Monitor (CGM)?

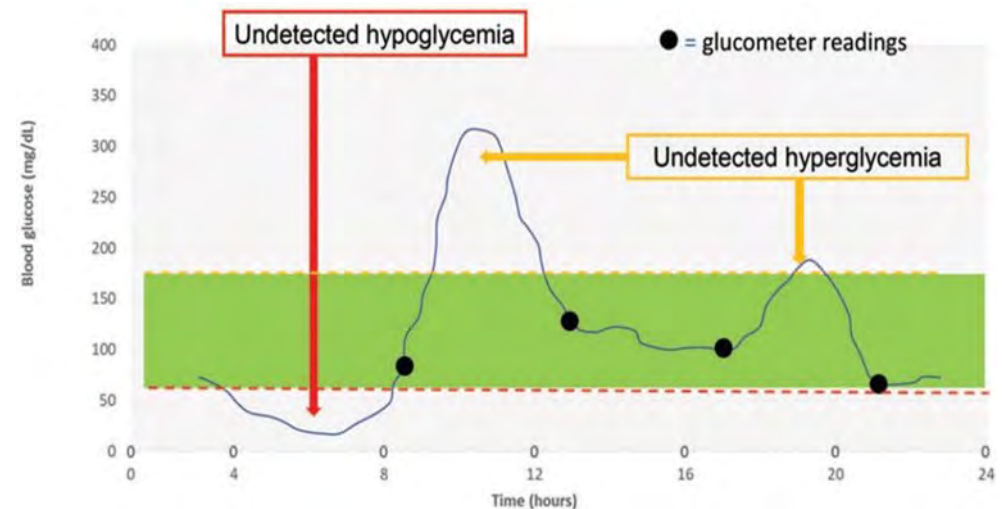
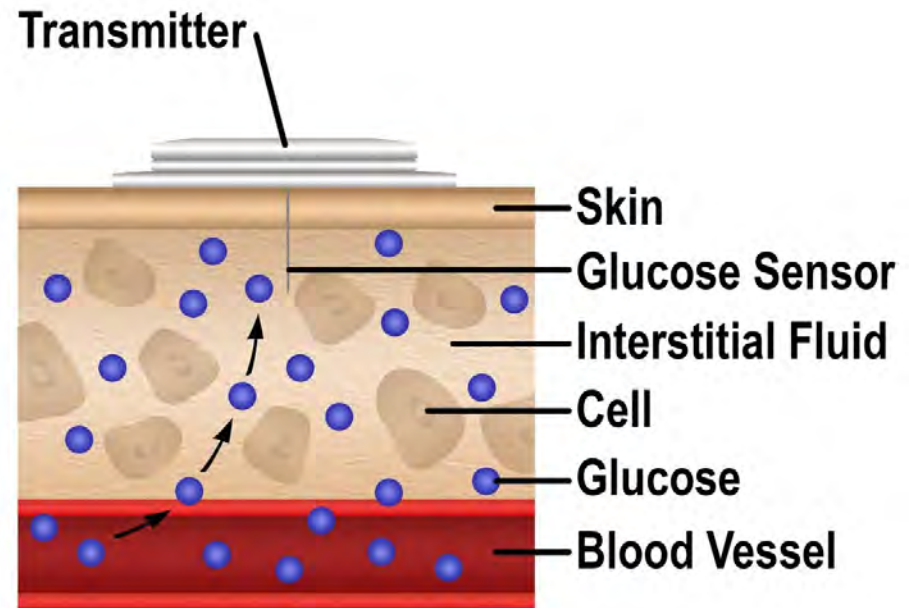
A CGM is another useful tool to measure glucose. It is a small self-inserted sensor worn on the abdomen or the back of the arm.

The CGM measures and records interstitial glucose every 5 to 15 minutes. A CGM provides additional information beyond a current glucose value.

