

Finger-Stick Cholesterol & Glucose Screening

Clinical Procedure



Supplies

- CardioChek® Plus Device
- CardioChek® Plus Lipid Test Strips & eGlu Test Strips
- Lancets
- Capillary Tubes
- Sharps Containers
- Biohazard Bags
- Gauze
- Alcohol Swabs
- Bandages (Band-Aids)
- Gloves
- Placemats
- Sanitizing Wipes
- Hand Sanitizer

Definition & Purpose

Cholesterol – Soft, waxy, fat-like substance found throughout the body, including the bloodstream and cells. Excess cholesterol can form plaque between layers of artery walls, making it harder for blood to circulate. Reduced blood flow can lead to stroke or heart attack.

• Cholesterol Readings

- Total Cholesterol (TC)– This value is not a type of cholesterol but instead a composite of different types. It is calculated by adding a participant’s HDL and LDL level, plus 20% of their Triglyceride level.
- High-density Lipoprotein (HDL) Cholesterol – HDL cholesterol is often referred to as the “good” cholesterol. HDL cholesterol removes harmful cholesterol from where it doesn’t belong. High HDL levels reduce the risk for heart disease, but low levels increase the risk.
- Low-density Lipoprotein (LDL) Cholesterol – LDL cholesterol is often called “bad” cholesterol because high levels lead to buildup in arteries, which narrows and may eventually block them. LDL cholesterol is the primary target of cholesterol-lowering therapy.
- TC/HDL Ratio – This number illustrates how much of the participant’s cholesterol is the “good” HDL cholesterol. A low level of LDL along with a high level of HDL reduces the participant’s risk for heart disease, heart attack and stroke.

Triglycerides – A type of fat (lipid) found in blood. High triglycerides can raise heart disease risk.

Glucose – Main source of energy used by the body. Glucose levels that remain high over time can damage eyes, kidneys, nerves, heart and blood vessels.

Fasting vs. Non-Fasting

TotalWellness considers an individual to be fasting if they have had no caloric intake for at least 9 hours. Water intake is acceptable and encouraged. Participants are encouraged to fast for their screening, but fasting is not required. Total Cholesterol, HDL Cholesterol, and TC/HDL Ratio are all accurate without fasting. Glucose is also accurate without fasting, but non-fasting and fasting glucose acceptable ranges vary depending on the fasting status. TotalWellness provides both non-fasting and fasting glucose range charts, which should be used accordingly. LDL cholesterol and Triglyceride readings are accurate if the participant has fasted. If the participant has not fasted LDL cholesterol and Triglyceride readings may not be accurate. Write down all values for the participant, and during the results review discuss how fasting can affect LDL Cholesterol and Triglycerides.

Measurement

Always wear two gloves, one on each hand, when collecting blood samples. Wear new gloves for each participant and sanitize hands in between participants.

1. Prepare the machine.
 - a. Insert the MEMo Chip that matches the lot number on both the eGLU and the Lipid Panel test strip vials. Remove one eGLU test strip from test strip vial and immediately replace cap. Insert the eGLU test strip into the designated eGLU test port. Remove one Lipid Panel test strip from test strip vial and immediately replace cap. Insert the Lipid Panel test strip into the designated reflectance test strip port.
 - i. It is very important to immediately replace the cap on test strip vials as extended exposure to air can cause inaccurate results.
2. Ask the participant which hand and finger they would like to use. The sample should be collected from one of the center fingers.
 - a. TotalWellness does not require participants to use a specific finger.

3. Kindly remind the participant to face forward, both feet on the floor, and relax.
4. Choose a spot on the side of one of the center fingers. The fingers should be warm to the touch, if they are not:
 - a. Gently massage the finger from the base to the tip several times to bring the blood to the fingertip.
 - b. Ask the participant to run their hands under warm water.
5. Clean the site with an alcohol swab. Dry thoroughly with a gauze pad before pricking the finger.
6. Firmly prick the side of the fingertip with a lancet. Dispose of lancet in provided biohazard container.
7. Squeeze the entire finger gently to obtain a large drop of blood.
 - a. Gently touch the finger to the tip of the glucose test strip to apply 1.1 uL drop of blood. Do not place blood on top of the test strip. Do not press the glucose test strip into the finger. It is acceptable to move the machine to touch the finger as opposed to moving the finger to the machine. Blood will be drawn into the strip automatically by capillary action. After applying blood to the eGLU test strip, wipe the finger to remove any blood with a clean piece of gauze.
8. Squeeze the finger gently again while holding it downward until a second large drop of blood forms. Do not milk the finger. The puncture should provide a free-flowing drop of blood.
9. Hold the capillary tube horizontally or at a slightly descending angle. Without squeezing the bulb, gently touch the end of the capillary tube to the blood drop. The tube will fill by capillary action. Allow capillary tube to fill all the way to the black fill line. Do not collect air bubbles. If it is necessary to collect another drop of blood, wipe the finger with gauze then massage again from base to tip until a large drop of blood forms.
 - a. If you collect an air bubble and it does not go away after collecting the entire sample, dispose of the capillary tube in biohazard container and collect a new sample with a new capillary tube.
10. Fill the capillary tube within 10 seconds.
11. Wipe off any excess blood from the finger and have the patient apply pressure to the puncture until the bleeding stops. Apply a bandage (Band-Aid).
12. Apply the sample:
 - a. Place the sample into the test strip blood application window by squeezing the bulb to apply the sample to the test strip. Be careful not to touch the tip of the capillary tube onto the test strip. The test will start running automatically.
13. Dispose of capillary tube in biohazard container.
14. Obtain the results and dispose of the testing supplies.
 - a. Results will appear in the machine window in approximately 2 minutes. Record results on participant's paperwork.
 - i. In order to view all results, you will need to press the arrow button on the machine to scroll to the next screen of results.
 - ii. Remove test strips and dispose of in biohazard bag. Dispose of contaminated gloves in biohazard bag and uncontaminated gloves in regular trashcan.
15. Clean and disinfect the CardioChek Plus machine after each participant.
 - a. Clean the machine by wiping it down with a provided sanitizing wipe.
 - b. Disinfect the machine by utilizing a new sanitizing wipe and keeping the area wet for 2 minutes.
 - c. Allow the machine to air dry completely.
 - d. After disinfecting, carefully wipe the optical glass with an alcohol wipe and dry with gauze to remove any residue from the disinfectant.

