A simple guide to lower cholesterol through diet and lifestyle.
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The heart of the matter

Nothing is more important than your heart. This ball of muscle beats approximately 100,000 times every day, pumping blood through your body. Every muscle and every organ in the body depends on the regular supply of life-giving oxygen that is carried in the blood through a maze of blood vessels – the arteries and veins.

Our arteries can gradually become blocked with cholesterol (a process called atherosclerosis). If the arteries become blocked completely, a heart attack or stroke can occur, and the heart may stop altogether.

Today many risk factors for cardiovascular disease are well known. Some of them can’t be changed, such as your age, gender and ethnicity. However, some risk factors, such as smoking, high blood pressure and high blood cholesterol are linked to diet and lifestyle, which we can influence greatly.
The importance of cholesterol

Heart disease is responsible for 40% of New Zealand deaths every year,\(^1\) a number that could be lowered if the prevalence of high cholesterol was reduced. Rates of heart disease among Maori and Pacific Islanders are even higher.\(^2\) The mean serum cholesterol of New Zealanders is 5.7mmol/L with 23% having cholesterol levels higher than 6.5mmol/L.\(^2\) The good news is that cholesterol can be lowered by diet and lifestyle changes.

The National Cholesterol Education Program of New Zealand aims to help New Zealanders lower their cholesterol levels through easy, effective and sustainable diet, physical activity and lifestyle changes. The information in this brochure is designed to help you take the first step towards a lower cholesterol level and a healthier heart.

Heart disease continues to be the leading cause of death in New Zealand\(^1\) with the mean cholesterol of New Zealanders above ideal levels.\(^2\)

Lowering cholesterol in New Zealand

Cholesterol is a fatty substance found in our blood. It’s essential and has many good uses – it’s needed to make hormones and vitamin D in the body. But we only need a small amount. Too much cholesterol in the blood can increase the risk of heart disease.

The average level of total blood cholesterol in New Zealand adults is 5.7mmol/L,\(^2\) while the recommended level for individuals is less than 4.0mmol/L.\(^1\)

The Good and the Bad.

Cholesterol in the blood comes in two main forms – which are often called ‘good’ and ‘bad’ cholesterol.

- ‘Good’ HDL cholesterol clears the blood of cholesterol helping to reduce the risk of heart disease.
- ‘Bad’ LDL cholesterol can build up in the arteries, increasing the risk of heart disease.

People with high cholesterol usually have high levels of ‘bad’ LDL cholesterol in their blood.

Why is our cholesterol high?

A major contributor to high cholesterol in New Zealand is a poor diet. Saturated fats are known to raise blood cholesterol levels and many foods, such as fatty meats, full fat dairy products, coconut cream, biscuits, cakes, pastries, fried takeaways and some snack foods are high in saturated fats. However, there are many tasty foods that have no effect on blood cholesterol and some that actually lower blood cholesterol.

Simple changes in diet can lower your cholesterol.

Simple cholesterol tests estimate your ‘total’ cholesterol whereas more complete tests provide additional information about total, LDL and HDL cholesterol. Your doctor can organise these tests, check for other risk factors and give you detailed advice. A Registered Dietitian can provide you with tailored dietary advice to improve and manage your cholesterol and SPARC, www.sparc.org.nz, can help you find activities that suit you.
How to lower your cholesterol

For a healthier heart, and a lower cholesterol level, make these three important changes to your diet.


Some fats push cholesterol up – these are saturated and trans fats, the ‘unhealthy’ fats. Other fats either have no effect or are cholesterol-lowering and are the ‘healthy’ fats, poly- and monounsaturated. Replacing some unhealthy fats in your diet with healthy fats will lower your cholesterol and, as a bonus, provide more of the essential nutrients found in fats.

Healthy fats: polyunsaturated and monounsaturated.

Poly and monounsaturated fats are found in abundance in many vegetable oils, such as sunflower, olive, soy bean, canola, safflower, olive and avocado oils, margarines, some salad dressings, nuts, seeds and avocados. Including moderate amounts of these foods in your daily diet is recommended.

Unhealthy fats: saturated and trans.