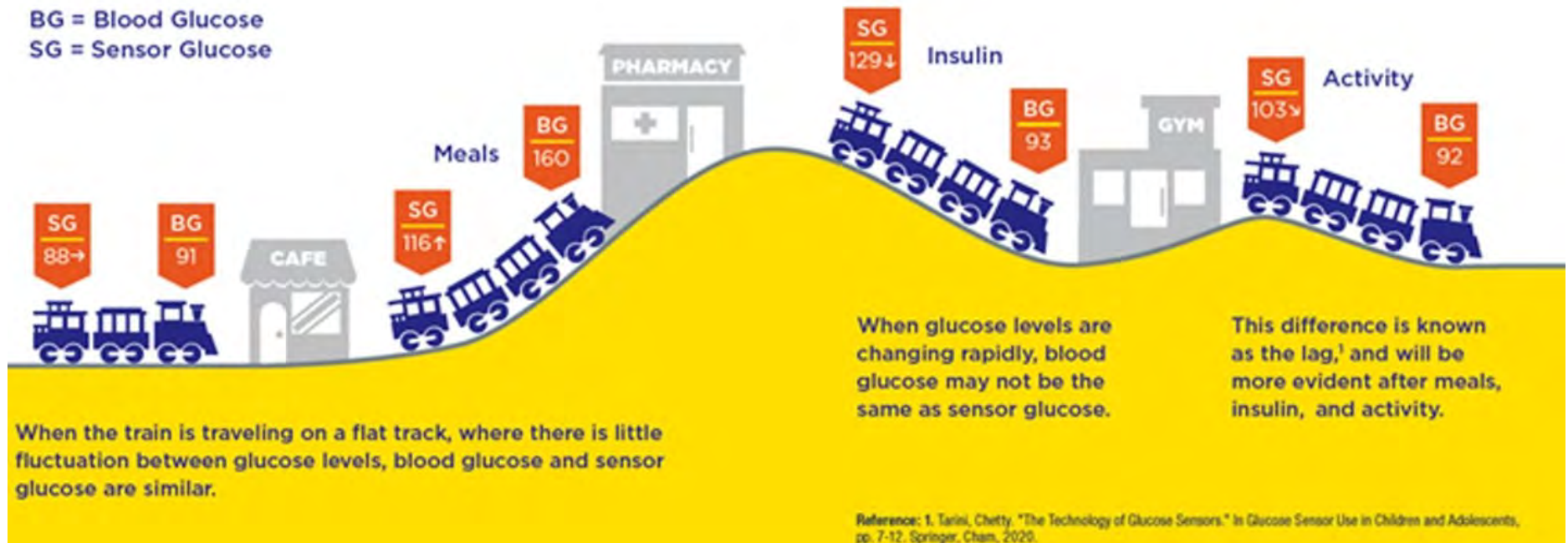
Interstitial fluid surrounds the cells in the tissue below the skin. Glucose moves from the blood (or blood vessels) into the interstitial fluid.

Some CGMs can pair with insulin pumps.

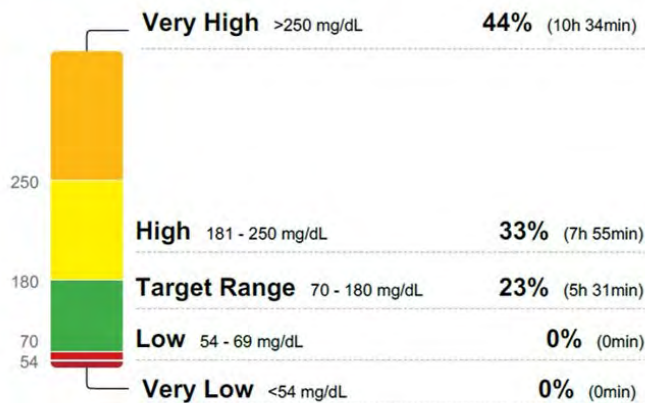
Criteria for use is different between VA and DOD. Talk to your provider or health care team to learn more about CGMs and to see if you qualify.



Sensor Glucose vs. Blood Glucose



TIME IN RANGES



- For most people, the time in range (TIR) values are 70-180.
- TIR range is customizable with alarms as needed.
- Typically TIR should be met 70% (17 out of 24 hours) of the time or more.

← Is the report here meeting that time in range?

Comparison of A1C and Estimated Average Glucose (eAG) Levels

A1C	eAG
6	126
6.5	140
7	154
7.5	169
8	183
8.5	197
9	212
9.5	226
10	240
10.5	255
11	269

A1C	What your A1C tells your provider
5.7-6.4	You have prediabetes and would benefit from going to classes to prevent diabetes.
6.5-7.0	You may have diabetes, check with your provider. If you do, it is within standard target ranges!
7.1-8.5	Still at low risk for complications. Likely glucose is within standard target ranges.
8.6-9.0	Your doctor may think this is ok if you have several other health concerns or conditions.
9.1 or higher	Recommend extra help (classes, dietitians, behavioral health, pharmacists) to help you better manage your diabetes.



