Guidance for patients undertaking particular treatments: patient information sheets

Lipids

Cholesterol, Lipoproteins and Triglycerides

Cholesterol

- Is a fatty, waxy substance
- Is made by the liver from the saturated fats in foods
- Plays a vital role in how every cell works
- much can increase your risk of coronary heart disease
- Is transported in the blood by a combination of cholesterol and proteins, which are called lipoproteins.

Lipoproteins

- Low -density lipoproteins (LDL) carry cholesterol from the liver to the cells
- High -density lipoproteins (HDL) return the extra cholesterol that is not needed to the liver.
- The ratio of LDL and HDL is important. The aim is to have a low level of (bad) LDL and a high level of (good) HDL
- Lipoprotein is a very sticky type of LDL

Triglycerides

- Are fats in foods and the body
- In the body they come from fats in food, or fats made by the body from carbohydrates.
- Are stored in fat cells; hormones regulate release for energy between meals
- High levels increase risk of coronary heart disease and strokes.

Causes of high blood cholesterol levels

- Too much saturated fat in diet
- Too much sugar (refined carbohydrates)
- Too many stimulants - coffee, alcohol, cigarettes and stress
- An underactive thyroid gland, chronic kidney failure, or alcohol abuse
- 1 in 500 people have an inherited disorder called 'familial hyperlipidaemia'.

Effects of High HDL

When LDL cholesterol undergoes a chemical process called oxidation it is taken up by cells in the coronary artery walls, which then become narrowed (atheroma). This reduces circulation and can cause thrombosis (clots), hypertension, angina, heart attack, stroke, intermittent claudication and gangrene.

How to lower high LDL and triglycerides, and raise HDL

Diet

Reduce:

- Saturated animal fats in red meat, kidney, liver, dairy (eg milk, cream, butter, cheese)
- Salt - crisps
- Sugar - biscuits, pastries
- Refined carbohydrates - white flour, white rice, white pasta
- Limit eggs to 4 a week
- Alcohol - 14 units a week for women, 21 units a week for men
- Fried foods

Increase:

- Fruits and vegetables - 5 portions a day, including blueberries, spinach, broccoli, kale, cooked tomatoes, ginger and garlic
- Pulses (lentils, chickpeas, kidney beans etc) soya and beans
- Whole grains - brown rice / pasta, oats, barley
- Oily fish - 2 / 3 portions a week - herring, kippers, mackerel, sardines, salmon, trout, fresh tuna
- Cold pressed fresh virgin olive oil, walnut oil, rapeseed oil
- Monounsaturated and polyunsaturated oils - sunflower, safflower
- Live yoghurt
- Avocado
- Green tea

Other Measures

- Increase exercise - discuss with your doctor first
- Reduce stress
- Reduce weight
- Stop smoking
- The following supplements may help, but discuss with your doctor first:

Vitamin C	Vitamin E	Vitamin B Complex
Lure Fish Oils	Chromium	Selenium
Nicotinic Acid	L-Carnitine	Hawthorn
CoQ10	Guggul	Red yeast rice extract

Sterols and Stanols

- Occur naturally in plants and wood pulp
- Can reduce absorption of cholesterol
- Foods, e.g margarines containing high levels of plant derived sterol, stanol esters, can be considered as an additional option for reducing cholesterol

Statins

- These are prescibed drugs that can lower cholesterol levels
- You will need to discuss their use, effects and adverse effects with your doctor
- Herbal equivalents exist