

What your lipid test means for you

This information sheet is designed to help you understand the results of your blood lipid ("cholesterol") test. It also describes some of the things you can do to improve your results and benefit your health.



When should I start testing?

Regular lipid testing is part of an overall heart health check and should begin for all **males aged over 45 years** and all **females aged over 55 years**. Your heart health checks might start earlier if you are of Māori, Pacific or South Asian ethnicity or have diabetes, a family history of heart problems or another health reason.



How often do I need to be tested?

This depends on other factors in your health. You will benefit from more regular checks if you have diabetes, heart or kidney disease, or are already taking a medicine to lower your cholesterol levels (e.g. a statin).

Your results

A lipid test shows results for multiple different values: the main ones we focus on are **total cholesterol**, **triglycerides**, **HDL cholesterol** and **LDL cholesterol**.

	Your result		General target*	Your target
Total cholesterol		mmol/L	< 5.0	
Triglycerides		mmol/L	< 2.0	
HDL cholesterol		mmol/L	> 1.0	
LDL cholesterol		mmol/L	< 3.4	
Total cholesterol/HDL ratio			< 4.5	
Non-HDL cholesterol		mmol/L	< 4.2	

* These targets are only a guide. There are many reasons why your personal targets might be higher or lower. If this is the case, your clinician will explain why and write them in the "Your target" column.

Notes:

What do your lipid results mean?

Cholesterol is a waxy, fat-like substance that is mostly made in the liver from the fats and oils we eat. It is stored in the walls of all cells in the body and is used for making hormones and bile. Cholesterol travels through the blood attached to carrier molecules called lipoproteins. The two most important lipoproteins are low-density lipoprotein (LDL) and high-density lipoprotein (HDL). We only need a small amount of cholesterol, and when too much is present, health problems such as heart disease can develop.

Total cholesterol is a measure of all the main types of cholesterol in your blood.

LDL cholesterol is often referred to as “bad cholesterol”. When too much LDL cholesterol is in the blood, it can slowly build up in the walls of the arteries that lead to the heart and brain. Over time, this can lead to thick, hardened areas forming, called “plaques”. Plaques increase the chance of a clot forming in the artery, which can cause a heart attack or stroke. For most people who need to improve their lipid levels, LDL cholesterol is the main result to focus on. It’s usually best to get your LDL cholesterol as low as possible.

HDL cholesterol is often referred to as “good cholesterol”. HDL carries cholesterol away from the arteries and back to the liver, where it can be removed from the body. HDL can also remove excess cholesterol from any developing plaques in the arteries, reducing build-up. In general, higher levels of HDL are better. However, it’s more important to lower your LDL cholesterol level than it is to increase your HDL cholesterol level.