Saturated fats significantly increase total cholesterol and limiting them is crucial to lowering blood cholesterol. Saturated fats are found in a wide variety of foods, especially fatty foods of animal origin, such as butter, cream, blue top milk, cheese and other full-fat dairy products, coconut cream, fatty meats and meat products. Many commercial cakes, biscuits and pastries are also high in saturated fats, as are many deep-fried takeaways and snack foods. Limiting saturated fat intake will also help lower your overall fat intake.

Trans fats also increase blood cholesterol but fortunately are only present in small amounts in the New Zealand diet. Dietary cholesterol (cholesterol from food) can also increase blood cholesterol but the effect is small. Saturated fats are the important ‘bad’ fats to focus on.

Reading nutrition information panels on packaged foods will help you to identify foods high in saturated fat. Looking out for foods with the Heart Foundation Tick is an easy way of identifying foods that contain less bad fat. Comparing the saturated fat in a Tick approved product versus the product you usually buy will give you an indication of whether it is suitable for you.

Choose healthy fats

- Use sunflower, canola, soybean, olive, avocado or safflower oil in cooking, and in salad dressings
- Use margarine spread on bread and in cooking
- Have oily fish once or twice a week
- Choose unsalted nuts as a healthy snack

Limit unhealthy fats

- Limit butter, cream, cheese, other full-fat dairy products and coconut cream. Choose low or reduced fat milk, yoghurt or ‘added calcium’ soy alternatives
- Trim fat from meats; limit fatty processed meats such as salami, sausages and canned corned beef
- Limit biscuits, cakes and pastries
- Limit deep-fried takeaways, potato chips and other fatty snack foods

Changing fats in the diet – less saturated fats and more unsaturated fats – will lower LDL cholesterol by an average of about 10%.5,6
2. Include plant sterol-enriched foods every day.

Including plant sterol-enriched foods in your diet is a highly effective way of lowering cholesterol.\(^7\)

How do they work?

Plant sterols occur naturally in small amounts in common plant foods, such as vegetable oils, nuts, seeds and vegetables. When eaten in high enough amounts, plant sterols partially block the absorption of cholesterol from the gut into the body, which in turn leads to a fall in blood cholesterol levels.

Many studies have now shown that consuming 2g of plant sterols a day can lower ‘bad’ LDL cholesterol by 5-15\(^\%\)\(^7\) when consumed as part of a healthy diet. Plant sterol-enriched margarines have been studied more than any other plant sterol food and the typical fall in LDL cholesterol is about 10\(^\%\),\(^7\) approximately equal to the effect of replacing unhealthy fats with healthy fats. And the effects add together. If you replace unhealthy fats with healthy fats and include plant sterol-enriched foods every day, LDL cholesterol can fall by 20\(^\%\).\(^8,9\)

Including plant sterols daily in your diet will lower LDL cholesterol by 10\(^\%\) on average.\(^7,9\)

How can I incorporate plant sterols in my daily diet?\(^i\)

Plant sterol-enriched foods need to be eaten daily and in sufficient amounts to have maximum effect.

A plant sterol-enriched margarine may be used as a spread on bread and also in cooking and baking.\(^ii\) About 25g of spread (one rounded tablespoon) contains 2g of plant sterols that provides close to the maximum cholesterol-lowering effect.

If you prefer yoghurt or other foods enriched with plant sterols, take note of the manufacturer’s advice. Two serves each day may be required to achieve the recommended intake of 2g of plant sterols each day.

\(^i\) People with the rare genetic condition sitosterolaemia should limit plant sterols in their diet. When consuming plant sterol enriched products, consume them as part of a healthy diet. Plant sterol enriched products may not be suitable for children under the age of five years and pregnant or lactating women. Plant sterols do not provide additional benefits when consumed in excess of 3g per day.\(^ii\) Reduced fat or ‘light’ plant sterol spreads are not recommended for cooking and baking. Use regular plant sterol spreads instead.

3. Soluble fibre and soy protein.

Soluble fibre can also help to lower cholesterol (by 2-3\(^\%\))\(^10\) and is found in foods such as oats and legumes (lentils, soya beans, red kidney beans, chick peas). Foods rich in soy protein such as tofu, soya beans and soy-based drinks also have a small cholesterol-lowering effect (3\(^\%\)).\(^11\) These foods are generally low in saturated fat and it is recommended they be included regularly in your diet. Other cereal fibres and wholegrains will not affect your blood cholesterol level but instead have other benefits such as digestive health.

