

Understanding Your Risk for Heart Disease





PREVENTION

Nolan Family Center for
Cardiovascular Health

For more than 40 years, The Minneapolis Heart Institute Foundation® (MHIF) has been a leader in researching the most effective ways to prevent and treat heart disease.

In 2020, MHIF established the Nolan Family Center for Cardiovascular Health, with a vision *“to change the paradigm from disease to optimal health as a world-class leader in cardiovascular disease prevention.”*

The center conducts industry-leading research on cardiovascular risk prediction and optimal preventive therapies, and provides education to patients and health care providers to ensure the best patient care. We’re committed to helping you learn more about how you and your loved ones can prevent or manage heart and vascular disease.

For more information about MHIF’s Nolan Family Center for Cardiovascular Health, please visit:

mplsheart.org/prevention



This booklet is designed to help you understand your personal risk for cardiovascular disease

Understanding Your Cardiovascular Risk

Heart disease is the #1 cause of death for both men and women in the U.S. That's why the Nolan Center for Cardiovascular Health at the Minneapolis Heart Institute Foundation is committed to helping prevent heart disease before it happens.

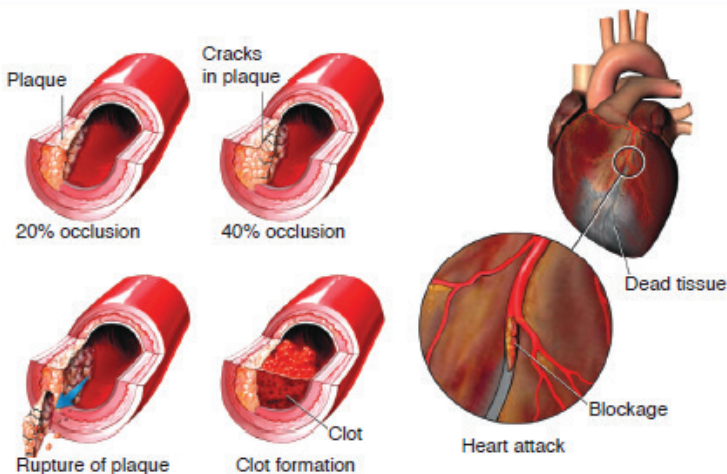
When we talk about cardiovascular disease – we are talking about the process of plaque building up in the arteries, especially the coronary arteries that supply blood flow to the heart. Blockages in these arteries are what lead to heart attacks – and the need for procedures such as stents and bypass surgery.

What is a Heart Attack?

Your heart is a muscle that receives oxygen-rich blood through its coronary arteries.

- As shown in the picture below, a heart attack happens when these arteries become blocked and cannot supply blood to the heart muscle.
- This blockage is caused by the buildup of plaque (deposits of cholesterol and inflammatory cells), a process called atherosclerosis.
- Plaque builds up over time and the longer it builds up, the more it blocks blood flow.

Plaques can become unstable and split open (rupture), causing a blood clot to form at the rupture site. A heart attack can occur when that blood clot in the artery blocks blood and oxygen from reaching the heart muscle. If the blockage is not opened – either by stents or clot-busting medications – it can cause the heart muscle tissue to die and scar.



What Puts You at Risk?

A combination of risk factors typically leads to coronary heart disease (CHD)— some of which you can change or modify and some you cannot.

**Your risk is calculated based
on these factors:**

 Cannot be modified	 Can be modified
---	--

Age	Sex	Diabetes
Total Cholesterol	HDL (“good”) cholesterol	LDL (“bad”) cholesterol
Systolic Blood Pressure (the top number)	Diastolic Blood Pressure (the bottom number)	Smoking Status

Risk Factors You Can Modify

These risk factors can often be managed with healthy lifestyle behaviors (nutrition, physical activity, stress management) and if necessary, medication.



Cholesterol Levels

The importance of lowering cholesterol has become increasingly clear in the past couple of decades. The recent research in cardiovascular prevention has consistently shown that you want your LDL cholesterol **as low as possible for as long as possible**.

Total Cholesterol

This number represents the sum of your LDL cholesterol, HDL cholesterol and a fraction of your triglycerides.

HDL Cholesterol

This is called your “good” cholesterol because it can be protective against heart disease. Low HDL levels are associated with higher cardiovascular risk.

Triglycerides

These are the carriers of fat cells in your blood. Higher triglycerides can be associated with higher cardiovascular risk.

LDL cholesterol

This is frequently referred to as “bad” cholesterol and is the main lipid target for treatment to reduce cardiovascular risk. The higher your LDL cholesterol, the higher your risk.



- **Talk with your doctor about how often you should have your cholesterol measured. A basic lipid panel will check your LDL level as well as several other lipid levels.**



High Blood Pressure

High blood pressure is often called the “silent killer” because there are usually no symptoms. Blood pressure is the force of blood pushing against your artery walls. Higher blood pressure creates more stress on the vessel walls and the likelihood of plaque to build up. The increase in blood pressure is also hard on the pump function of the heart, leading to a higher risk for heart failure.