My Current A1C: _____

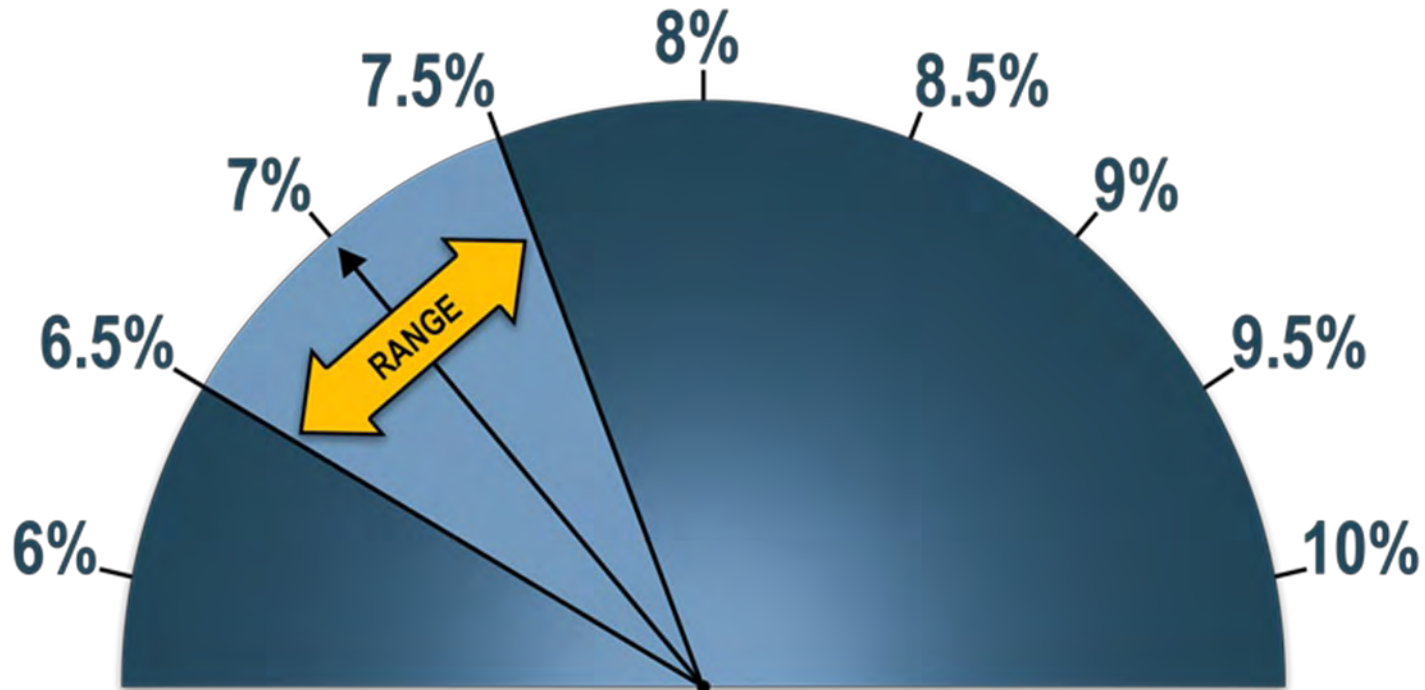
My Current eAG: _____

A1c Target

Did you know?

- Your A1C is used to monitor blood glucose over the past 3 months.
- A1C is a tool and should be used together with blood glucose monitoring.
- Your A1C reflects a range.
- Many factors may cause your A1C to vary like anemia (low iron), recent blood transfusions, dehydration, and sickle cell.

Talk to your provider or health care team to make sure that you both agree on your target A1C.



Blood Pressure (BP)

Your heart supplies your organs and tissues with blood. With every heartbeat, it pumps blood into the large blood vessels of the circulatory system. As the blood moves around the body, it puts pressure on the walls of the vessels.