Diet checklist for heart health

- Choose healthy fats and oils
- Choose low and reduced-fat milk and yoghurt
- Choose lean meats and chicken without skin
- Include plant sterol-enriched foods every day
- Eat oily fish once or twice a week
- Aim for at least 5 serves of fruit and vegetables every day\(^iii\)
- Include wholegrain breads or cereals each day
- Moderate portion sizes
- Limit sugary and alcoholic drinks
- Use salt sparingly and limit high salt foods

\(^iii\) Visit www.5aday.co.nz for more information about serves of fruit and vegetables.
### Healthy meal suggestions for everyone

<table>
<thead>
<tr>
<th></th>
<th>Breakfast</th>
<th>Lunch</th>
<th>Dinner</th>
<th>Snack</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mon</strong></td>
<td>High fibre cereal with low fat milk</td>
<td>Wholemeal wrap with low fat cottage cheese</td>
<td>Grilled lean beef, boiled noodles and</td>
<td>Fresh seasonal fruit, rice</td>
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<tr>
<td></td>
<td>topped with canned fruit in juice</td>
<td>grated carrots and nuts eg walnuts</td>
<td>broccoli, salad</td>
<td>crackers</td>
</tr>
<tr>
<td><strong>Tues</strong></td>
<td>Porridge with sliced apple</td>
<td>Garden salad with lean ham, wholemeal</td>
<td>Lean lamb chops with kumara and steamed</td>
<td>Banana or apple, low fat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bread roll</td>
<td>fresh or frozen carrots and beans</td>
<td>yoghurt, wholemeal cracker</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>with reduced fat cheese</td>
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<tr>
<td><strong>Wed</strong></td>
<td>Wholegrain toast with margarine spread</td>
<td>Spinach and ricotta cannelloni pasta dish</td>
<td>Grilled terakihi (or other fish) with</td>
<td>Orange, grapes, handful</td>
</tr>
<tr>
<td></td>
<td>and jam</td>
<td></td>
<td>mashed potatoes and steamed fresh or frozen</td>
<td>unsalted nuts eg almonds</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>carrots and beans</td>
<td></td>
</tr>
<tr>
<td><strong>Thurs</strong></td>
<td>Fresh or canned fruit salad in juice</td>
<td>Tuna sandwich with salad</td>
<td>Chicken stir fry with fresh or frozen</td>
<td>Watermelon, apple, wholemeal</td>
</tr>
<tr>
<td></td>
<td>in juice with low fat yoghurt, muesli</td>
<td></td>
<td>veggies and rice topped with a sprinkle</td>
<td>bread roll with peanut</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>of sesame seeds</td>
<td>butter</td>
</tr>
<tr>
<td><strong>Fri</strong></td>
<td>Wholemeal toast with margarine spread</td>
<td>Chick pea (or three bean mix) salad with</td>
<td>Grilled salmon, roast potatoes and</td>
<td>Canned or fresh pineapple,</td>
</tr>
<tr>
<td></td>
<td>and banana and honey</td>
<td>paprika and cucumber</td>
<td>asparagus (or seasonal Asian greens)</td>
<td>banana, low fat yoghurt</td>
</tr>
<tr>
<td><strong>Sat</strong></td>
<td>Wheat biscuits with low fat yoghurt</td>
<td>Wholemeal bread sandwich with tomato,</td>
<td>Vegetable lasagne</td>
<td></td>
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<tr>
<td></td>
<td>and diced seasonal fruit</td>
<td>mozzarella and rocket (or other salad</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>leaves)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sun</strong></td>
<td>Wholegrain toast with margarine spread</td>
<td>Vegetable salad with potatoes and bread</td>
<td>Spaghetti Bolognese, salad</td>
<td>Fresh seasonal fruit, handfull</td>
</tr>
<tr>
<td></td>
<td>and reduced fat cheese, glass of low</td>
<td></td>
<td></td>
<td>unsalted nuts and seeds</td>
</tr>
<tr>
<td></td>
<td>fat milk</td>
<td></td>
<td></td>
<td>eg almonds, sunflower seeds,</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>pumpkin seeds</td>
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</tbody>
</table>

### Lose a little weight

If you are overweight, even losing a few kilos will help to lower your blood cholesterol and other blood fats. In fact, the ‘bad’ LDL-cholesterol goes down and the good HDL-cholesterol goes up – a double benefit. Blood pressure may also drop a little, so trimming off a little excess weight is a heart-healthy step for many reasons. Major improvements are often seen with quite small falls in body weight of between 5 and 10% (or 5-10 kilos if you weigh 100kg).

