



Cholesterol and Familial Hypercholesterolemia

Cholesterol-lowering through diet and lifestyle, as part of a prescribed treatment regime



WHAT IS FAMILIAL HYPERCHOLESTEROLAEMIA?

Familial hypercholesterolaemia (FH) is an inherited condition which causes high cholesterol levels. It's a genetic disorder and therefore it can pass from parent to child. The liver is unable to remove excess 'bad' cholesterol, known as LDL-cholesterol (LDL-C) and as a result, LDL-C levels can become very high early in life, even with a healthy lifestyle

Without treatment, FH leads to a greater risk of heart and circulatory disease at an early age but once diagnosed, it can be effectively treated.



WHAT IS CHOLESTEROL?

Cholesterol is a waxy, fat-like substance found in your blood that is mostly produced in the liver, but it's also obtained via foods such as red meat, cheese, butter and eggs. Cholesterol is essential for your body to function normally, but too much can be harmful.

WHAT IS THE ROLE OF CHOLESTEROL IN FH?

When there is too much cholesterol in your blood, it may cause plaque buildup on the walls of your arteries. This condition, known as atherosclerosis, can lead to blockages in the arteries of the heart and/or brain, leading to health problems as a result of coronary heart disease, such as heart attack or stroke.

For individuals with FH, gene mutations make it impossible for their liver to remove excess cholesterol from the blood stream, meaning they are more susceptible to atherosclerosis. The longer a person experiences high cholesterol, the higher the risk for heart attacks or stroke. Lowering cholesterol levels early and keeping them low can help avoid cardiovascular problems later on in life.

WHO GETS FH?

The 'familial' part of FH means it runs in families and is inherited from parent to child. Each child of a person with FH has a 50% chance of inheriting the disorder and genetic testing can be done to screen for the condition. If one of your family members has FH, it's imperative you get tested as well.

At present, most people with FH have variants in one of three genes, 'LDLR gene', 'APOB gene', and 'PCSK9 gene', although there are many known variants.

In Heterozygous FH, one abnormal mutation is passed down to a child, typically from one parent. Two inherited mutations can result in Homozygous FH, the more rare and severe form of FH.





UNDERSTANDING YOUR CHOLESTEROL LEVEL AND FH DIAGNOSIS

The first step to finding out whether you have FH is to have your cholesterol checked. Your doctor will ask about any high cholesterol or heart conditions in the family. FH may be diagnosed depending on your blood test results and family history. Genetic testing may be used to confirm the presence of FH.

When it comes to your blood cholesterol results, total cholesterol includes different types of cholesterol. The balance between the levels of these cholesterol is important because they do different things. There are two main types:

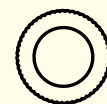


LDL (low-density lipoprotein) is a 'bad' type of cholesterol. If there is too much LDL cholesterol in the blood, it can slowly build in the arteries, making them narrower which increases the risk of coronary heart diseases.



HDL (high-density lipoprotein) is a 'good' type of cholesterol. It helps to remove excess cholesterol from the tissues and returns it to the liver and passed out of the body.

A quick tip to remember the difference is that your **LDL** should be **Lower** and your **HDL** should be **Higher**. You may also get some additional blood measurements if you get tested.



Non-HDL refers to all of the 'bad' types of cholesterol, including but not limited to LDL. The non-HDL measurement also includes VLDL (very-low-density lipoprotein) though usually only present in small amounts. Sometimes non-HDL measurement is used instead of just the LDL level.



Triglycerides are not the same as cholesterol but are a type of fat found in your blood and often measured at the same time.

In FH, it is recommended that LDL-C levels fall below the limits shown below:

3.5 mmol/L (135 mg/dL) for children

2.5 mmol/L (100 mg/dL) for adults

1.8 mmol/L (70 mg/dL) for adults with coronary heart disease or diabetes

HDL cholesterol ≥ 1.0 mmol/l



WHAT CAN I DO TO IMPROVE MY CHOLESTEROL?

