



# Cholesterol Matters to Everyone

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**Melvin Lim is a 52-year-old bus driver. Due to his busy work schedule, he often eats out and he does not exercise regularly. However, he is determined to make positive changes after a visit to his neighbourhood CDMP Clinic.**

“ I received an invitation letter from HPB about the Integrated Screening Programme. At first I tossed it aside but since my father suffered from a heart attack when he was around my age, my wife and I decided to make an appointment at my neighbourhood Chronic Disease Management Programme (CDMP) clinic. The results of my cholesterol test shocked me. I had a total cholesterol of 6.2mmol/L! I know I do not get much exercise but I am not overweight. Even so, I had to start eating more fruits and vegetables and less hawker food. I do not like having to take a pill every day but that is what I have to do to keep my condition under control. I am glad that I found out early because now I can do something about my heart health before anything more serious happens. ”



## The Good and Bad about Cholesterol

Cholesterol is used by the body for producing hormones, protecting nerves, building new cells, and other important functions. The amount of cholesterol in your blood comes from what is made by your liver and from the food you eat. If your cholesterol level is too high, it can cause heart disease.

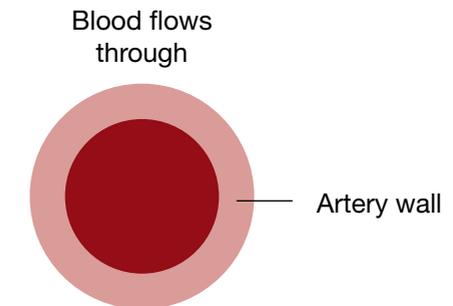
For a healthy individual, your blood lipid (comprising cholesterol and triglycerides) levels should be as follows:

	Desirable Levels
Total cholesterol	< 5.2mmol/L (200mg/dL)
HDL- cholesterol	≥ 1.0mmol/L (40mg/dL)
LDL- cholesterol	< 3.4mmol/L (130mg/dL)
Triglycerides	< 2.3mmol/L (200mg/dL)

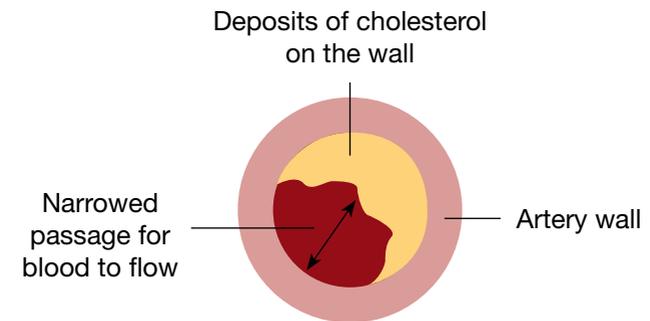
You can find low density lipoprotein (LDL), high density lipoprotein (HDL) and triglycerides in your blood. LDL is **bad cholesterol** because too much LDL in your blood can cause your arteries to become narrow and hard (atherosclerosis). HDL is **good cholesterol** because it prevents excess cholesterol from building up in the blood vessel. Triglycerides are fats in your blood that are used by your muscles as energy. Excess or high levels will put you at higher risk of heart attack.

## The Big Deal about High Blood Cholesterol

Too much cholesterol in your blood can lead to heart attacks and strokes. This happens because the excess cholesterol is deposited in blood vessels and can cause them to become narrow and hard (Figure 2).



**Normal artery**  
Figure 1



**Narrowed artery**  
Figure 2

## Fats in Your Diet and Your Cholesterol Levels



### Trans Fats

Trans fats increase LDL (bad cholesterol) and lower HDL (good cholesterol). Most of the trans fats we eat come from processed foods (e.g. pastries, cakes, deep-fried food, cookies, biscuits).



### Saturated Fats

Saturated fats increase LDL and total cholesterol in your blood thus increasing your risk of heart disease. Many foods that are high in saturated fat are also high in cholesterol (e.g. fatty meat, skin of poultry, dishes containing coconut milk/cream, deep-fried food).



### Polyunsaturated Fats

Polyunsaturated fats are good for your health and can help lower blood cholesterol. Omega-6 and Omega-3 are polyunsaturated fats that reduce the risk of blood clots and stroke (e.g. salmon, sardine, walnuts, vegetable oils).



### Monounsaturated Fats

Monounsaturated fats lower LDL and increase HDL. They are good for your overall health and are typically high in vitamin E, an antioxidant (e.g. avocados, almonds, cashew nuts, olive oil).

## Cholesterol in Your Food

Knowing the cholesterol content of your favourite dishes will help you to make healthier food choices. Learn how much cholesterol is in some popular local dishes to help you plan your daily diet.



