

Be good to your

HEART

Managing cholesterol lowers your risk of heart disease

By Drs. Mark Hull, Matt Bennett and Marianne Harris

Living with HIV is no longer just about surviving. It's about staying healthy over the long term, and that means staving off the same health problems everyone has to worry about as they grow older. Heart disease is the number one killer of Canadians and high cholesterol is a major contributor. HIV poses some unique challenges but healthy eating, exercise and attention to your drug regimen will help reduce your risk for heart disease.

There are many things that can affect your risk of heart disease: some you can control, like smoking and stress, and others you can't, such as your age (see "Heartbreakers" for a list of heart risk factors). HIV infection itself may affect heart disease risk, as can some of the antiretroviral drugs used to keep the virus in check. High cholesterol can also increase your risk of heart disease.

Doctors look at all your risk factors to calculate your total heart disease risk. This number is called a **Framingham score** and represents the likelihood a person will have a heart attack over the next 10 years. Someone who's at high risk will have a 20% or greater chance; moderate risk is 10-19%; low risk is under 10%. To calculate your score, complete the Heart and Stroke Foundation's online assessment at http://ww2.heartandstroke.ca/hs_risk.asp. Managing your heart risk can require that you make certain lifestyle changes, like quitting smoking or eating better, and/or that you take medications to lower your blood pressure or control your diabetes, for example.

Your score will also determine your target cholesterol levels. For example, a 50-year old man who smokes and whose father died of a heart

attack at 60 will want to keep his cholesterol very low. Having HIV does not, in itself, change your target cholesterol levels.

Cholesterol and your heart

Cholesterol is a fat (a "lipid") found in the bloodstream. There are several different types of cholesterol, collectively known as blood lipids. Low-density lipoprotein cholesterol (LDL-C for short) is also called "bad" cholesterol, because having too much puts you at greater risk of having a heart attack. LDL-C sticks to the artery walls and as it builds up, hardens into a thick substance called plaque. Over time, plaque causes the artery walls to get thicker and lose their elasticity, a process that's called **atherosclerosis**. At this stage, the heart has to work harder to pump your blood through your body and the extra strain can severely damage it.

High-density lipoprotein cholesterol (HDL-C) is another type of cholesterol. Unlike LDL-C, HDL-C has a protective effect on the heart and is therefore called the "good" cholesterol. HDL-C transports cholesterol away from the tissues to the liver so it can be eliminated. By taking cholesterol away from the artery walls, HDL-C prevents atherosclerosis and reduces the risk of heart attack.

When your doctor checks your cholesterol, he or she will measure your total cholesterol to HDL-C ratio (TC:HDL-C ratio). This measurement is particularly useful because it gives a clearer picture of the amount of bad cholesterol vs. the amount of good cholesterol in your body. The higher the ratio, the greater the risk.

Triglycerides are another form of fat that are often measured at the same time as cholesterol. The relationship between triglycerides and heart attacks is less clear, but high levels may raise the risk of heart disease. Triglycerides aren't included in the Framingham risk assessment.

The term "high cholesterol" generally means having too much LDL-C. Cholesterol comes from two main sources: it's produced by the liver, and ingested in the

Heartbreakers

- Heredity (i.e. whether close relatives have also had heart disease)
- Older age
- male gender
- smoking
- diabetes
- high blood pressure
- stress



food we eat. Some rare, inherited conditions cause very high levels of LDL-C, but an improper diet is much more likely. Dietary cholesterol comes mainly from meat, poultry and dairy products. Organ meats, such as liver, are especially high in cholesterol content, while foods of plant origin contain no cholesterol. If you eat a lot of high-cholesterol foods, don't get much exercise or are overweight, your cholesterol is likely to be higher.

The HIV factor

The relationship between HIV and lipids is complex. HIV infection itself can cause lower HDL-C and higher triglycerides. These changes are usually

reversed by antiretrovirals (ARVs), but the drugs themselves can also affect cholesterol and triglyceride levels in different ways. Drug-induced lipodystrophy, a pattern of abnormal body fat distribution caused by certain ARVs, for example, may increase your heart disease risk, especially if you have an accumulation of fat in the abdominal area. The table below lists some of the most commonly used ARVs and their effect on blood lipids.

Blood tests

Cholesterol levels should ideally be measured in a fasting state, meaning you have had nothing to eat or drink except water for eight to 12 hours (usually overnight, to avoid conflicts with medications. You may also take your medications with a light snack such as crackers). This is because the levels of

Dr. Mark Hull is an Infectious Diseases specialist at the University of British Columbia. He's currently working as a Postdoctoral Fellow with the Canadian HIV Clinical Trials Network at the BC Centre for Excellence in HIV/AIDS.

