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High Cholesterol

In the UK we have amongst the highest average blood cholesterol levels in the world¹. In fact, two thirds of the UK population have a high total cholesterol level (>5.2 mmol/L).

Often people think that their high cholesterol is genetic because their family members also have a high cholesterol. But actually, genetic causes are the problem in only 1 in 500 people in the UK², so this is a small proportion of the $\frac{2}{3}$ of people in the UK that have high cholesterol. Your doctor will have to consider this however if your cholesterol level is >7.5mmol/L and you had a parent who had heart disease before they were 60 years old.

There are several things to exclude first when approaching high cholesterol, which no doubt your GP will already have checked. But in case they have been missed you will need to have the tests listed in 'Blood Tests, Urine Tests & Medication Review', and a look at whether some of your medicines (if you are taking any) need to be stopped or changed.

In terms of actions you can take for your own health, I will outline here what increases and what lowers our bad (LDL) cholesterol, as well as how to drive up your good (HDL) cholesterol

¹ Report of the Joint British Societies for the Prevention of Cardiovascular Disease; JBS3, 2014

² National Institute for Health & Care Excellence (NICE) guidance. Familial Hypercholesterolaemia: Identification and Management

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Blood Tests, Urine Tests & Medication Review

Thyroid Function

One cause of high cholesterol is an underactive thyroid. If this is the cause then your cholesterol level will improve once your underactive thyroid has been treated..

HbA1c

This is measure of how sugary your blood is over a 3 month period, and we use it to test for (pre)diabetes. The reason this is important is because if you think of insulin as being a key which lets glucose (sugar) into cells to be used as fuel, cholesterol can gum up that lock. For that reason, if your cholesterol is high it can make you (pre)diabetic.

Kidney health

Another cause of high cholesterol is a condition called nephrotic syndrome. People with this have a build-up of fluid in their body which can make their ankles swell. They can even get fluid around their lungs which can make them breathless. If your doctor suspects this they will dip your urine to look for protein, & send off a sample to get an idea of the amount of protein being passed out through the kidneys.

Medication

Some drugs eg thiazide diuretics, beta blockers, the combined oral contraceptive pill & retinoic acid amongst others can also raise cholesterol.

Your doctor may change or stop these if it is safe to do so.

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What Increases Cholesterol?

Epigenetics

A very common misconception (even amongst doctors!) is when they describe something as being 'genetic' what they really mean is 'epigenetic'.

The reason this is critical is that we cannot do anything about our *genetic* risk, but our *epigenetic* risk is considerably within our power.

Epigenetics is about how we switch genes on and off. It is achieved by little tags being added to our genes (or the proteins that our genes are packaged around) to say 'I am available' or 'I am not available'.

We do inherit these tags (hence the misconception that it is 'genetic'), but the tags are added or removed by the way we live (including diet, exercise, stress)

Diet

These are the **3** factors in our food that increase cholesterol:

1. Trans-fats
2. Saturated Fat
3. Cholesterol

By understanding where these are found you can start to make an informed choice about how to harness the power of your food to lower your cholesterol and reduce your risk of health problems

What Increases Cholesterol?

Diet : Trans-fats

These are the worst for both raising cholesterol and increasing the risk of heart disease. These are found in processed foods, fried foods, oil that is heated repeatedly (e.g. oil used to deep fry, cooled and re-used), and all animal foods (meat, eggs, dairy).

They are only in small amounts, but it depends how much of these you eat. .

Diet : Cholesterol

This contributes the least of the three to raising cholesterol, but it does still cause an increase.

Cholesterol is found in *all* animal foods.

It is *never* found in any plant food.

It is found in both the fat *and lean* part of meats.

Diet :Alcohol

Drinking too much alcohol can raise your cholesterol. This may show up on your blood test, but it doesn't always.