Interpreting Results

Category	Desirable	Borderline High	High Risk
Total Cholesterol (TC)	199 and below	200-239	240 and above

Category	Lowers Your Risk	Normal	High Risk
HDL Cholesterol	60 and above	40-59	39 and below

Category	Optimal	Near Optimal	Borderline High	High	Very High
LDL Cholesterol	99 and below	100-129	130-159	160-189	190 and above

Category	Optimal	Normal	High Risk
TC/HDL Ratio	3.5 and below	3.6-4.9	5.0 and above

Category	Normal	Borderline High	High
Triglycerides	149 and below	150-199	200 and above

Category	Normal	Pre-diabetes	Diabetes
Glucose	Fasting: 99 and below Non-Fasting: 139 and below	Fasting: 100-125 Non-Fasting: 140-199	Fasting: 126 and above Non-Fasting: 200 and above

High and Low Glucose Referral Protocol

Individuals with glucose readings of 300-399 mg/dL should be asked about their glucose history and instructed to follow up with their primary care provider. Individuals with extremely low (50 mg/dL or lower) or very high (400 mg/dL or higher) glucose readings should be questioned about their glucose history and monitored for symptoms. Call TotalWellness and speak with the Director of Nursing or Medical Director for assistance in accessing the situation. If the individual is not exhibiting symptoms and is aware of the condition recommend they follow up with their primary care provider immediately. Call 911 if the participant is exhibiting extreme low/high glucose symptoms. Extremely low glucose symptoms include confusion, dizziness, headaches, irritability, racing pulse, sweating, and weakness. Extremely high glucose symptoms include confusion, lethargy, excessive thirst, frequent urination, weak pulse, and nausea. Complete an incident report if 911 is called.

Important Tips

- Raise your hand to gain the lead's attention if you are having issues.
- If you do not get results after the first attempt, gather another sample and run the test again using a new set of test strips and a different machine.
 - Do not stick a participant more than twice trying to get results.
- If a participant seems to question their results or if the results seem off, re-test them.
 - Make sure the participant knows that you are retesting because you just want to double check. NOT because the machines are inaccurate.
 - Participants should walk away feeling they received valuable information. Make sure they don't walk away thinking their values are incorrect.
- Put a bandage (Band-Aid) on the participant's finger, don't make the participant put it on themselves.
- Anytime blood comes in contact with your placemat, replace the placemat with a new one.
- Store test strip package in a cool, dry place at room temperature of 68-86°F (20-30°C). Keep away from heat and sunlight.
- Out of date or expired strips cannot be used. Check the expiration date on the vial prior to use.
- Do not remove or discard the desiccant packet in the vial.
- Always replace vial cap immediately after removing a test strip.
- Insert test strips immediately before use. Do not insert in preparation of your next participant as this extended exposure to air could cause inaccurate results.
- Use test strip as soon as you have removed it from the vial.
- Keep the MEMo Chip either in the analyzer or stored with the original lot of test strips. Do not store the MEMo Chip in the test strip vial.
- Make sure the MEMo Chip and test strip lot numbers match. Never use a MEMo Chip from a different lot than the test strip.
- Add all of the blood to the test strip at once. If you do not get all of the blood on the test strip, do not add blood to the same test strip. Test again with a new, unused test strip and fresh blood sample.
- Test strips are to be read once. Never insert or read a used test strip.
- Ensure machine is not moved and table does not vibrate while sample is testing.
- The drugs dopamine and methyl dopa may cause decreased lipid results.
- Extremely high doses of ascorbic acid (Vitamin C) may cause decreased lipid results.
- Glycerol, which can be found in some hand creams and lotions, may cause inaccurate results.
- If you get an unexpected result, test again.