

# THE **FATS** OF LIFE...

How to identify and manage  
high cholesterol



*holding your hand through health*

## What is cholesterol?



Cholesterol is a soft, waxy, fatty substance found in the blood. The body needs cholesterol for the proper functioning of hormones and other body processes.<sup>1,2</sup> Although the liver produces the cholesterol that your body needs, food high in saturated fats and cholesterol (mostly animal based food), is also a source of cholesterol.<sup>1</sup> Cholesterol travels through the bloodstream in small packages called lipoproteins which are made of fat (lipid) on the inside and proteins on the outside.<sup>3</sup> Lipids, or 'lipoproteins', include cholesterol and triglycerides.<sup>4</sup>

There are two kinds of lipoproteins that carry cholesterol throughout the body: low-density lipoproteins (LDL) and high-density lipoproteins (HDL), often referred to as 'bad' cholesterol and 'good' cholesterol, respectively.<sup>3</sup> A blood test can be done to measure the different types of cholesterol/fats in the body (as shown below):<sup>3</sup>



### Types of fats in the body

Total cholesterol	Although high total cholesterol increases the risk of heart disease, treatment decisions are based on the level of LDL-, or HDL-cholesterol rather than the level of total cholesterol. <sup>4</sup>
LDL-cholesterol	This is referred to as 'bad' cholesterol because high levels can build-up in the arteries and affect the blood flow from the heart to the rest of the body. <sup>3</sup> High LDL-cholesterol levels increase the risk of heart disease and strokes. <sup>5</sup>
HDL-cholesterol	This is referred to as 'good' cholesterol because it removes cholesterol from the body by carrying it from other parts of the body back to the liver. <sup>3</sup> High HDL-cholesterol levels decrease the risk of heart disease and strokes. <sup>5</sup>
Triglycerides	<p>This is the main form of fat stored in the body.<sup>6</sup> Triglycerides are the end product of digesting and breaking down the fats in food.<sup>6</sup> Any food eaten that is not used immediately for energy is converted into triglycerides and taken up by the fat cells.<sup>6</sup></p> <p>While this is not cholesterol, it is a type of fat and high levels of triglycerides can also increase the risk of heart attacks and strokes.<sup>5</sup></p>

## What is hyperlipidaemia?



Hyperlipidaemia or 'hypercholesterolaemia' is a condition in which there is too much cholesterol in the blood i.e. increased levels of lipids (fats) in the blood.<sup>3,4</sup> Having hyperlipidaemia significantly increases the risk of developing heart disease.<sup>4</sup> People with high cholesterol levels do not experience any symptoms and run the risk of the condition going unnoticed.<sup>3</sup>

Although cholesterol is part of a healthy body, having too much of it in the blood can be a problem. In addition to the cholesterol made in the body, the foods that you eat can impact your cholesterol levels.<sup>2b</sup> High cholesterol levels left untreated can affect the blood vessels supplying the heart, brain or limbs causing coronary artery disease, cerebrovascular disease or peripheral vascular disease respectively. These conditions can lead to chest pain, heart attack, stroke and other health problems.<sup>4</sup>

Coronary artery disease is a condition of plaque build-up in the arteries of the heart caused by high blood cholesterol levels.<sup>1,3</sup> Plaque is a thick, hard deposit made up of cholesterol, fat, calcium and other substances, that can narrow the coronary (heart) arteries and make them less flexible. This process is called atherosclerosis.<sup>1,3</sup> Over time, the plaque can limit the flow of blood to the heart.<sup>3</sup> If an area of the plaque breaks, a blood clot is formed on the surface of the plaque which may further block blood flow. If blood flow is obstructed in a blood vessel supplying blood to the heart or brain, this can result in a heart attack or stroke, respectively.<sup>1,3</sup>



## It's all in the numbers

In South Africa, it is recommended that patients have their cholesterol levels checked at least once in young adulthood (from 20 years of age).<sup>7</sup> Hyperlipidaemia is diagnosed by checking the levels of cholesterol in the blood.<sup>3</sup>

Cholesterol levels are measured in millimoles per litre (mmol/l) and are a measure of how concentrated the fats are in one litre of blood.<sup>6</sup> For accurate results, it is recommended to fast (no food and liquids) for at least nine hours before having the test done.<sup>1</sup> A full lipid blood test (lipogram) is recommended for the initial diagnosis of hyperlipidaemia, which measures total cholesterol (TC), LDL-C, HDL-C and triglycerides.<sup>7</sup>

A finger-prick test can also be used to screen for hyperlipidaemia.<sup>7</sup> If your TC level is high from a finger-prick screening test (i.e. > [greater than] 5.0 mmol/l), it is recommended that you discuss this result with your doctor.<sup>7</sup>

Once a full laboratory-performed fasting lipogram is done, the doctor will perform a full cardiovascular risk assessment.<sup>7</sup> A score is calculated taking into account several risk factors, including your age, sex, smoking status, blood pressure, cholesterol levels and other factors.<sup>8</sup> The resulting score is calculated as a percentage chance.<sup>8</sup> As an example, if your score is 30 %, this means that you have a 30 % (i.e. 3 in 10) chance of developing a cardiovascular disease within the following 10 years.<sup>8</sup>

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You are said to be at:

- **High risk** – if your score is 20 % or more<sup>8</sup>
- **Moderate risk** – if your score 10-20 %<sup>8</sup>
- **Low risk** – if your score is less than 10 %<sup>8</sup>

If you have any of the following pre-existing conditions, you are considered to be at 'very high risk' and your treatment will be decided by your doctor, without the need to calculate your risk score:<sup>7</sup>

