Cardiovascular Disease (Atheroma)

The cause of most cardiovascular disease is a build-up of atheroma - a fatty deposit within the inside lining of arteries. There are lifestyle factors that can be taken to reduce the risk of forming atheroma. These include not smoking; choosing healthy foods; a low salt intake; regular physical activity; keeping your weight and waist size down; drinking alcohol in moderation.

Your blood pressure and cholesterol level are also important. All people aged over 40 years should have a cardiovascular health risk assessment - usually available at your GP surgery. If you have a high risk of developing a cardiovascular disease, treatment to reduce high blood pressure (hypertension) and/or cholesterol may be advised.

What is cardiovascular disease?

Cardiovascular diseases are diseases of the heart or blood vessels. However, the term cardiovascular disease is used to describe diseases of the heart or blood vessels that are caused by atheroma.

The rest of this leaflet briefly discusses atheroma, the diseases atheroma can cause and ways of preventing a build-up of atheroma and preventing the diseases it causes.

Narrowing of the blood vessels can lead to cardiovascular diseases, including heart disease (for example, angina, heart attack and heart failure), cerebrovascular disease (transient ischaemic attacks and stroke), and peripheral arterial disease.

See separate leaflet called Atheroma.

Risk factors

Everybody has some risk of developing small fatty lumps called atheroma. However, certain risk factors increase the risk. Risk factors include:

- **Lifestyle risk factors that can be prevented or changed:**
  - Smoking.
  - Lack of physical activity.
  - Obesity.
  - An unhealthy diet and eating too much salt.
  - Excess alcohol.

- **Treatable or partly treatable risk factors:**
  - High blood pressure (hypertension).
  - High cholesterol blood level.
  - High fat (triglyceride) blood level.
  - Diabetes.
  - Chronic kidney disease causing diminished kidney function.

- **Fixed risk factors - ones that you cannot alter:**
  - **A strong family history.** This means if you have a father or brother who developed heart disease or a stroke before they were 55; or, if you have a mother or sister who developed heart disease or a stroke before they were 65.
  - **Being male.**
  - **Age.** The older you become, the more likely you are to develop atheroma.
  - **Ethnic group.** For example, people who live in the UK with ancestry from India, Pakistan, Bangladesh, or Sri Lanka have an increased risk.

However, if you have a fixed risk factor, you may want to make extra effort to tackle any lifestyle risk factors that can be changed.

**Note:** some risk factors are more risky than others. For example, smoking probably causes a greater risk to health than obesity does. Also, risk factors interact. So, if you have two or more risk factors, your health risk is much more increased than if you just have one.

Lifestyle risk factors that can be prevented and/or changed
Smoking

Lifetime smoking roughly doubles your risk of developing heart disease. The chemicals in tobacco get into the bloodstream from the lungs. They damage the blood vessels (arteries) and other parts of the body. Your risk of having a stroke and of developing other diseases such as lung cancer is also increased. Stopping smoking is often the single most effective thing that a person can do to reduce their health risk. The increased risk falls rapidly after stopping smoking (although it takes a few years before the excess risk reduces completely). If you smoke and are having difficulty in stopping then see your practice nurse for help and advice.

Lack of physical activity - a sedentary lifestyle

People who are physically active have a lower risk of developing cardiovascular diseases compared with inactive people. To gain health benefits you should do at least 30 minutes of moderate physical activity, on most days (at least five days per week).

- **30 minutes in a day** is probably the minimum to gain health benefits. However, you do not have to do this all at once. For example, cycling to work and back 15 minutes each way adds up to the total of 30 minutes.
- **Moderate physical activity** means that you get warm, mildly out of breath, and mildly sweaty. For example, brisk walking, jogging, swimming, cycling, etc. However, research studies do suggest that the more vigorous the exercise, the better for health - particularly for preventing heart disease.
- **On most days.** You cannot store up the benefits of physical activity. You need to do it regularly.

"Public Health England advises 150 minutes of physical activity each week, in bouts of 10 minutes or more. This might feel like a tall order, but it can be done in a way that becomes an enjoyable part of your life. Honestly."


Being overweight

If you are overweight, you are more likely to develop cardiovascular diseases, diabetes, or certain cancers. The increased health risk of obesity is most marked when the excess fat is mainly in the tummy (abdomen) rather than on the hips and thighs. As a rule, a waist measurement of 102 cm or above for men (92 cm for Asian men) and 88 cm or above for women (78 cm for Asian women) is a significant health risk.