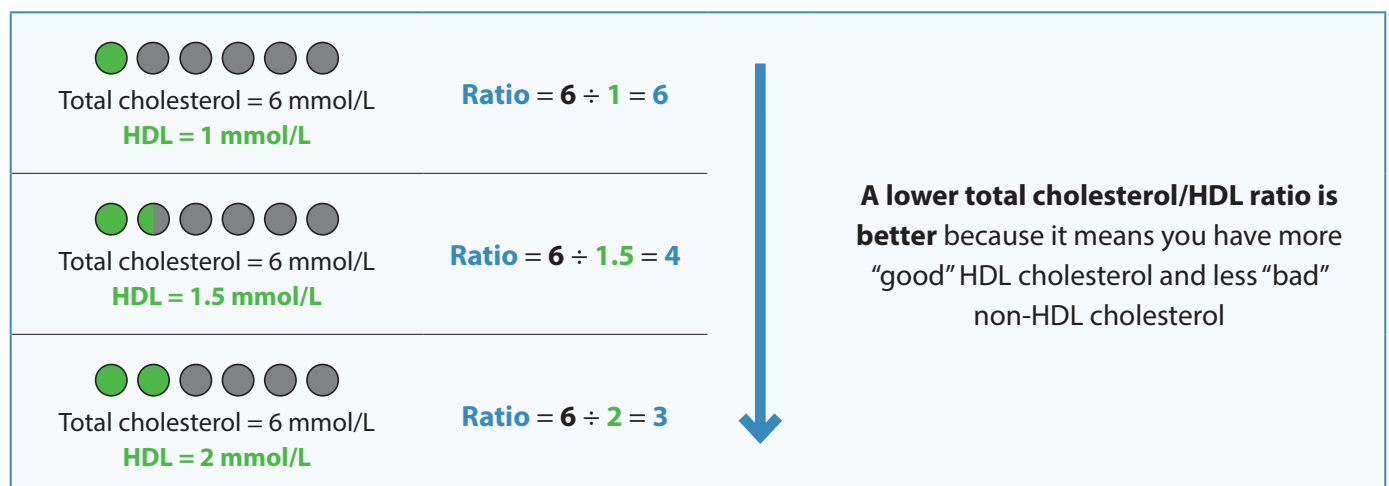


A good way to remember the difference between LDL and HDL cholesterol is that **LDL** is better to be **lower** and **HDL** is better to be **higher**.

Triglycerides are the main type of fat in our food. The body also changes excess sugar and carbohydrates into triglycerides when large amounts are eaten. Triglycerides are an important source of energy, but high levels in the blood can increase the chance of a heart attack or stroke.

Non-HDL cholesterol is a measurement of the total amount of cholesterol in the blood that can build up in plaques. This includes LDL cholesterol, as well as the cholesterol carried by other lipoproteins that can build up inside arteries, i.e. other “bad” types of cholesterol. Your non-HDL cholesterol result provides more information about your chance of a heart attack or stroke, even if your LDL cholesterol is normal. Ideally, you want your non-HDL cholesterol to be as low as possible.

Total cholesterol/HDL ratio is a measurement of how much of the cholesterol in your blood is “good”. It is calculated by dividing your total cholesterol by your HDL cholesterol. A lower ratio means a lower chance of a heart attack or stroke, because less of your total cholesterol is “bad” non-HDL cholesterol, i.e. more HDL is “good”. The box below shows how three people with the same total cholesterol result (6 mmol/L) can have different chances of a heart attack or stroke, depending on the type of cholesterol they have, and how this changes their total cholesterol/HDL ratio.



Dietary fats affect your lipid results

Cholesterol and triglyceride levels (lipid results) are strongly influenced by the foods we eat, especially fats and oils. Our family history (genetics), body weight and how much exercise we do also plays a part in this.

All fats and oils should be eaten in moderation, as they are high in calories and eating too much of them can cause weight gain and increase the chance of health problems. However, some types of fats are healthier to eat than others and knowing the difference between them is important for making healthy food choices.



Trans fats are not a healthy type of fat and should be avoided. They increase LDL cholesterol and decrease HDL cholesterol, which is the opposite of what we want. Most trans fats are made during food manufacturing, meaning they may be found in processed and fried foods.



Saturated fats should only be eaten in small amounts, as they increase LDL cholesterol. Saturated fats are mainly found in foods that come from animals (e.g. meat, dairy products) but coconut and palm oil also contain large amounts. Most of us need to reduce the amount of saturated fat we eat.



Unsaturated fats are the best type of fat to eat and are an important part of a healthy diet (although you still don't need too much). Most unsaturated fats are in foods that come from plants (e.g. olive oil, avocados). Omega-3 is an important type of unsaturated fat that is found in large amounts in oily fish and other seafood, as well as some types of nuts and seeds.



Replace "bad" fats with "good" fats

Check food product labels to see how much and what type(s) of fat they contain. Replacing trans fats and saturated fats with unsaturated fats is the best way to improve your lipid profile, as it helps to reduce both LDL cholesterol and triglycerides.