- Existing cardiovascular, cerebrovascular or peripheral vascular disease
- Diabetes
- Genetic hyperlipidaemia
- Chronic kidney disease

In South Africa, the LDL-cholesterol goal is based on your risk:<sup>7</sup>

### LDL-cholesterol goal based on risk assessment<sup>7</sup>

- **1.8 mmol/l for the very high risk group (> [greater than] 30 %)**
- **2.5 mmol/l for the high-risk group (15 to 30 %)**
- **3.0 mmol/l for moderate to low risk patients (< [less than] 3 to 15 %)**

## Lifestyle and diet

Maintaining a healthy lifestyle is essential to lower cholesterol levels and reducing your risk of heart disease, as follows:<sup>2c</sup>

- ✓ Lower saturated and trans fat intake by decreasing your intake of: cream, butter, margarine, fat on meat and baked products.<sup>2d,e</sup>
- ✓ Choose fats such as vegetable oils, soft tub margarine, seeds and nuts.<sup>2f,g</sup>
- ✓ Include fatty fish such as sardines or salmon in your weekly diet.<sup>2g</sup>
- ✓ Opt for wholegrain breads, rice and pasta.<sup>2g</sup>
- ✓ Be active. Do at least 30 minutes of moderate physical activity five days a week.<sup>2h</sup>
- ✓ Stop smoking if you are a smoker.<sup>2i</sup>



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# Treatment options for high cholesterol

Lifestyle changes are the first line of defence against high cholesterol.<sup>9</sup> However, if you have made these important changes and your cholesterol levels still remain high, then your doctor will recommend medication.<sup>9</sup> The choice of medication depends on various factors, including your age, current health and possible side-effects, which your doctor will take into consideration before prescribing. The treatment options include:<sup>9</sup>

## • Statins

This is the most effective treatment option for lowering LDL-cholesterol and preventing the complications associated with high cholesterol, such as coronary heart disease, heart attack, stroke and death.<sup>10</sup> Statins work by blocking the substance the liver needs to make cholesterol.<sup>9</sup> This causes the liver to remove cholesterol from the blood.<sup>9</sup> Statins may also help the body reabsorb cholesterol from built-up deposits on the artery walls, thus reversing the potential for heart disease.<sup>9</sup>

## • Bile-acid-binding resins

The liver uses cholesterol to make bile acids, which are substances needed for digestion.<sup>9</sup> This type of treatment lowers cholesterol indirectly by binding to bile acids.<sup>9</sup> This causes the liver to use excess cholesterol to make more bile acids, which reduces the level of cholesterol in the blood.<sup>9</sup>

## • Cholesterol absorption inhibitors

Cholesterol from the diet is absorbed by the small intestine into the bloodstream.<sup>9</sup> Cholesterol absorption inhibitors reduce blood cholesterol by limiting the absorption of dietary cholesterol.<sup>9</sup>

## • Fibrates

Fibrates decrease triglycerides by reducing very-low-density lipoprotein (VLDL) cholesterol produced by the liver.<sup>9</sup> They also speed up the removal of triglycerides from the blood. VLDL cholesterol is another type of lipoprotein and contains mostly triglycerides.<sup>9</sup>

## YOU ARE NOT ALONE

It may feel as though you are alone with your condition. You are not alone. Hyperlipidaemia is a common disorder.

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References: 1. The Heart and Stroke Foundation of South Africa. Cholesterol. 2015. Available at: <http://www.heartfoundation.co.za/cholesterol>. Accessed 13 March 2019. 2. American Heart Association. Check. Change. Control. Cholesterol. My Cholesterol Guide. 2018. Available from: [https://www.heart.org/-/media/files/health-topics/cholesterol/cccc\\_my-cholesterol-guide.pdf](https://www.heart.org/-/media/files/health-topics/cholesterol/cccc_my-cholesterol-guide.pdf). Accessed 29 April 2019. 3. National Heart, Lung and Blood Institute (NIH). High blood Cholesterol. 8 April 2016. Available at <http://www.nhlbi.nih.gov/health/health-topics/topics/hbc#>. Accessed 13 March 2019. 4. UpToDate. Patient Information. High Cholesterol and lipids (hyperlipidaemia) (Beyond the basics). Available at [www.uptodate.com](http://www.uptodate.com). Accessed 13 March 2019. 5. UpToDate. Patient Information: High cholesterol (The Basics). Available at: [www.uptodate.com](http://www.uptodate.com). Accessed 13 March 2019. 6. Patient.co.uk. Hyperlipidaemia. Available at <http://patient.info/health/hyperlipidaemia-leaflet>. Accessed 13 March 2019. 7. Klug EQ, Raal FJ, Marais AD. *et al.* South African Dyslipidaemia Guideline Consensus Statement. A joint statement from the South African Heart Association (SA Heart) and the Lipid and Atherosclerosis Society of Southern Africa (LASSA). *South African Family Practice*. 2015;57(2):22-31. 8. Patient.co.uk. Cholesterol. Available at <http://patient.info/health/cholesterol>. Accessed 13 March 2019. 9. Mayo clinic. Diseases and conditions. High Cholesterol. Treatment. Available at <http://www.mayoclinic.org/diseases-conditions/high-blood-cholesterol/diagnosis-treatment/treatment/dxc-20181913>. Accessed 13 March 2019. 10. UpToDate. Patient Information: High cholesterol treatment options (Beyond the basics). Available at [www.uptodate.com](http://www.uptodate.com). Accessed 13 March 2019.