Diet

Eating healthily helps to control obesity and lower your cholesterol level. Both of these help to reduce your health risk. Also, there is some evidence that eating oily fish (herring, sardines, mackerel, salmon, kippers, pilchards, fresh tuna, etc) helps to protect against heart disease. It is probably the omega-3 fatty acids in the fish oil that help to reduce the build-up of small fatty lumps called atheroma. Also, fruit and vegetables, as well as being low in fat, also contain antioxidants and vitamins which may help to prevent atheroma from building up. Briefly, a healthy diet means:

- AT LEAST five portions, or ideally 7-9 portions, of a variety of fruit and vegetables per day.
- A THIRD OF MOST MEALS should be starch-based foods (such as cereals, wholegrain bread, potatoes, rice, pasta), plus fruit and vegetables.
- NOT MUCH fatty food such as fatty meats, cheeses, full-cream milk, fried food, butter, etc. Use low-fat, mono-unsaturated or polyunsaturated spreads. One study conducted at Harvard University found that replacing saturated fats with polyunsaturated fats is an effective way of lowering your risk of heart attacks and other serious problems from heart disease.
- INCLUDE 2-3 portions of fish per week, at least one of which should be oily (such as herring, mackerel, sardines, kippers, salmon, or fresh tuna).
- LIMIT SALT to no more than 5 g a day (and less for children). See below for details.
- If you eat meat, it is best to eat lean meat, or poultry such as chicken.
- If you do fry, choose a vegetable oil such as sunflower, rapeseed or olive.

Following a Mediterranean diet can reduce the chance of developing cardiovascular disease. Read more about the Mediterranean Diet.

Salt

Adults should eat no more than 5 g of salt a day. This is about a teaspoon of salt. Even a modest reduction in intake can make quite a big difference. The current average daily intake of salt in the UK is 9 g per day. About three quarters of the salt we eat is already in the foods we buy. Simply checking food labels and choosing foods with lower salt options can make a big difference. A tip: sodium is usually listed on the food label. Multiplying the sodium content by 2.5 will give the salt content. Also, try not to add salt to food at the table.

Alcohol

Drinking a small or moderate amount of alcohol probably reduces the risk of developing cardiovascular diseases (38% compared with teetotallers in one study). That is, 1-2 units per day - which is up to 14 units per week. Drinking more than the recommended upper limits can be harmful. Men and women should drink no more than 14 units per week.

Other treatable or partially treatable risk factors

High blood pressure
You should have your blood pressure checked at least every 3-5 years. High blood pressure (hypertension) usually causes no symptoms, so you will not know if it is high unless you have it checked. However, over the years, high blood pressure may do some damage to the blood vessels (arteries) and put a strain on your heart.

Sometimes high blood pressure can be lowered by losing weight if you are overweight, regular physical activity and eating healthily as described above. Medication may be advised if your blood pressure remains high. See separate leaflet called High Blood Pressure (Hypertension).

**Cholesterol and other lipids**

In general, the higher the blood cholesterol level, the greater the risk of developing cardiovascular diseases. Having a high cholesterol level is more risky if you also have other risk factors such as diabetes or high blood pressure. As a rule, no matter what your cholesterol level is, lowering the level reduces your risk. This is why people at high risk of developing a cardiovascular disease are offered medication to lower their cholesterol level. See separate leaflet called Cholesterol.

A high blood level of triglyceride, another type of fat (lipid), also increases the health risk.

**Diabetes and kidney disease**

The increased risk that diabetes and kidney disease pose to developing cardiovascular diseases can be modified. For example, good control of blood sugar (glucose) levels in people with diabetes reduces the risk. Good control of blood pressure in people with diabetes and kidney diseases reduces the risk.

**Calculating your cardiovascular health risk**

A 'risk factor calculator' is commonly used by GPs and practice nurses. This can assess your cardiovascular health risk. A score is calculated which takes into account all your risk factors such as age, sex, smoking status, blood pressure, cholesterol level, etc. The calculator has been devised after a lot of research that monitored thousands of people over a number of years. The score gives a fairly accurate indication of your risk of developing a cardiovascular disease over the next 10 years. Read more about cardiovascular risk assessment.

**Further reading & references**

- Risk estimation and the prevention of cardiovascular disease; Scottish Intercollegiate Guidelines Network - SIGN (2017)
- 2016 European Guidelines on cardiovascular disease prevention in clinical practice; European Society of Cardiology (2016)
- Cardiovascular disease prevention; NICE Public Health Guideline (June 2010)
- Lipid modification - cardiovascular risk assessment and the modification of blood lipids for the prevention of primary and secondary cardiovascular disease; NICE Clinical Guideline (July 2014)
- CVD risk assessment and management; NICE CKS, September 2014 (UK access only)

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