Your healthcare professional will advise you how to proceed with managing your cholesterol. Unfortunately, FH can't be managed through diet alone but you should still make sure you eat a healthy, balanced diet and get plenty of exercise.

In this brochure we focus on foods that promote healthy cholesterol as part of a treatment regime prescribed to FH patients. Simple steps such as improving the quality of fats that you eat, consuming more fibre, or including Benecol products with added plant stanols as part of a healthy diet, could start lowering your cholesterol level. Even small daily changes can yield significant results over time.

CHOLESTEROL LOWERING WITH BENECOL® PRODUCTS

Benecol products with added plant stanol ester have been shown to lower cholesterol. High cholesterol is a risk factor for coronary heart disease.

How can Benecol help to lower my cholesterol?

Benecol products contain plant stanol ester, which is shown to lower your blood cholesterol levels. Plant stanol ester works by partly blocking cholesterol absorption in the digestive tract.

The tasty products in the Benecol range contain plant stanol ester and are shown to lower your LDL cholesterol in **2-3 weeks***. What's more, the daily usage of Benecol as part of your meals keeps your cholesterol at a lower level in the long term.

Benecol products are designed to be part of a balanced and varied diet and a healthy lifestyle. The cholesterol-lowering effect is at its best when most Benecol products are consumed as part of a meal.









The use of Benecol products adds to the effectiveness of lowering cholesterol even when using statin medication. Always discuss the use of Benecol products with your doctor.









Only Benecol products contain plant stanol ester and are clinically proven to lower cholesterol.








OPTIMISING YOUR DIET FOR HEALTHY CHOLESTEROL LEVELS

Making good dietary choices is central to achieving good cholesterol levels and is recommended by experts worldwide. The key features of a cholesterol-lowering diet include reducing saturated fat intake, getting enough dietary fibre and incorporating plant stanol-containing products. Below you will find a table offering options/alternatives to help improve your diet in a practical, convenient way.

		HEALTHIEST CHOICES	EAT OCCASIONALLY	BEST TO LIMIT
FRUIT & VEGETABLES	 FRUIT	<ul style="list-style-type: none"> Fresh, frozen or dried fruit and fruit canned in natural juice Fruit smoothies (no added sugar) 	<ul style="list-style-type: none"> Canned fruit in syrup (drain the syrup) 100% fruit juice 	<ul style="list-style-type: none"> Fruit flambéed in butter and sugar Fruit fritters Fruit coated in chocolate or candied fruit
	 VEG	<ul style="list-style-type: none"> Homemade vegetable based soups Fresh and frozen vegetables steamed or lightly boiled (cooked with no oil) 100% vegetable juice 	<ul style="list-style-type: none"> Canned vegetables containing added salt/sugar (rinse and drain) Fried vegetables Honey roasted vegetables like parsnips 	<ul style="list-style-type: none"> Battered, deep fried vegetables (e.g. onion rings) Buttered vegetables
	 SALADS	<ul style="list-style-type: none"> Undressed salads or salads with low fat dressings Rainbow salads with a good variety of vegetables 	<ul style="list-style-type: none"> Reduced fat coleslaw 	<ul style="list-style-type: none"> Coleslaw Salads with heavy mayonnaise dressing
CARBOHYDRATES	 POTATOES	<ul style="list-style-type: none"> Potatoes, sweet potatoes, yam and plantain – boiled, baked, mashed (no fat) or dry roasted Leave the skins on for extra fibre 	<ul style="list-style-type: none"> Thick cut, reduced fat oven chips Roast potatoes cooked in small amounts of vegetable oil such as sunflower, rapeseed or olive oil 	<ul style="list-style-type: none"> Roast potatoes cooked in dripping or large amounts of oil Potatoes mashed with butter/cream Deep fried thin cut chips
	 BREAD	<ul style="list-style-type: none"> Bread, bagels, rolls, pitta, tortillas, chapattis – choose wholemeal versions where possible and use lower fat spreads rather than butter, or no fat at all Wholegrain breakfast cereals, muesli (no added sugar), oats/porridge (with skimmed milk or semi-skimmed milk) 	<ul style="list-style-type: none"> Naan bread Non-wholemeal options 	<ul style="list-style-type: none"> Garlic bread, croissants, waffles Breads spread thickly with butter or made with ghee (e.g. parathas) Sugar coated breakfast cereals
	 PASTA/RICE	<ul style="list-style-type: none"> Boiled pasta, rice noodles – choose wholemeal versions where possible and eat plain or with vegetable-based sauces Wild rice 	<ul style="list-style-type: none"> Non-wholemeal options Filled pasta like ravioli 	<ul style="list-style-type: none"> Pasta or rice served in creamy/buttery sauces Fried rice Cheesy sauces Instant noodles containing lots of salt, fat or sugar
PROTEIN	 MEAT	<ul style="list-style-type: none"> Lean cuts of meat (pork, ham, lamb, beef, venison, veal, rabbit) and remove any visible fat Extra lean minced meat Grilled or roasted meat without using fat, or casserole with vegetables 	<ul style="list-style-type: none"> Lean bacon Low fat sausages Limit red meat intake to no more than 70 g on average per day 	<ul style="list-style-type: none"> Fatty cuts of meat – belly pork, duck, goose; fat from edge of meat Processed meats like streaky bacon, frankfurters, sausages, sausage rolls, salami, parma ham Meat pies
	 POULTRY	<ul style="list-style-type: none"> Chicken and turkey without skin – grilled or roasted without fat, casserole with vegetables 	<ul style="list-style-type: none"> Chicken breast in breadcrumbs Pan-fried chicken 	<ul style="list-style-type: none"> Poultry with skin Kievs Deep fried chicken Processed chicken nuggets

