CMScript
Issue 3 of 2022
Member of a medical scheme? Know your guaranteed benefits!

20th ANNIVERSARY
CMS
Council for Medical Schemes

Hyperlipidaemia

Hyperlipidemia, also known as hypercholesterolemia or high cholesterol, is one of the 26 chronic diseases included in the Prescribed Minimum Benefit (PMB) regulations. According to the Heart and Stroke Foundation of South Africa, it is estimated that 80% of westernised South Africans have raised blood cholesterol levels, of which 20% have levels that place them at high risk of developing heart disease.

What is hypercholesterolaemia?

Hypercholesterolaemia occurs when there is too much cholesterol in the body. Cholesterol is a soft, waxy, fat-like substance that is a natural element of the body cells. The human body makes all the cholesterol it needs to function normally. Any additional cholesterol can cause harm.

Three types of cholesterol (fat) exist. These are often referred to as 'good' and 'bad' cholesterol.

1. **High Density Lipoprotein (HDL)** cholesterol, also known as the 'good' cholesterol, helps clear excess cholesterol from the blood back to the liver. The lower the HDL level, the higher the risk for heart disease.
2. **Low Density Lipoprotein7 (LDL)** cholesterol, or 'bad' cholesterol, is found in the fatty deposits in the arteries and can contribute to heart disease.
3. **Triglycerides** are a type of fat. It is the most common type of fat in your body. Triglycerides come from foods, especially butter, oils, and other fats in the diet. It also comes from extra calories. These are the calories eaten, but the body does not need them right away.

If you have high total cholesterol, it is important to know what type of cholesterol is high.

High cholesterol increases your risk for heart disease, heart attack, and stroke. Too much cholesterol circulating in the blood can create sticky deposits (plaque) along the artery walls. This plaque can eventually narrow or block blood flow to the brain, heart, and other organs. Blood

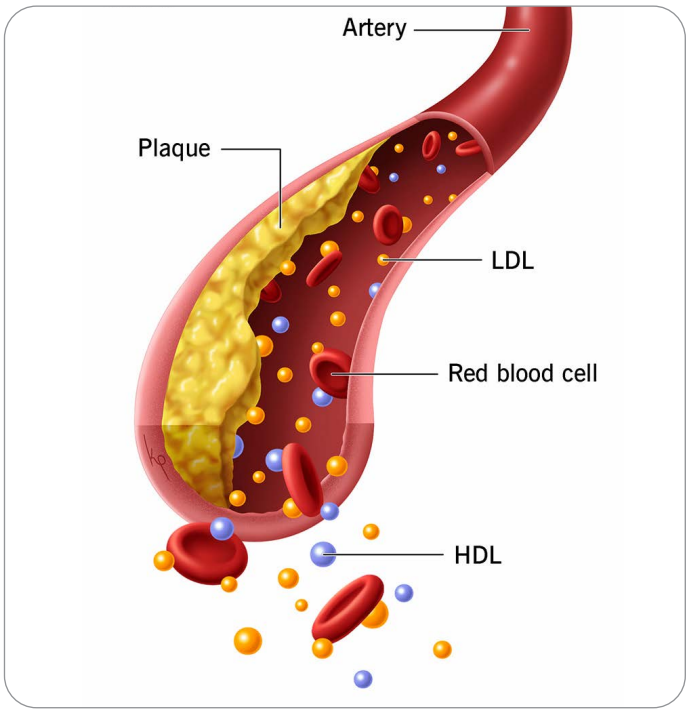

Figure 1: Bad cholesterol (LDL) and plaque in an artery

cells that get caught on the plaque form clots, which can break loose and completely block blood flow through an artery, causing a heart attack or stroke.

Causes

Nonfamilial (non-inherited) hypercholesterolaemia is the most common form of hypercholesterolaemia. It occurs in people with a predisposed genotype worsened by the excessive intake of saturated fats and cholesterol.

Familial hypercholesterolemia is an inherited genetic disorder. The children of people with familial hypercholesterolemia may inherit either the normal gene or the

defective gene; therefore, the prevalence within such a family will be approximately 50%.