Blood pressure is made up of two values:

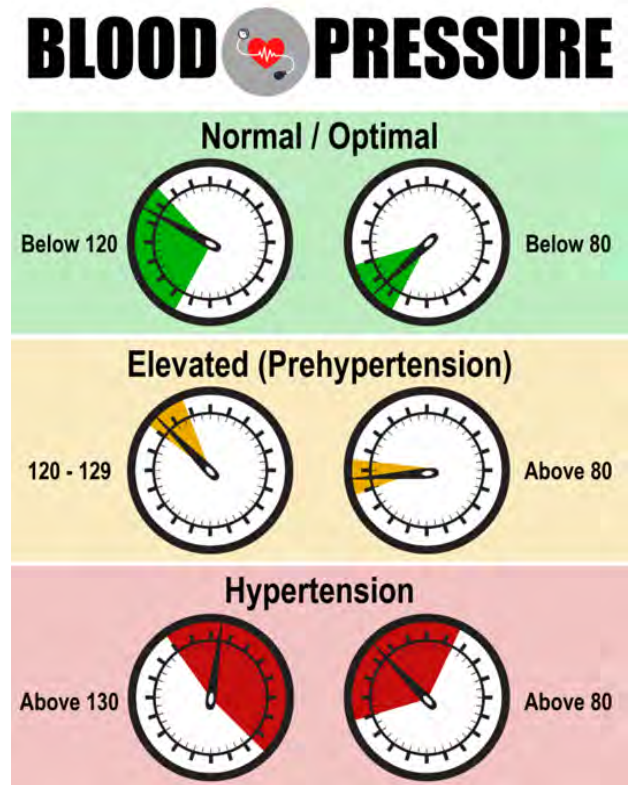
- **Systolic blood pressure**—the pressure when the heart beats
- **Diastolic blood pressure**—the pressure on the blood vessels when the heart muscle relaxes

Blood pressure varies throughout the day. To get reliable readings, blood pressure is measured more than once and while sitting down. Physical exertion, stress, pain, and extreme temperature (hot or cold) can cause blood pressure to fluctuate. This type of change in blood pressure is temporary and soon returns to baseline.

Blood pressure that is high (**above 130/80**) during several measurements is called hypertension. High blood pressure increases your risk for cardiovascular problems like heart attacks, strokes, and heart and kidney failure. We will discuss more in **Module 7—Reducing Risks**.

Managing your blood pressure is important! Here are some tips to help you:

- Eat healthy—limit sodium to 2300 mg or less per day or 700 mg per meal
- Be active
- Quit tobacco/nicotine products
- Get enough sleep
- Manage stress
- Take medications as prescribed