		HEALTHIEST CHOICES	EAT OCCASIONALLY	BEST TO LIMIT
PROTEIN	 FISH	<ul style="list-style-type: none"> White fish (e.g. cod, plaice, sole) and oily fish (e.g. salmon, mackerel, herring, fresh tuna) – grilled, baked, steamed, poached or fried in a tiny amount of oil Canned fish in water 	<ul style="list-style-type: none"> Canned fish in oil (drain oil) Fish fingers 	<ul style="list-style-type: none"> Deep fried fish in batter/breadcrumbs Fish in buttery or rich sauces (e.g. Hollandaise, lobster sauce)
	 EGGS	<ul style="list-style-type: none"> Eggs – boiled, scrambled or poached without fat; scrambled eggs with skimmed/semi-skimmed milk Baked eggs with vegetables 	<ul style="list-style-type: none"> Fried eggs and omelettes cooked in minimal vegetable oil 	<ul style="list-style-type: none"> Quiche Scotch eggs Egg mayonnaise
	 BEANS, PEAS, LENTILS AND OTHER ALTERNATIVES	<ul style="list-style-type: none"> Lentils, beans, peas, chickpeas, kidney beans (rinse if canned in salt/sugar) Reduced sugar/salt varieties of baked beans Soya mince, soya beans, tofu Quorn 	<ul style="list-style-type: none"> Reduced fat hummus 	<ul style="list-style-type: none"> Deep fried falafel
	 NUTS AND SEEDS	<ul style="list-style-type: none"> Nuts and seeds – especially almonds, walnuts, linseed (flaxseed), pumpkin, sesame, sunflower seeds 	<ul style="list-style-type: none"> Nut butters (choose varieties lower in sugar and salt) Reduced fat coconut milk 	<ul style="list-style-type: none"> Coconut, coconut cream, coconut milk Roasted nuts in oil and salt, chocolate coated nuts Nut and seed butters with hydrogenated fat
DRINKS	 DRINKS	<ul style="list-style-type: none"> Tap, mineral, soda water Small portions of fruit juice (no added sugar) Tea/coffee with low fat milk Low fat milk Sugar-free drinks 	<ul style="list-style-type: none"> Sugar free squash Diet fizzy drinks Sugar free hot chocolate 	<ul style="list-style-type: none"> Fruit squash Fizzy drinks with added sugar Drinks made with whole milk and cream Milkshakes Hot chocolate
FLAVOURINGS	 FLAVOURINGS	<ul style="list-style-type: none"> Pepper, herbs, spices, lemon juice, garlic, etc. Pickles 	<ul style="list-style-type: none"> Reduced salt soya sauce Reduced salt flavouring (e.g. reduced salt stock, ketchup) Chutney made without oil Small amount of chili sauce or low sugar/salt tomato ketchup 	<ul style="list-style-type: none"> Salt (regular, sea and rock salt) Soy sauce Oily pickles Seasonings/flavour enhancers with added salt/sodium e.g. monosodium glutamate
DAIRY & ALTERNATIVES	 MILK	<ul style="list-style-type: none"> Skimmed, 1% fat or semi-skimmed milk Soya/nut/rice/coconut/oat based drinks (with added calcium and vitamins) 		<ul style="list-style-type: none"> Full fat milk Flavoured milk with added sugar Malted milk
	 CHEESE	<ul style="list-style-type: none"> Lower fat cheese e.g. cottage, quark, ricotta, fromage frais and 'extra light' soft cheese spreads 	<ul style="list-style-type: none"> Medium fat cheese e.g. half fat cheddar, 'reduced fat' cheese, paneer, 'light' soft cheese spreads 	<ul style="list-style-type: none"> High fat cheese e.g. cheddar, mascarpone, Red Leicester, Stilton, Gruyere, Parmesan Soft cheeses such as Brie, Camembert and cream cheese Fried paneer