Some people tend to carry excess weight around their bottom and thighs while others put on fat around the waist, which is more of a problem – it has worse effects on cholesterol, other blood fats, blood pressure and blood glucose (sugar) levels. Your waist circumference is a good guide to this ‘central’ body fat and can be simply measured with a tape measure at the narrowest part of your waist (or in line with your belly button). The NZ Dietetic Association recommends a waist circumference of less than 88cm for women and less than 102cm for men to reduce risk. So aim to lose a few centimetres as well as a few kilos.

### Let’s get physical

Being physically active has a small beneficial effect on cholesterol and many other heart health benefits, including improved blood flow and weight reduction. The good news is activity doesn’t always have to be vigorous. Moderate activity, such as brisk walking, is great for your health.

Most people should aim for at least 30 minutes of moderate activity a day, most days of the week. Why not try brisk walking, swimming, cycling or a game of tennis or squash? Older people and those with a history of heart disease should consult their local doctor about a suitable activity plan.

### New Zealand Physical Activity Guidelines

- Think of movement as an opportunity, not an inconvenience.
- Be active every day in as many ways as you can.
- Put together at least 30 minutes of moderate intensity physical activity on most, if not all, days of the week.
- If possible add some vigorous exercise for extra health and fitness.
Answers to your questions

1. If I change to a healthier, cholesterol-lowering diet, will I be able to give up my cholesterol medication?
A heart healthy diet works together with cholesterol-lowering medication. Your doctor is the best person to advise you on your need for medication.iv

2. Is it okay to eat fried foods?
At home, lightly frying foods in a little sunflower, canola or olive oil is a tasty and healthy way to prepare foods. These vegetable oils are healthy fats and can be used regularly. However, the fats used in commercial frying are usually saturated (unhealthy) fats so many deep-fried takeaways are not recommended. Check the type of oil used and choose wisely.

3. What about salt?
Eating salt does not affect your blood cholesterol level, but it can increase your blood pressure – another important risk factor for heart disease. Eating a little less salt is a healthy step for everybody. Avoid adding salt at the table or during cooking and watch out for packaged foods high in salt.

4. Can I drink alcohol?
Alcohol has little effect on cholesterol. Including one standard drink per day for women and two a day for men is usually OK, unless you have been advised not to drink alcohol. If in doubt, check with your doctor.

5. Will this diet help me lose weight?
If you want to reduce your weight, the advice in this booklet will be an excellent start. However, for a personalised plan it’s best to see a Registered Dietitian who can work out an eating plan that suits you.

6. What snacks can I eat?
This is one of the more difficult aspects of a diet to lower blood cholesterol. Some popular snack foods such as biscuits, cakes and pastries, are very high in saturated (bad) fat so it’s best to limit them. But what to eat instead?
If you are watching your weight, limiting snacking often helps. Otherwise, some fresh fruit, raw vegetables and/or nuts are ideal snacks. Biscuits and cakes baked at home with margarine or plant sterol spread may also be included occasionally.

7. What about eggs?
Eggs are not high in saturated fat but they are rich in cholesterol, which has led to considerable debate about their role in a healthy diet. For some, cholesterol in eggs can actually raise their blood cholesterol, while others have no reaction at all.iii However, if your cholesterol is high, take a cautious approach and limit yourself to 2-4 eggs a week.

8. Can I eat starchy foods like potato, kumara, taro and rice?
Yes, they are all low in saturated fat and are recommended. They can be simply steamed or boiled, or prepared with a little vegetable oil or table margarine.