\*Please note that food items listed are of single portion size.

## 10 Tips for Managing Your Cholesterol

Having too much cholesterol increases your risk of heart attacks and strokes. The good news is that you can manage your cholesterol levels through exercise, healthy eating, weight loss, and, if necessary, medication. Here are some tips for managing your cholesterol:

**1** Maintain a healthy weight through exercise and a healthy diet.

**2** Engage in moderate-intensity aerobic activity over 3 to 7 days and accumulate 150 minutes throughout the week. Each session should last at least 10 minutes. Examples of moderate-intensity aerobic activities include brisk-walking, recreational swimming and leisure cycling.



**3** Engage in muscle-strengthening activities that work all major muscle groups (arms, abdomen, shoulders, chest, legs, hips and back) at least twice a week. Rest for at least 48 hours before your next session. Examples of muscle-strengthening activities include body weight resistance exercises, using resistance bands/ tubing and weight lifting.



**4** Avoid foods that are high in trans fats, such as deep-fried food, pastries and cakes.

**5** Use monounsaturated fats, like olive oil, instead of saturated fat (butter, ghee, and palm oil) when you cook.

**6** Limit cholesterol-rich foods such as organ meats, shellfish, and eggs.

**7** Eat more fibre, such as whole grain food, vegetables, fruit and beans.



**8** Enjoy fish rich in Omega-3 fatty acids like sardine, longtail shad (terubok) and spanish mackerel (tenggiri papan) two to three times a week.

**9** Ask your doctor or pharmacist for help to quit smoking or call QuitLine 1800-438-2000 – smokers who stop, see an improvement in their HDL levels.

**10** Take medication as prescribed by your GP or family doctor to help lower your cholesterol.

**Q Margarine contains trans fat. Is it a healthier choice than butter?**

A Soft margarine has less trans fats and saturated fat than hard margarine and butter and is therefore a healthier choice. Look for soft margarine with the Healthier Choice Symbol.



**Q What are the symptoms of high cholesterol?**

A There are no symptoms that will tell you if your cholesterol is getting too high. Most people find out they have high cholesterol from a blood test during a check-up or when they have already suffered a heart attack or stroke. This is why it is important that you get a cholesterol test every three years starting from age 40 if you have not been diagnosed with high cholesterol.

**Q Do I have to watch what I eat if I am on medication to lower my cholesterol?**

A Yes, you should always have a healthy diet. Cholesterol-lowering drugs cannot replace a healthy lifestyle. Remember to take your medication as advised by your GP or family doctor.

**Q Do I have to worry about my cholesterol if I am thin?**

A Yes, people who are thin can also have high blood cholesterol. Although being overweight significantly increases a person's risk of high cholesterol, anyone who eats too much saturated and trans fats can have too much cholesterol in their blood stream. If you are over 40, you should have your cholesterol tested every three years or more frequently as advised by your healthcare provider, regardless of your weight.

**Q Why do I have higher cholesterol than my friend even though she and I have similar lifestyles?**

A You may have a family history of high cholesterol. Eating a healthy balanced diet and doing regular physical activity can help keep your cholesterol under control.

### Rava Uppita

Created by Milind Sovani

Serves 4

Ingredients	Weight
Semolina (rava)	150g
Onions (chopped)	50g
Carrots (grated)	50g
Canola oil	1 tbsp
Curry leaves	8 nos
Mustard seeds	½ tsp
Sugar	1 tsp
Green chillies (chopped)	1 tsp
Asafoetida (hing)	a pinch
Fairprice Pasar cashew nuts	8 nos
Fresh coconut (grated)	2 tsp
Fresh coriander (chopped)	1 tbsp
Water (hot)	280ml
Salt	¼ tsp



#### Method of Preparation

1. Dry roast semolina in non-stick pan till fragrant but not till it gets colour.
2. Heat oil, add mustard seeds and let crackle.
3. Add curry leaves and green chillies and saute.
4. Add onions and saute till translucent, then sprinkle the asafoetida powder.
5. Add carrots and saute for 2 minutes.
6. Add roasted semolina and hot water, then mix well.
7. Add sugar, cashew nuts and salt, and keep stirring.
8. Saute the mixture until all the water is absorbed and it is soft and dry.
9. Garnish with coriander and coconut and serve hot.

#### Healthy Cooking Tips

1. Heat oil till hot before stir-frying, as this will shorten cooking time and reduce the amount of oil absorbed by the ingredients.
2. Nuts are a rich source of unsaturated fat, especially Omega-3 fatty acids, which benefit heart health.
3. Use fresh herbs and spices instead of salt to add interesting and varied flavours to dishes.