Plant stanol ester has been shown to lower cholesterol. High cholesterol is a risk factor in the development of coronary heart disease. A daily intake of 1.5-2.4g plant stanols has been shown to lower cholesterol by 7-10% in 2-3 weeks. Individual results may vary.

		HEALTHIEST CHOICES	EAT OCCASIONALLY	BEST TO LIMIT
DAIRY & ALTERNATIVES	 YOGURTS AND CREAM	<ul style="list-style-type: none"> Low-fat and low-sugar yogurts Yogurts and yogurt drinks with plant stanols*/sterols (for people with high cholesterol) Dairy alternatives e.g. soya/nut/rice/coconut yogurts Low fat Greek yogurt Unsweetened kefir 	<ul style="list-style-type: none"> Lower fat cream products Half fat crème fraîche 	<ul style="list-style-type: none"> Creamy yogurts; Greek yogurt Clotted, double, whipping, soured, single cream Crème fraîche
	 FATS, SPREADS AND OILS	<ul style="list-style-type: none"> Lower, unsaturated fat spreads Spreads with plant stanols*/sterols (for people with high cholesterol) Unsaturated vegetable oils e.g. olive, sunflower, rapeseed, (most vegetable oil is made from rapeseed oil), soya, corn – use as little as possible (measure, don't pour) or use a spray oil 		<ul style="list-style-type: none"> Butter, lard, suet, dripping, ghee, hard margarines, spreads with hydrogenated fat (check the label) Palm oil, coconut oil Oils which have been reheated several times
FATTY AND SUGARY FOODS	 SALAD DRESSINGS AND GRAVIES	<ul style="list-style-type: none"> Low fat salad dressings Gravies and sauces thickened with flour Tomato/vegetable-based sauces 	<ul style="list-style-type: none"> Lower fat salad creams and mayonnaise 	<ul style="list-style-type: none"> Salad creams, mayonnaise Sauces made with butter or cream Gravies made with fat from cooking meat/poultry
	 BISCUITS, CAKES, CONFECTIONARY, PASTRIES AND DESSERTS	<ul style="list-style-type: none"> Fruit salads, sorbet Sugar-free jelly 	<ul style="list-style-type: none"> Plain biscuits (e.g. rich tea, malted milk biscuits), tea cakes, crumpets, malt bread; fruit buns Fruit-based puddings Frozen yogurt Meringue (without cream) Jam; fruit preserves 	<ul style="list-style-type: none"> Cakes, biscuits, pastries, pies, doughnuts, cheesecake Chocolate, fudge, toffees Dairy ice cream or ice cream made with cream
	 SAVOURY SNACKS	<ul style="list-style-type: none"> Wholemeal breadsticks Plain popcorn Tomato-based sauces and dips 	<ul style="list-style-type: none"> Reduced fat crisps Reduced fat hummus 	<ul style="list-style-type: none"> Crisps Cheese snacks Bombay mix