9. What are the benefits of wholemeal bread and wholegrain breads and cereals?
Wholegrain cereal foods have been shown to promote heart health for reasons that are not yet well understood. They are also rich in dietary fibre, which is good for the health of the bowel and keeping you ‘regular’. Refined cereals and white bread generally contain less fibre so choose wholegrain options more often.

10. Where can I find more information on healthy eating for my heart?
National Cholesterol Education Program of New Zealand
www.ncepnz.co.nz
New Zealand Nutrition Foundation
www.nutrition.org.nz
New Zealand Dietetic Association
www.dietitians.org.nz
National Heart Foundation of New Zealand
www.nhf.org.nz

vi If your cholesterol is greater than 4.0mmol/L please consult your doctor.
Other risks to heart health

Apart from high cholesterol there are other risk factors to heart health that you can influence:

**Diabetes**

If you have type 1 or type 2 diabetes, the sugar (glucose) levels in your blood are higher than normal, and your risk for heart disease is increased. Diabetes can damage your blood vessels, including the arteries that supply blood to your brain and heart.

**High blood pressure**

The heart moves 5-8 litres of blood around the body. If you have high blood pressure, the walls of your arteries can be damaged and become less flexible, and the heart needs to work harder. Being overweight, inactive, drinking too much alcohol, eating too much salt and other aspects of diet can raise blood pressure.

**Overweight**

Managing your weight will help your heart. An increase in body weight usually increases blood cholesterol, blood pressure and generally the risk of heart disease. Your body shape is also important: an “apple” body shape, where excess fat is stored around the stomach, carries a higher risk than a “pear” body shape, where weight is carried around the hips and thighs. Your waistline should be below 88cm (women) or below 102cm (men) for optimal health.14, 16

**Smoking**

If you are a smoker, the single most important thing you can do for your health is to quit smoking. After three days you will be able to breathe easier and after a year your heart disease risk due to smoking will be reduced by half.17 One of the first steps in the quitting process is to decide that you want to quit, then set a quit date and plan towards it. For more information visit www.quit.org.nz

**Stress**

Stress is a part of life, and is not harmful to your health if it happens occasionally. However, if you are stressed most of the time, it is time to take action and see your doctor. Know your limits – everyone has them – and take your time to prioritise – life should not be a race against time. Try to have a good night’s sleep, eat healthily and exercise regularly.

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Are you at risk?

Cholesterol is only one risk factor for heart health. By filling out the questionnaire below, you will help the nurse give you better advice when discussing your cholesterol result.

<table>
<thead>
<tr>
<th>Question</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have had a heart attack or stroke in the past</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have type 2 diabetes</td>
<td></td>
<td></td>
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<tr>
<td>Male over 45 yrs or female over 55 yrs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian, Maori or Pacific Islander over 35 yrs (males) or over 45 yrs (females)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My father (before he was 55 years old) or my mother (before she was 65 years old) had a heart attack or stroke</td>
<td></td>
<td></td>
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<tr>
<td>My blood pressure is often too high (≥ 140/90mmHg) OR I take blood pressure lowering medication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am overweight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I smoke every day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My cholesterol level is _<strong>.</strong>__.iv This is above the recommended level for individuals of 4.0mmol/L OR I take cholesterol lowering medication</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If you have ticked ‘yes’ for 1 or more □ OR 2 or more □ then please make a time to see your general practitioner. A general practitioner can do a detailed overall heart health risk assessment and give you more information.

If you have any concerns in regards to your health, please ask your general practitioner for more information. For expert nutrition and dietary advice, visit a Registered Dietitian.

iv This is the result of a simple finger-prick cholesterol check. See your doctor for a more complete test including total, LDL and HDL cholesterol levels. Any information provided is not to be used in replacement of medication or advice from your healthcare professional.
The National Cholesterol Education Program of New Zealand was initiated to educate the New Zealand public and health care professionals about dietary and lifestyle measures to lower cholesterol. The program is proudly funded by Unilever Australasia. For more information on the National Cholesterol Education Program of New Zealand visit: www.ncepnz.co.nz

Information in this brochure has been reviewed by the New Zealand Nutrition Foundation.


7 National Heart Foundation of Australia. Summary of evidence on phytosterol/stanol enriched foods. 2007. www.heartfoundation.org.au