*“When I was growing up, this was a popular breakfast dish. This is also a welcome snack, anytime of the day.” – Milind Sovani*

## Fried Kueh-Teow in Creamy Foo Yong Sauce

Created by Eric Teo

Serves 4

Ingredients	Weight
Medium prawns, shelled	12
Squids, cleaned and sliced	150g
Toman fillet, sliced	100g
Chye sim, cut into 4-inch pieces	12
Kueh teow	300g
Canola oil	1½ tbsp
Light soya sauce	2 tbsp
Hot water	500ml
Maggi concentrated chicken stock	2 tbsp
White sesame oil	1 tsp
Eggs, lightly beaten	2
Cornflour	4 tbsp
Salt & pepper	to taste



### Method of Preparation

1. Heat wok until hot and then add canola oil.
2. Add kueh teow and light soya sauce. Stir-fry until very hot and well-mixed.
3. Dish onto a serving plate and set aside.
4. Blanch seafood and chye sim in boiling water for 2 minutes until cooked. Drain and set aside.
5. Add concentrated chicken stock to water and heat until boiling point. Add sesame oil, salt and pepper seasoning to taste.
6. Mix cornflour with 8 tbsp water. Add to stock and stir till stock has thickened.
7. Add beaten eggs to stock.
8. Pour sauce over fried kueh teow. Serve hot.

### Healthy Cooking Tips

1. Heat oil till hot before stir-frying, as this will shorten cooking time and reduce the amount of oil absorbed by the ingredients.
2. Substitute whole egg with egg white to reduce the amount of cholesterol intake.
3. Use fresh herbs and spices instead of salt to add interesting and varied flavours to dishes.

*“ This is one of my favourite all-time comfort food – a wholesome one-plate meal, with all my favourite ingredients.” – Eric Teo*

## Gulai Ayam (Chicken Curry)

Created by Kintamani Chefs

Serves 4

Ingredients	Weight
Chicken leg, boneless (skin removed)	400g
Onion, medium	200g
Chilli powder	½ tsp
Turmeric powder	½ tsp
Curry powder	1 tsp
Ginger	1 tsp
Garlic, crushed	2g
Green capsicum, sliced	30g
Salt	¼ tsp
Pepper	¼ tsp
FairPrice sunflower oil	1 tbsp
Low-fat evaporated milk	480g
Curry leaf	2g



### Method of Preparation

1. Rub the chicken leg with salt.
2. Heat oil in a frying pan and gently fry onions until translucent.
3. Remove onions from the pan and add chilli powder, turmeric powder, curry powder, curry leaf, ginger and garlic.
4. Cook gently for a few minutes.
5. Add chicken and fry on all sides until golden.
6. Add the onions and evaporated milk.
7. Simmer, cover for 20 minutes or until tender.
8. Remove lid and cook for another 5 minutes.
9. Garnish with capsicum slices, then serve.

### Healthy Cooking Tips

1. Use fresh herbs and spices instead of salt to add interesting and varied flavours to dishes.
2. As coconut milk is high in saturated fat, try substituting at least one quarter of the coconut milk with low-fat milk, low-fat yoghurt, and water or soup stock to create healthier dishes.
3. Leaner cuts of meat (e.g. skinless chicken breast, lean pork or beef) are flavourful yet lower in fat. To further enhance their healthfulness, remove visible fat and skin where possible before cooking.

*“ You can substitute with duck or chicken breast for this recipe.” – Kintamani Chefs*

- Talk to your GP or family doctor for more information about high cholesterol and how you can keep your condition under control. Keep to one doctor.
- Call HealthLine at **1800 223 1313** to speak to a Nurse Advisor during office hours. This service is available in 4 languages.
- Visit [www.hpb.gov.sg](http://www.hpb.gov.sg)
- Contact the Nurse Educator at **6435 3221** during office hours or email to [hpb\\_nurse\\_educator@hpb.gov.sg](mailto:hpb_nurse_educator@hpb.gov.sg) for information about workshops on how to manage high cholesterol.

Under the Chronic Disease Management Programme (CDMP), individuals can draw on their Medisave account to help reduce out-of-pocket payments for outpatient treatment of their chronic disease. The use of Medisave for CDMP is applicable for the following medical conditions:

- Diabetes Mellitus
- High Blood Pressure
- High Blood Cholesterol
- Stroke
- Asthma
- Chronic Obstructive Pulmonary Disease (COPD)
- Schizophrenia
- Major Depression

Please check with the doctor or CDMP clinic for more details.

Participating clinics will display this sticker:



For more information, visit  
**[www.hpb.gov.sg](http://www.hpb.gov.sg)**