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TOP TIPS FOR REDUCING CHOLESTEROL

You can stay on top of your cholesterol and keep a balance while still enjoying life. Making switches is a simple way to do this without having to make big changes to your diet or lifestyle.



Try new things in your everyday diet. Can you introduce more cholesterol-lowering foods? Eating Benecol foods with plant stanols as part of a healthy diet can lower LDL cholesterol more than healthy eating alone.

Get to know which foods are high in saturated fat – and choose them less often. Saturated fat is found in high-fat dairy foods (such as cream, whole milk, hard cheese, butter), in fatty cuts of meat and in cakes and pastries. Eating these foods a little less often, and making switches – like swapping out butter for a Benecol spread – are changes you can make that will add up.

Quick guide: **the average man** aged 19–64 years should eat no more than 30 g of saturated fat a day

the average woman aged 19–64 years should eat no more than 20 g of saturated fat a day

Get wise to hidden saturated fats. Saturated fats may also be ‘hidden’ in some convenience foods, so by checking nutrition labels on food packaging you can choose products that are lower in saturated fat. Small changes like this can all help you limit your saturated fat intake.



Switch to unsaturated ('good') fat. Unsaturated fat is better for your heart health and is found in a wide range of tasty and versatile foods. These include nuts, seeds and vegetable oils (e.g. olive, rapeseed, sunflower) and spreads made from these. This means you can keep your heart happy with a variety of ingredients to choose from.

Choose healthier cooking methods. Grilling, steaming, boiling and baking use less fat than frying, so you can cook up a storm with some of your favourite foods while cutting back on saturated fats. You can also cook and bake with some Benecol spreads rather than butter.



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Eat more fruit and vegetables. Aim to eat at least 5 portions of fruit and vegetables a day. This will provide you with fibre and a range of vitamins and minerals, while also keeping your plate varied and colourful. Some fruit and veg also contain soluble fibre which can help lower cholesterol.

Go for fibre. Eating plenty of fibre is good for your heart, and some high-fibre foods can help lower cholesterol. Opt for 30 g of fibre a day, starting with wholemeal/wholegrain/whole wheat varieties of bread, rice and pasta whenever possible. Foods that contain soluble fibre are especially good for cholesterol – these include oats, beans, peas, lentils and chickpeas.

Stay physically active. Exercise is known for being one of the most important factors in maintaining a good quality of life, helping to maintain our overall health and wellbeing. Regular exercise helps boost 'good' cholesterol while reducing LDL (bad cholesterol) and can also lower blood pressure.



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MY PERSONAL PLAN: CHOLESTEROL-LOWERING DIETARY COMMITMENTS

Improving the quality of my diet.

My practical steps:

Reducing bad habits.

My practical steps:

Other planned lifestyle changes/additional information:



For more information and advice, visit Benecol online.

UK: www.Benecol.co.uk



Plant stanol ester has been shown to lower cholesterol. High cholesterol is a risk factor in the development of coronary heart disease. A daily intake of 1.5-3g plant stanols lowers cholesterol in 2 to 3 weeks.