If you suspect you should cut down, start by recording how much you drink in a week (you can try the 'Drink Aware' app, or simply note it down yourself). Depending on what you find, there are a number of approaches to take to cut down which we can discuss.

What Increases Cholesterol?

Diet : Saturated-fats

Although trans-fats are the most damaging type of fat, the amount in foods tends to be small.

That means that **saturated fats tend to be the biggest contributor to high cholesterol.**

Saturated fats are *only* found in: coconut oil, palm oil, *all* animal foods.

This statement from the American Heart Association³ underlines the enormous impact of reducing saturated fats in your diet

*"In summary, randomized controlled trials that lowered intake of dietary saturated fat and replaced it with polyunsaturated vegetable oil **reduced cardiovascular disease (CVD) by ≈30%, similar to the reduction achieved by statin treatment.***

Prospective observational studies in many populations showed that lower intake of saturated fat coupled with higher intake of polyunsaturated and monounsaturated fat is associated with lower rates of CVD and of other major causes of death and all-cause mortality. "

The 'Blue Zones' are pockets of populations around the world who have the highest healthy longevity. They are all plant-based. Those that do eat meat eat a portion the size of a deck of cards, roughly four times per month. So think of meat as a condiment rather than a main player on your plate if you do want to include it.

3 Sacks FM, et al American Heart Association. Dietary Fats and Cardiovascular Disease: A Presidential Advisory From the American Heart Association. Circulation. 2017 Jul 18;136(3):e1-e23.

What reduces cholesterol?

Diet

This is definitely the biggest cause and the biggest cure. You may not want to cut out all animal foods, but begin with eg 'Meat Free Mondays' to build your confidence and repertoire of plant-focussed foods to lower your saturated fat intake and improve your heart healthy foods.

Remember, every journey starts with a single step and research shows that the largest benefits are seen when going from no healthy habits to including just some, so don't let the perfect be the enemy of the good!

But there are specific foods that are proven to lower cholesterol and I will tell you about these too

Mono- and Poly-unsaturated Fats

Reducing saturated fats and substituting with mono and polyunsaturated fats will not only reduce your LDL-cholesterol and reduce your risk of CVD at a similar degree to medication, but you avoid the side-effects of the drugs, plus gain the benefit of heart healthy, anti-inflammatory fats.

Mono-unsaturated fats are found in olive oil, rapeseed oil (so use these for cooking) as well as nuts, avocados, seeds.

Poly-unsaturated fats are found in nuts and seeds – particularly linseed (also known as flaxseed) –these are an absolute superfood so if you can include these in your diet I would. They are also found in soybean and fatty fish.

What reduces cholesterol?

If you want to eat fish, try to stick to small fish so that you don't add the risk of mercury, PCBs, dioxins etc which build up in the food chain as bigger fish consume smaller fish. These environmental toxins are well known to cause cancer and promote chronic diseases. Farmed fish are less of a risk with this (though they are fed on wild fish!), but their anti-inflammatory omega 3 fats tend to be lower. The conventional 'heart healthy' advice on fish has become complicated due to these environmental toxins.

Phytosterols

These are the plant version of cholesterol. They have a similar structure to cholesterol so they compete at the site at which cholesterol binds, so they stop it from being absorbed and therefore lower cholesterol. It is how things like 'Benecol' spread works. They are particularly high in foods like: soyabean, peas, nuts, seeds, avocado, wheatgerm and brussel sprouts

Fibre

Again this is **only** found in plant foods. They are high in legumes (beans and lentils), vegetables (particularly okra, aubergine, sweet potato, but all), fruit (esp, figs, pears, but all), whole grains*

Nuts

Aim to eat a handful per day, including almonds, walnuts, pecans

What reduces cholesterol?

Oats

You won't find wholegrain oats in any supermarket. They are typically 'rolled' or 'flaked'. I will explain what this means below. Try to get 'pinhead' oats and soak overnight in oat milk.

What are Wholegrains?