The hereditary disease occurs where the liver makes too much cholesterol, or the body does not remove LDL from the blood as well as it should. Hereditary disease is marked by a family history of premature heart disease, i.e., heart attack or sudden death in men before the age of 55 and 65 years in women.

Risk factors for hypercholesterolemia

These include:

- **Genetics:** A family medical history and race. It is more common among certain ethnic or racial groups, such as French, Canadian, Finnish, Lebanese, and Dutch descent.
- **Age:** Between the ages of 20 and 65 years, total cholesterol levels may steadily increase after they decrease slightly in men and stabilize in women.
- **Gender:** Women have higher HDL cholesterol levels and a lower risk of developing heart disease than men. During menopause, the LDL increases, and their risk equals that of men.
- **Diet:** A diet too high in saturated fat (mostly found in animal meat and fat), dietary cholesterol, and energy can increase blood cholesterol levels. It is common for South Africans to consume 40-50% of their total energy intake in fat, with usually more than 50% of these fats being saturated. It is recommended to keep fat intake below 30%.
- **Weight:** Overweight people tend to have higher LDL (bad) and lower HDL (good) cholesterol levels, thus increasing risk.
- **Sedentary lifestyle:** HDL levels increase if a person is more active. Exercise also helps to control weight and blood pressure.
- Smoking can contribute to increased cholesterol levels and diabetes.
- Stress has been associated with increased cholesterol levels.
- Excessive alcohol intake.
- Liver disease.
- Chronic kidney disease.
- Underactive thyroid.
- Poorly controlled diabetes.
- Some medications may also cause an increase in lipid levels.

Symptoms

There are usually no symptoms of high cholesterol, especially in the early stages. The only way to tell if your cholesterol is high is through a blood screening (lipogram). Familial hypercholesterolaemia can be identified through a history of stroke, heart attack, or sudden death in the immediate family. A lipogram will then be performed to confirm the cholesterol levels.

Treatment

Lowering your cholesterol level reduces your risk of heart disease and stroke. People who already have a heart condition or a higher risk of cardiovascular problems and stroke will benefit from lowering their cholesterol.

Changes in lifestyle management such as an improved diet and increased exercise are the most effective means of preventing and, in less severe cases, treating high LDL cholesterol levels. In addition to recommending lifestyle changes, physicians often prescribe specific cholesterol lowering medications. Medications that are used in the treatment of hypercholesterolaemia include:

- Statins (HMG-CoA reductase inhibitors) ()
- Fibrates such as gemfibrozil
- Ezetimibe
- PCSK9 inhibitors (e.g., alirocumab)
- Bile acid sequestering resins
- Nicotinic acid
    - Although bile acid sequestrants and nicotinic acid have cholesterol-lowering properties, their side effects limit the use.

Some of the medications mentioned above may not be included in the Prescribed Minimum Benefit (PMB) level of care.

Prevention

The same healthy lifestyle changes that can lower cholesterol levels can assist in preventing high cholesterol in the first place. These lifestyle changes include:

- Eating a low-salt diet that emphasizes fruits, vegetables, and whole grains.
- Limiting the amount of animal fats and use good fats in moderation.
- Losing extra weight.
- Quiting smoking.
- Exercising most days of the week for at least 30 minutes.
- Drinking alcohol in moderation.
- Managing stress.

Complications

High cholesterol can cause a dangerous buildup of cholesterol and other deposits on the walls of the arteries (atherosclerosis). These deposits (plaques) can reduce

blood flow through the arteries, which can cause complications, such as:

- Chest pain: If the arteries that supply the heart with blood (coronary arteries) are affected, chest pain (angina) and other symptoms of coronary artery disease may occur.
- Heart attack: If plaques tear or rupture, a blood clot can form at the plaque-rupture site, blocking the flow of blood or breaking free and plugging an artery downstream. If blood flow to a part of the heart stops, a heart attack occurs.
- Stroke: Similar to a heart attack, a stroke occurs when a blood clot blocks blood flow to part of the brain.