Smoking

One of the best things you can do for your health is not to use tobacco in any form. Generally, the more tobacco you are exposed to, as a smoker or through secondhand smoke, the higher your risk. Smoking causes the wall of the arteries to be inflamed – making it easier for plaque to build up. Smoking also makes the blood more likely to clot, and therefore, increases the risk for a heart attack. Much of this risk is dramatically lowered after quitting.



Diabetes

Diabetes is a condition that occurs when your blood glucose (or blood sugar) is too high. The higher your blood glucose, the higher your risk. People who have diabetes are about two times more likely to have a heart attack compared with people who do not have diabetes. Unfortunately, diabetes is on the rise in the US.

- **Be sure to have your blood pressure measured at every clinic visit. For some people with high blood pressure, it's also helpful to self-monitor blood pressure at home and share results with a primary care provider. Blood pressure does tend to increase with age as our blood vessels lose some of their elasticity.**
- **A simple blood test with your doctor can identify if you are at risk for or have diabetes.**

Risk Factors You Cannot Modify



Age

The older you are, the higher your risk.



Sex

Males are at higher risk than females, particularly at younger ages. After menopause, however, a woman's risk increases considerably.



Race

Although race is entered in the risk estimator, race in itself is not an actual risk factor. Many social factors disproportionately impact people of color, including racism. These factors often increase cardiovascular risk.



Other factors that contribute to cardiovascular risk:



Family history of early heart disease – If your father or brother had cardiovascular disease before age 55 or your mother or sister had cardiovascular disease before the age of 65, your risk is higher. While family history is an important consideration, the significance of healthy lifestyle behaviors matters more. In other words, having a family history does not make you destined for cardiovascular disease; it is preventable.



Elevated Lipoprotein a Lp(a) levels. Lipoprotein a (Lp(a)) is a genetically determined cholesterol particle that is not part of a routine lipid panel. Lp(a) is unresponsive to changes in lifestyle behaviors as well as most traditional lipid medications and is associated with increased cardiovascular risk.



Chronic kidney disease



History of premature menopause (before age 40)



History of pregnancy conditions (such as preeclampsia, gestational hypertension or gestational diabetes)



Chronic inflammatory conditions (for example, psoriasis, rheumatoid arthritis, lupus or HIV/AIDS)



Most prevention guidelines recommend having an Lp(a) level checked at least once in all adults.

Know Your Risk

Recent prevention guidelines recommend that adults age 40-79 estimate their cardiovascular risk to help determine their optimal prevention treatment plan.

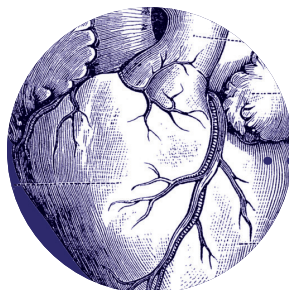
You can use the calculator on your own or with the help of your primary care provider or preventive cardiologist.

The calculator will ask a series of questions about several risk factors mentioned on the previous pages. It will then calculate your risk for a heart attack, stroke, or dying from cardiovascular disease over the next 10 years. Generally, if you have:

- Less than a 5% risk, you are considered *low risk*
- A 5-20% risk, you are considered *intermediate risk*
- >20%, you are considered *high risk*

In general, patients at higher risk require more intensive treatment, including lifestyle behavior changes and in some cases, medication to help prevent heart attack and stroke.

Using the calculator is an important first step, but it isn't necessarily where the process of understanding your risk should end.



Calculate your personal risk at:
mplsheart.org/risk-estimator

19.6%
Intermediate **Current 10-Year ASCVD Risk****

Lifetime ASCVD Risk: **69%** Optimal ASCVD Risk: **3.6%**

Current Age *
Age must be between 20-79

Sex * Male Female

Race * White African American Other

Systolic Blood Pressure (mm Hg) *
Value must be between 90-200

Diastolic Blood Pressure (mm Hg) *
Value must be between 60-130

Total Cholesterol (mg/dL) *
Value must be between 130 - 320

HDL Cholesterol (mg/dL) *
Value must be between 20 - 100

LDL Cholesterol (mg/dL) *
Value must be between 30-300

History of Diabetes? * Yes No

Smoker? * Current Former Never

How long ago did patient quit smoking? *

On Hypertension Treatment? * Yes No

On a Statin? * Yes No

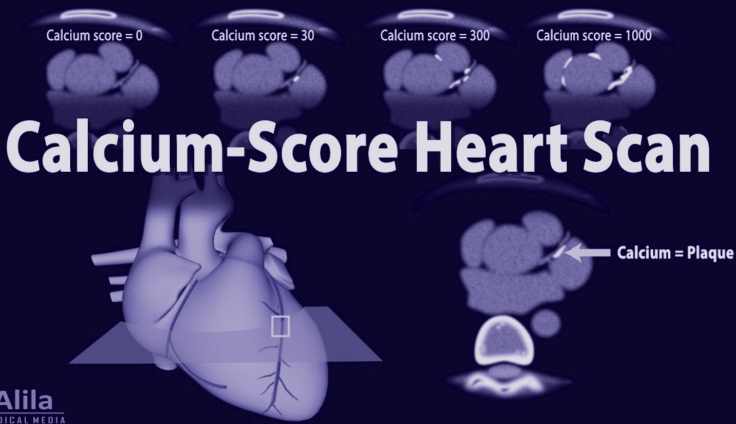
On Aspirin Therapy? * Yes No

Values you will need to know for the risk estimator:

- Systolic Blood Pressure
- Diastolic Blood Pressure
- Total Cholesterol
- HDL Cholesterol
- LDL Cholesterol

What Other Preventative Tests Should You Consider?

A **coronary artery calcium scan**, or CAC scan, is a test designed to determine the amount of calcified plaque in the coronary arteries. This test uses a specialized X-ray that takes pictures of your heart and measures calcium-containing plaque in your arteries. A CAC score is calculated using a formula based on the number of plaques as well as their size and density. The test takes less than 10 minutes, does not require any IV contrast, and involves a low dose of radiation.



If there is no plaque in the arteries, meaning a CAC score of zero, an individual is very unlikely to have a heart attack in the near future.

Roughly half of individuals in middle-age will have a CAC score of zero. Those individuals can be treated conservatively and focus on following heart-healthy behaviors.

If calcified plaque is detected, it identifies you at high risk for heart disease. The higher the score, the higher your risk of heart disease. These individuals benefit from preventive treatments, such as cholesterol and blood pressure medications.

There are numerous studies showing that a CAC score is likely the best test to understand an individual's risk for future heart disease.

Who should have a Coronary Artery Calcium score test?

We recommend this imaging test for individuals who are 40-80 years old and at intermediate for cardiovascular disease – meaning 5-20% based on the calculator discussed in the previous section.



For those at low or high 10-year risk, a CAC score can still be considered, but it is recommended to discuss with your primary care provider or preventive cardiologist.

If you are at high risk for cardiovascular disease, consider a visit to a preventive cardiologist

Preventive cardiology services include:



A comprehensive cardiovascular examination and evaluation of cardiac risk factors



Advanced blood tests with results provided during your appointment



Lipid management, including for those with prior intolerance of statin medications



Nutrition and physical activity assessment and recommendations



Opportunity for participation in clinical trials of new therapies



Steps You Can Take Now

A heart healthy lifestyle is the foundation to coronary heart disease prevention. Think about small improvements you can make and build on them over time to achieve improved health.



Eat Heart Healthy

Incorporate more plant-based foods, including an abundance of fruits and vegetables, whole grains, and healthy fats (olive oil, nuts and seeds, avocados). Reduce intake of sodium, added sugars (especially sugar-sweetened beverages) and meat, particularly red or processed meats.



Be Active

Aim for 150 minutes of activity each week. If 30 minutes of daily continuous activity is challenging, consider three 10-minute sessions throughout the day. You will get the same health benefits. Avoid sitting for long periods of the day – make an intentional effort to get up and move more!



Maintain a Strong Network of Family and Friends

Social connections have many positive health benefits, including improved mood, lower levels of anxiety and depression – and reduced rates of heart disease. Find ways to connect with others regularly, whether that's face-to-face, over the phone or online.



Avoid Tobacco Exposure

No smoking, chewing, e-cigarettes or breathing in secondhand smoke. Within 1 year after quitting, your risk of heart disease goes down by half.



Practice Positive Actions to Manage Stress

This can lower blood pressure, improve sleep and promote healthy behaviors. Try mindful meditation, deep breathing and yoga.



Sleep 7-9 Hours Each Night

Sleep is increasingly recognized as a critical component to overall health. Studies have shown that too little or too much sleep can increase your risk of heart disease.

In summary, it is important to understand that your risk for heart disease is heavily driven by your age, but multiple other risk factors should be considered.

Up to 80% of heart disease can be prevented with healthy lifestyle behaviors as well as medications when appropriate.

To recap, here are the steps you can take:

1

Practice heart healthy behaviors! These are the foundation of cardiovascular prevention and no risk assessment is required to practice heart-healthy behaviors. We don't need a coronary artery calcium score to decide if you should eat healthier, exercise, and avoid smoking.

2

Determine your 10-year risk for a cardiovascular event using a risk calculator. mplsheart.org/risk-estimator

3

If you are uncertain about your risk or at intermediate risk, **consider a coronary artery calcium score** to better understand your likelihood of having a heart disease or stroke.

We hope you found this information helpful. Education is a core part of our mission at the Nolan Family Center for Cardiovascular Health at the Minneapolis Heart Institute Foundation.



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Nolan Family Center for
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920 East 28th Street, Suite 100, Minneapolis, MN 55407

Email: info@mhif.org | Phone: 612-863-3833



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