

High blood pressure and the ASCOT study

What is high blood pressure?

High blood pressure, or hypertension, is very common and affects about one in five adults in most countries in Northern Europe. The force of the heart beat, the size of the blood vessels and the volume of blood can all affect the pressure of the blood.

The most frequent underlying problem in hypertension is blood vessels which have become thickened and narrowed. Imagine water flowing through a hose pipe, but when you squeeze and narrow the hose, the water pressure is raised so it shoots out at a much greater force.

In many cases there is no identifiable cause for high blood pressure but genetic factors, being overweight, high intake of salt or alcohol, stress or kidney disease and other factors may all play a role.

The complications which arise as a result of high blood pressure are:

- **Coronary heart disease:** Impaired blood flow through the blood vessels which supply the heart muscles with blood. This may cause a heart attack or angina.
- **Heart attack:** A complete blockage in one of the arteries which supply the heart with blood. This results in the 'death' of some of the heart muscle and causes pain.
- **Angina:** A pain in the chest due to a combination of impaired circulation of blood to the heart and the heart having to work harder to pump the blood around the body, especially during activity.
- **Heart failure:** The heart has to work much harder to pump the blood around the body as a result of the increased pressure in the blood vessels. This causes the muscle on one side of the heart to build up and the heart eventually stops working effectively.
- **Stroke:** When a part of the brain suddenly loses its blood supply usually due to a blood vessel in the brain which either becomes blocked or bursts.
- **Kidney disease:** Hardening of the arteries in the kidneys which reduces the flow of blood despite increased pressure. The kidneys cannot then function properly.
- **Eye disease:** High blood pressure can damage the tiny blood vessels on the back of the eye (retina) which can impair vision.

Many people with high blood pressure experience no symptoms, and doctors believe there are a great number of undetected cases. This is why high blood pressure is sometimes called the silent killer.

What are the treatments for high blood pressure?

If changes in diet and activity levels cannot control raised blood pressure there are a number of different types of drugs available to treat this condition. Many people require two or more drugs to control their blood pressure. The different drugs are suited to different types of patients, depending on their age, other risk factors or aspects of their general health and how high their blood pressure is.

The most commonly used classes of drugs for high blood pressure are:

- **Diuretics:** Act on the kidneys to make the body excrete more salt and water in the urine. They also relax blood vessels and therefore pressure is reduced.
- **Beta-blockers:** Work on receptors in the heart to decrease the force and frequency of the heart beat.
- **Calcium channel blockers:** (sometimes called calcium antagonists). Reduce the flow of calcium ions (not related to dietary calcium) into cells, which causes the muscle in the blood vessels to relax. This makes it easier for the blood to flow and for the heart to pump.
- **ACE inhibitors:** Block the formation of a hormone that makes the blood vessels constrict (become smaller), so the blood vessels remain open and blood pressure falls.
- **Alpha-blockers:** Block some effects of the nervous system on blood vessels, causing them to relax and lower blood pressure.

High blood pressure is a chronic (long term) condition and hence each of these drugs has to be taken continuously over a long period of time.

What is high blood cholesterol (hypercholesterolaemia)?

Raised levels of cholesterol in the blood, sometimes called hypercholesterolaemia, result in the accumulation of fatty deposits in the walls of arteries (atherosclerosis). This leads to narrowing and eventually blockage of the arteries.

High blood pressure can damage the lining of the blood vessels which can accelerate the build up of fatty deposits. Smoking, being overweight and diabetes can also damage blood vessel walls.

What are the treatments for high blood cholesterol?

The newest drugs to reduce blood cholesterol levels are called statins; these work by stopping the body from making cholesterol in the liver.

These drugs should also be taken continuously over a long period of time, because like hypertension, high blood cholesterol can currently only be controlled, not cured.

What is the ASCOT trial?

'A randomised, controlled, multi-centre trial of prevention of coronary heart disease and other vascular events by blood pressure lowering and by cholesterol lowering'.

The official scientific description of the trial sounds complicated, but these words define in medical terms the precise way the research is to be carried out.

Why is this trial important?

Despite advances in medical knowledge and in the prevention and treatment of high blood pressure and high blood cholesterol, around 200,000 people in the UK die each year from the serious consequences of heart disease and stroke.

Effective treatments with few side effects have undoubtedly saved many lives over the years. But there are still gaps in our knowledge which this trial may be able to fill. All significant new findings developed during the course of the research will be made available to you.