What is covered under PMB level of care?

When the blood cholesterol level is tested, the total cholesterol and the different types of cholesterol are determined. It is necessary to fast for 10-12 hours before laboratory testing to ensure the measurements are accurate.

A blood test to check cholesterol levels — called a lipid panel, lipid profile, or lipogram— typically includes:

- Total cholesterol
- LDL cholesterol
- HDL cholesterol
- Triglycerides — a type of fat in the blood

The PMB Regulations include an algorithm that determines which cases of hypercholesterolaemia qualifies as a PMB condition.

Hypercholesterolaemia qualifies as a PMB condition if the total fasting cholesterol level is >5mmol/L.

PMB treatment

The treatment of hypercholesterolaemia is specified in the algorithm in the Regulations. This algorithm specifies when medicine management must commence and guide medical schemes in the funding decision. The algorithm includes lifestyle management in patients who do not have coronary heart disease or other risk factors.

The high prevalence of the disease caused the PMB package to include a risk scoring system to determine when medical management should be funded in full.
Cardiovascular risk scoring systems (e.g., Framingham risk score) provide an estimate of the chance that a person will develop cardiovascular disease within the next 5 or 10 years. It indicates who will most likely benefit from lifestyle changes only or a combination of lifestyle and medicines. The Framingham Risk Score is incorporated in the chronic disease algorithm to determine when a medical scheme can fund medicine treatment as prescribed.

If your risk of developing Cardiovascular Disease (CVD) is low, the doctor may prescribe cholesterol-lowering medicine; however, the medical scheme does not have to fund the medication as part of PMB cover. If the risk of developing CVD is high, the doctor may prescribe some medicines irrespective of the LDL levels. To ensure that the medicine is covered, it is advised that the risk profile as determined by the Framingham risk score is discussed with your doctor.

Statins and Fibrates are PMB level of care. The medical scheme may use medicine formularies; hence it is also important to check which medicines are included in the medicine formularies of the medical scheme. Ezetimibe is the PMB level of care only in specific cases. PCSK9 inhibitors (e.g., alirocumab) are not currently PMB level of care.

References

1. Mayoclinic.org. 2022. High cholesterol - Diagnosis and treatment - Mayo Clinic. [online] Available at: <https://www.mayoclinic.org/diseases-conditions/high-blood-cholesterol/diagnosis-treatment/drc-20350806> [Accessed 25 January 2022].
2. HealthEngine Blog. 2022. Hypercholesterolaemia (high blood cholesterol) information | myVMC. [online] Available at: <https://healthengine.com.au/info/hypercholesterolaemia> [Accessed 25 January 2022].
3. Klug, E., Raal, F., Marais, A., Smuts, C., Schamroth, C., Jankelow, D., Blom, D., & Webb, D. (2018). South African dyslipidaemia guideline consensus statement: 2018 update A joint statement from the South African Heart Association (SA Heart) and the Lipid and Atherosclerosis Society of Southern Africa (LASSA). South African Medical Journal, 108(11b), 973-1000. Retrieved from http://www.samj.org.za/index.php/samj/article/view/12479
4. Framinghamheartstudy.org. 2022. Framingham Heart Study. [online] Available at: <https://framinghamheartstudy.org/> [Accessed 26 January 2022].
5. Heart & Stroke Foundation | South Africa. 2022. Cholesterol | Heart & Stroke Foundation | South Africa. [online] Available at: <https://www.heartfoundation.co.za/cholesterol/> [Accessed 26 January 2022].

The Communications Unit would like to thank the Clinical Unit for assisting with this edition of CMScript

Contact information:
information@medicalschemes.co.za
Hotline: 0861 123 267
Fax: 012 430 7644

The clinical information furnished in this article is intended for information purposes only and professional medical advice must be sought in all instances where you believe that you may be suffering from a medical condition. The Council for Medical Schemes is not liable for any prejudice in the event of any person choosing to act or rely solely on any information published in CMScript without having sought the necessary professional medical advice.