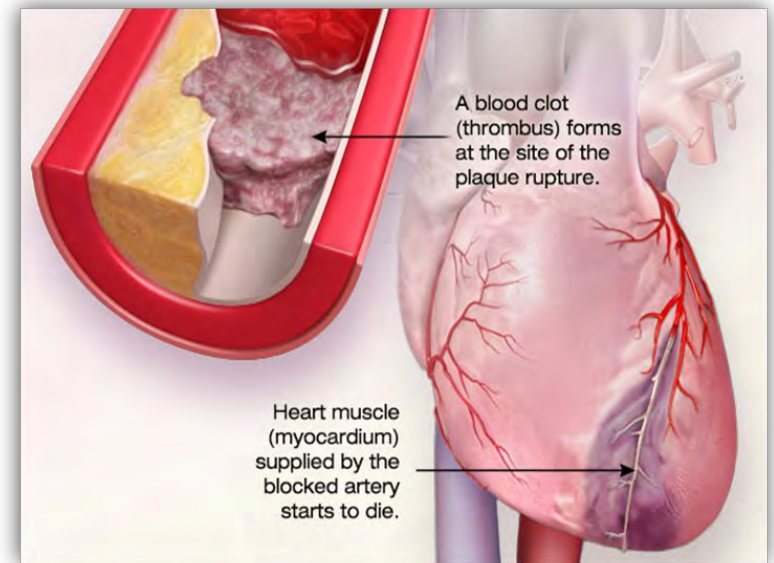
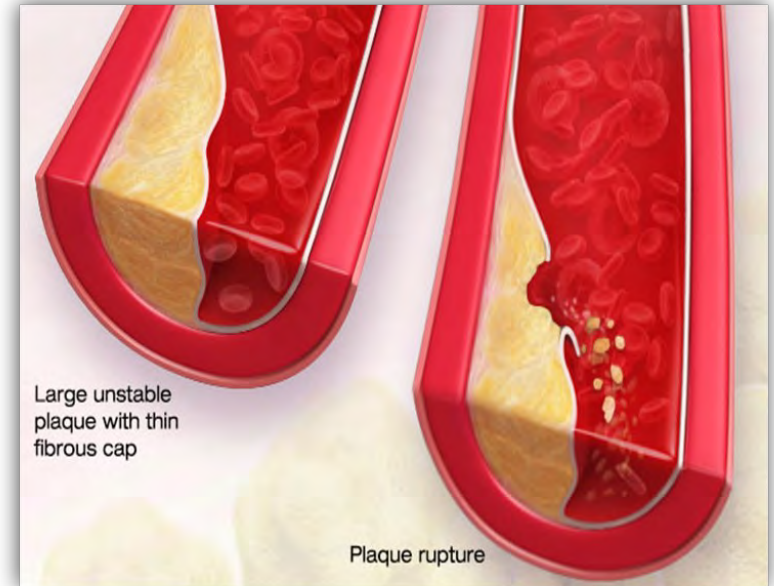
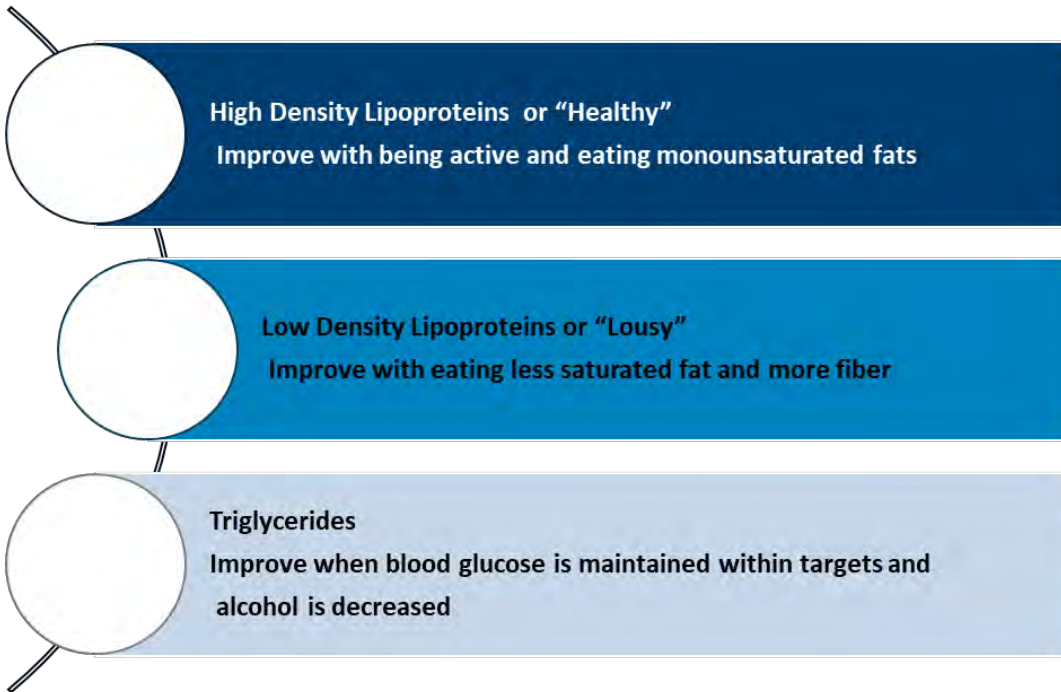


Cholesterol (Lipids)

Cholesterol is a waxy substance produced in the liver and released into the bloodstream. The body uses cholesterol to form cell membranes, aid in digestion, make Vitamin D in the skin cells, and develop hormones.