Grains are the same as cereals. They are things like rice, oats, wheat, barley, quinoa, rye, amaranth, buckwheat etc.

A wholegrain includes all three layers: the outer layer (the bran) the fluffy inner part (the endosperm) the small innermost part (the germ). Typically the outermost layer (bran) is removed. It has most of the vitamins and a lot of fibre. We hear about a lot of foods being 'wholegrain', but actually they aren't all good for us because the more processed they are, the less benefit they give us

Take oats as an example. Going from least to most processed they go: oat groats, pinhead oats, rolled oats, flaked oats, puffed, oat flour.

As it gets more processed, we lose more of the benefit, particularly to our gut biome. Our biome is important for a range of disease risks including inflammatory diseases, immunity and cancer.

Cholesterol: Increase your HDL

Exercise

Exercise has enormous and wide-ranging benefits including reducing insulin resistance, levels of chronic inflammation, and obesity -all of which contribute to a person's cardiovascular risk alongside high cholesterol.

Exercise mainly improves your good (HDL) cholesterol rather than lowering your bad (LDL) cholesterol. Exercise directly effects the activity of enzymes that break down fats in our blood.

It is important that you build up your exercise level carefully and safely. If in doubt, check with your doctor before starting anything new.

Exercise : How much?

The biggest benefit (as with most good habits) is from doing nothing to doing *something*. So do not feel bad if you don't do any exercise yet - you have much to gain by getting started! If you are already exercising, we now know that getting the recommended 30 minutes of moderate exercise (a level of exercise at which you can talk but not sing), is enough to stop your cholesterol from rising. But to actually help it to drop you need to aim for more than this.

Exercise : Which type?

There is some evidence that high intensity interval training (HIIT) has a bigger impact on cholesterol levels than moderate aerobic exercise. If you are not yet exercising however, do not start with HIIT.

Cholesterol: Increase your HDL

Break up periods of sitting

Even if you run marathons at the weekend (or even every evening!) - sitting for prolonged periods of time (more than an hour at a time) has been found to increase your risk of disease and early death.

One explanation is that when we sit for long stretches, the activity of enzymes involved in regulating the fats in our blood are lowered by as much as 90%.

Stress

Both short and long-term stress affect our cholesterol levels. Short term stress is not typically a problem and may even be healthy.

But long-term (chronic) stress is more problematic. Both cortisol (our stress hormone) and adrenaline (our fight or flight hormone) alter the levels of glucose and triglycerides (a type of fat) in our blood stream, and over time this raises our cholesterol levels.

Stop smoking

There are many reasons to stop smoking, which is a significant risk factor for cardiovascular disease. It also directly impacts HDL cholesterol levels, so may be another reason why your cholesterol levels are unhealthy.

If you have tried to give up before don't be disheartened. People just like you *do* manage to give up - it can just take several attempts to find the right approach that works for you.

Cholesterol: Increase your HDL

Sleep

Much like exercise, sleep has a wide range of health benefits. Adults should aim for 7-8 hours of restorative sleep per night.

Both sleeping too little and too much on a regular basis is not good for your heart health. Although there are multiple ways in which sleep benefits our health, studies have shown that HDL cholesterol is lower in people who regularly sleep less than 7-8 hours per night.

Create and nourish social connections

A number of studies have now shown that being socially isolated or lonely carries significant health risks.

Creating and cultivating relationships is not just a potential source of pleasure and positivity, it can shift our health destiny!

If you aren't sure how you should go about this, don't worry. We will discuss how to make shifts to improve the quality of relationships you already have, or ways to cultivate meaningful social connections if you don't yet have them.

The bottom line

Finding out you have a high cholesterol is an opportunity to place your health at the forefront of your awareness, and to prioritise yourself.

It is usually treatable with lifestyle, and these same lifestyle shifts come with a wealth of positive side-effects including reducing your risk of *every* chronic disease, maintaining a healthy weight, and improving your mood!