 Trans fats (avoid) May be found in fried foods, vegetable shortening, packaged snack foods, crackers and biscuits, baked goods (can also be called "hydrogenated vegetable oil"). <i>Not all brands of these products contain trans fats – check labels.</i>  Saturated fats (limit) Found in meat (red and processed), cheese, butter, cream, coconut cream, palm oil, coconut oil, takeaways (e.g. pizza, burgers), baked goods and sweets (e.g. pies, biscuits, cakes, pastries)	Replace with 	 Unsaturated fats Monounsaturated fats Nuts, olives, avocados, olive oil, avocado oil, safflower oil, canola oil Polyunsaturated fats • Omega-3 Salmon, tuna, mackerel, sardines, mussels, chia and flax seeds, nuts, linseed oil, canola oil • Omega-6 Nuts, seeds, grapeseed oil, soybean oil, corn oil, sesame oil, rice bran oil, some margarines
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Making healthy food choices

You can make changes to your diet and cooking to help improve your lipid profile (cholesterol levels).

To reduce the amount of fat you eat (particularly trans and saturated fats):

- Use low-fat cooking methods, e.g. grilling, baking, steaming, air-frying
- Use only a small amount of plant-based oil, e.g. canola oil, olive oil, cooking spray, when needed instead of animal-based fats, e.g. butter, ghee, tallow, lard
- Choose lean meats or remove visible fat from meat prior to cooking, e.g. trim the white parts off meat, remove skin from chicken
- Replace full fat milk ("blue milk") with lower fat milk, e.g. "light blue" or "green" top
- Replace butter with a monounsaturated or polyunsaturated margarine or other plant-based spread
- Avoid foods that contain "hydrogenated vegetable oil" or "partially hydrogenated vegetable oil", as these are other names for trans fats
- Be aware that fat may be "hidden" in pies, pastries, cakes and biscuits

Eating a healthy, balanced diet is also important for a healthy lipid profile. Aim to:

Eat more:		Why?
	Fibre Legumes (e.g. beans, peas, lentils), fruit, vegetables, nuts, seeds, whole grains (e.g. oats, brown rice), wholegrain bread, barley, wholemeal pasta	Reduces LDL cholesterol
	Sterols Fruit, vegetables, nuts, grains and legumes, margarines with added plant sterols	Reduces LDL cholesterol
	Oily fish (omega-3) Canned or fresh salmon, tuna, mackerel, sardines	Reduces triglycerides
Eat less:		Why?
	Sugar Soft drink ("fizzy"), fruit juice, cordial, energy drinks, sweets, baked goods	Large amounts increase triglycerides
	Refined carbohydrates White rice, pasta, white bread, processed snack foods, baked goods	Large amounts increase triglycerides and decrease HDL cholesterol
	Alcohol	Increases triglycerides



Regular exercise and keeping a healthy body weight can help increase HDL cholesterol, reduce LDL cholesterol and triglycerides, and decrease your chance of heart disease and other health problems



Read the nutritional information on products

In New Zealand, the amounts of total fat and saturated fat that a food contains must be written on the packaging. By comparing "nutrition information" panels on similar foods, you can choose the item with the lowest levels and healthiest types of fat. You can also see which foods have less sugar and salt (sodium), helping you make healthier choices overall.



Apps that let you scan product barcodes to find out more about their nutritional information, e.g. FoodSwitch, KaiWise, can help make this easier

Don't forget about serving size; some "single serve" products contain multiple servings



Less "S" is best:

- Saturated fat
- Sugar
- Sodium (salt)

Even foods labelled with "no added sugar" can naturally contain lots so it's always best to check

Ingredients are listed by quantity in descending order, i.e. from largest amount to smallest amount

Use this column to compare similar foods

NUTRITION INFORMATION

Servings per package: 3		Serving size: 150 g
Average quantity :	Per serving	Per 100 g
Energy	616 kJ	411 kJ
Protein	7.2 g	4.8 g
Fat, total	4.8 g	3.2 g
– saturated	4.5 g	3.0 g
Carbohydrates	18.6 g	12.4 g
– sugars	18.6 g	12.4 g
Sodium	90 mg	60 mg

Ingredients: Whole milk, concentrated skim milk, sugar, strawberries (7%), gelatine, culture, thickener (1442).

Sugar can also be called other names, e.g. corn syrup, dextrose, fructose, glucose, maltose



Some packaged foods have a Health Star Rating that can be used to compare them to similar products.

More stars mean that a product has less saturated fat, sugar and salt and more healthy nutrients and ingredients.