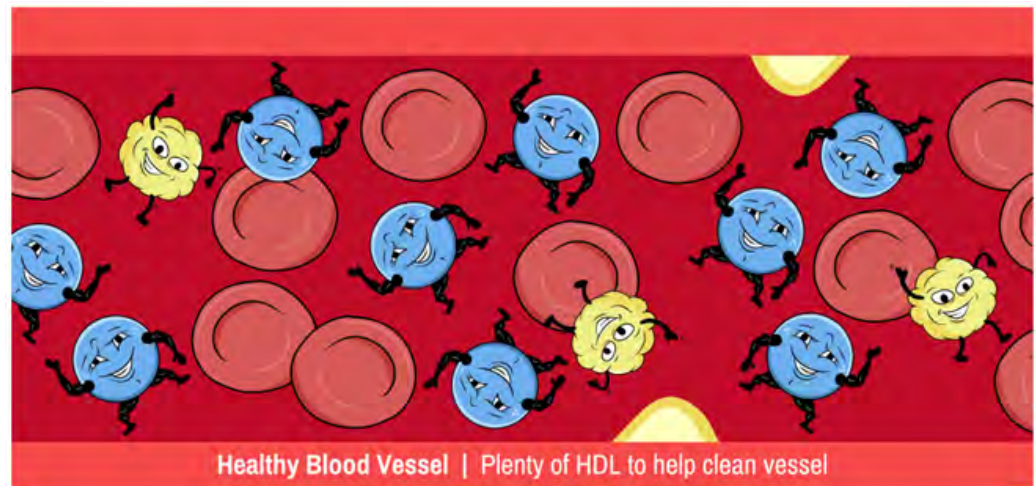
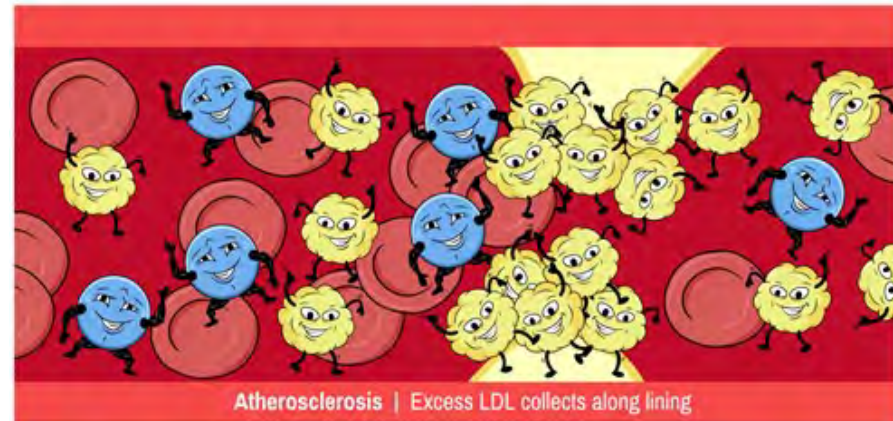
Cholesterol and specific proteins form several types of particles called lipoproteins. Higher than normal levels of low density lipoproteins (LDL) can lead to coronary artery disease. Whereas high density lipoproteins (HDL) remove cholesterol from the bloodstream and the artery walls.

Triglycerides are made of fat and glycerol. Triglycerides are stored in fat all over the body and can be an energy source. High triglycerides may cause coronary artery disease.



Self-Management Strategies

- Having diabetes increases your risk for heart disease. Eating a healthy diet high in monosaturated fats and fiber and low in saturated fat and sodium is suggested. We will cover this topic in more detail in **Module 5–Healthy Eating**.
- Being active is also important to lower the risk for heart disease. We will review this topic in **Module 6–Be Active**.
- Most often a “statin” or a cholesterol lowering medication is prescribed. We will discuss this in more detail in **Module 4–Taking Medications**.
- If you have already had a heart attack, a lower LDL is recommended (<70 mg/dL). However, you and your provider or health care team should discuss your target range.



Kidneys

The kidneys are versatile organs in the body. Their primary role is to filter waste products from the blood. After the kidneys have filtered the waste products, the next step is to remove waste and excess fluid. They keep some components while removing others. The kidneys are responsible for regulating the body's water volume, salt content, and blood pressure. The kidneys also produce hormones, regulate pH balance, and process vitamin D.

There are two important tests to determine how healthy the kidneys are.

These tests should be monitored yearly and may need to be repeated:

- **Microalbumin:** This is a test that checks for protein in the urine. Ideally less than 30 mg/dL.
- **eGFR:** This is a blood test that measures kidney function. Ideally higher than 60 mg/dL.

Medications may be prescribed. This will be discussed in more detail in **Module 4–Taking Medications**.



Other Medical Care Guidance

- Dental Exams: 1-2 times per year
- Retinal Exams: Every 1-2 years
- Blood Pressure: At every clinic visit
- Vaccines: Up to date
- Foot Exam: Self-check daily. Have a comprehensive foot exam yearly.

Notes:

Check List:

- I had a dental exam within the last year.
- I had a retinal eye exam within the last year.
- I had my blood pressure checked at my last clinic appointment.
- I received my flu vaccine this year.
- I check my feet daily.

Notes:



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