Dr. Matt Bennett is a Clinical Cardiology Fellow at the University of British Columbia.

Dr. Marianne Harris is a family doctor who currently works with the AIDS Research Program at the Immunodeficiency Clinic in St. Paul's Hospital, Vancouver.

Heart effects of ARVs

DRUG CLASS	AGENT	USUAL EFFECT
Nucleosides/nucleotides (NRTIs)	D4T (Zerit®) To lesser extent, AZT (Retrovir®) and ddl (Videx®)	↑ cholesterol, ↑ triglycerides
	Abacavir (Ziagen®, also found in Kivexa®), tenofovir (Viread®, also found in Atripla® and Truvada®), 3TC, FTC (found in Truvada® and Atripla®)	Little or no effect
Non-nucleosides (NNRTIs)	Efavirenz (Sustiva®, Atripla®)	↑ triglycerides ↑ LDL-C
	Nevirapine (Viramune®)	↑ HDL-C ↓ TC:HDL-C
Protease inhibitors (PIs)	Ritonavir-boosted PIs	↑ cholesterol, ↑ triglycerides
	Non-boosted PIs	Less effect than boosted PIs
Fusion inhibitor	T-20 (Fuzeon®)	No effect

N.B. ↑: raises levels; ↓: lowers levels



cholesterol in blood can go up temporarily after a meal. People with HIV who are taking ARVs should generally have their cholesterol checked every three to six months. If your levels are high, your doctor may want to test you more often to monitor your progress. If levels are normal, you may only need to be tested once a year.

Remember, having HIV doesn't mean you have to aim for lower cholesterol levels than other people do. But it may put you at greater risk of having abnormal cholesterol levels, so you do have to be extra vigilant.

Take charge

A healthy diet and regular exercise can help you achieve and maintain your target cholesterol levels. If you need an extra push, there are very effective medications that can help.



Heart healthy habits

EAT MORE

Fruits and vegetables
Vegetable and olive oils
Fatty fish, like salmon
Meals focused around whole grains or meat substitutes

EAT LESS

Red meat
Poultry
Dairy products
Baked goods
Fast food

WORK IT!

You need:
30 minutes of moderate physical activity, or 60 minutes of light exercise every day
OR 20 minutes of vigorous exercise 4-7 times a week.

Moderate-level activities increase your breathing rate: try cycling, swimming or faster-paced walking.

Lifestyle modifications

Since food is one of the main sources of cholesterol, healthy eating habits can have a huge impact. Foods that are high in saturated and *trans* fats, which the body turns into cholesterol, are particularly bad for you.

If you really want to keep your heart in shape, you have to work it out. Regular exercise delivers a triple punch against heart disease by lowering cholesterol, blood pressure and the risk of diabetes. To avoid injury, always get a proper assessment before beginning a strenuous exercise program.

Cholesterol-lowering drugs

Statins are the most widely prescribed cholesterol-lowering drugs. They have been shown to significantly lower the risk of death from heart disease. We don't know why, but people living with HIV don't seem to respond to these drugs as well as other people do. Some statins also interact with antiretroviral drugs. The ones with the fewest drug interactions with HIV medications are pravastatin (Pravacho®), fluvastatin (Leschol®) and rosuvastatin (Crestor®). Simvastatin (Zocor®) and lovastatin (Mevacor®) should be avoided.

Some studies show that people living with HIV may be more likely to reach their lipid targets if they take a statin in combination with a drug that targets triglycerides, like fenofibrate (Lipidil®). However, using both drugs in combination may increase the risk of side effects. Fish oil has also been shown to be beneficial at lowering triglycerides.

Finally, there's a new type of medication that lowers cholesterol by preventing it from being absorbed in the digestive tract. So far, results of small studies with ezetimibe (Ezetrol®) — the only drug of this class that's currently available — have been promising in people living with HIV.

As with any other drug, it's important to talk to your doctor about the possible side effects of cholesterol-reducing medications. Together, you can find a solution that works for you.

Changing your ARV regimen

Switching to more heart-friendly HIV drugs may improve your cholesterol and lipid levels, but it's a decision that shouldn't be made without careful consideration. If you have known HIV drug resistance, changing your regimen may not be the best course of action. Switching may also result in new side effects.

Controlling cholesterol is an important part of reducing your heart disease risk, but there are other things you can do as well. Quitting smoking, for example, can have a huge impact on your risk of death from a heart attack. Don't neglect your heart. Get a comprehensive risk assessment and talk to your doctor about how to keep it beating strong. **R**