

## Hypertension

### Overview

Hypertension means high blood pressure. It affects about one-third of the Australian population and is a major contributing factor in strokes, heart disease, kidney failure and peripheral vascular disease.

Hypertension usually has no symptoms, although some people, if their blood pressure is really high, may feel dizzy or have a dull headache.

A certain amount of pressure in the arteries is necessary to help the heart pump blood around the body, but if it is too high, it strains and damages the artery walls and the heart, which has to work harder to push the blood around.

Normal blood pressure in adults is considered to be 120/80. High blood pressure is 140/90 or above. The higher figure is the "systolic pressure" or the pressure in the arteries as the heart pumps, and the lower figure is "diastolic pressure" which occurs during the time that the heart is refilling for the next beat.

It is usually adults over the age of 40 who are affected, but overweight children may also develop high blood pressure.

### Causes

In most cases, there is no absolute cause for hypertension. Doctors call this 'primary' or 'essential' hypertension and it is by far the most common type.

What we do know is that there are various risk factors that increase blood pressure. These include:

- ▶ Smoking
- ▶ Too much salt in the diet
- ▶ Excessive alcohol intake
- ▶ Being inactive
- ▶ Being overweight
- ▶ Having a family history of hypertension
- ▶ Increasing age
- ▶ Low potassium in the diet
- ▶ Stress
- ▶ Pain

There are also some rarer conditions that are known to cause hypertension. In this case it is 'secondary' hypertension and the conditions that cause it include:

- ▶ Renal (kidney) disease.
- ▶ Renal artery stenosis - a narrowing of the main blood vessel to the kidney. This causes an increase in the hormones that cause blood vessels to constrict, which in turn increases blood pressure.

- ▶ Adrenal gland tumours - which cause the gland to produce cortisol and aldosterone, which increase blood pressure.

- ▶ A rare congenital defect (something you were born with) that causes a narrowing of the aorta, the body's largest artery.

Sometimes pregnancy and diabetes may increase blood pressure.

Certain over-the-counter drugs like cough medicines, and some illicit drugs such as cocaine, can cause a short-term rise in blood pressure. Other medications that can increase

blood pressure are the oral contraceptive pill and non-steroidal anti-inflammatory drugs used in the treatment of arthritis and other painful conditions.

### Symptoms

In rare instances there may be a dull headache or dizziness but in most cases there are no symptoms for hypertension.

### Treatment

Because high blood pressure is directly involved in so many life-threatening conditions including heart disease and strokes, it is important to get it under control.

Lifestyle changes such as weight loss, regular exercise, reduction in alcohol intake and salt reduction are first line approaches. For someone with mild hypertension and no other risk factors for cardiovascular disease, these changes may be adequate on their own.

However, most people with hypertension will require medications in addition to lifestyle changes. Up to four different types of drugs may be involved in the treatment. And while it may be daunting to take so many drugs, it is more effective to take multiple medications, in smaller individual doses, as they offer better control and fewer side effects than bigger doses of fewer drugs.

- ▶ **Surgical options** Surgery is rarely used to treat the cause of hypertension unless there is an adrenal tumour causing it, or there is a congenital condition that has narrowed the body's main artery, the aorta.

Renal artery stenosis may also benefit from a less invasive procedure. It can be treated by dilatation or opening up of the narrowed section using so-called 'interventional radiology'.

In this procedure, also used for some types of coronary artery blockages, a tube

is inserted into the artery at the groin then threaded up under x-ray guidance to the narrowed section of the renal artery. A balloon at the end of the tube is then inflated and stretched out to hold open the narrowed section of artery.

### Medicines

Drugs for hypertension fall into a number of groups.

- ▶ **Angiotensin Converting Enzyme Inhibitors (ACE-I) and Angiotensin Receptor Blockers (ARB).**

ACE-Is and ARBs act at different points in the production and action of kidney hormones, which act on blood vessels to cause them to narrow. Narrowing makes it harder for the blood to flow and causes an increase in blood pressure. Blocking this effect lets the vessels dilate or open so the blood flows more easily, and the blood pressure drops.

Perindopril is an ACE inhibitor and candesartan is an ARB.

- ▶ **Calcium-channel blockers** The constriction of blood vessels relies on the contraction of the muscle cells wrapped around the walls of blood vessels. The ability of calcium to move in and out of the muscle cells is critical to this function. By blocking the movement of calcium, the contraction of these muscles is reduced and so the blood vessels dilate or open up. As a consequence the blood can flow more easily and the blood pressure drops.

Nifedipine and diltiazem are both calcium-channel blockers.

- ▶ **Beta (adrenergic) blockers**

Adrenaline is a hormone involved in control of blood pressure as part of its role in responding to stress, both physical and emotional. Beta blockers block or inhibit some of its effects, with the result that the heart's output, the blood pressure and pulse rate are all reduced.

Alprenolol and metoprolol are beta blockers.

NOTE: Beta blockers are not recommended for asthmatics as they will block the effect of the usual inhaled 'rescue' medication such as salbutamol.

- ▶ **Diuretics**

Diuretics work by increasing the amount of sodium passed out by the kidneys in the urine. "Where sodium goes, water flows", so diuretics cause an increase in urine output.

Hydrochlorothiazide and spironolactone

## Hypertension

are different types of diuretics.

- ▶ **Other drugs** In difficult to control hypertension, a range of other drugs may be used but these are not first line choices. Hydralazine, prazosin, methyldopa and clonidine would now fall into this group.

### Lifestyle and diet

The intake of a high salt diet is associated with hypertension, and Australians are known for their high salt intake. Thus, as a general rule, you are better off with a 'no added salt' diet. Look for "low salt" or "reduced salt" products and avoid salty snacks and high-salt processed foods.

Eat less saturated fat and follow a healthy eating pattern of lots of fruits and vegetables and wholegrains and moderate amounts of low-fat dairy products and lean fish, poultry and meats.

A heart healthy diet can help prevent arteriosclerosis - the formation of plaques in the artery walls, which make them become harder or lose their elasticity (hardening of the arteries).

Elevated Cholesterol levels combines with hypertension to damage blood vessels. Similarly, people with diabetes should be aware that inappropriate diet and poor diabetic control add to the harm caused to blood vessels by hypertension.

Maintaining optimal weight, adequate exercise and limited alcohol intake are essential, as is not smoking.

### Support and resources

- ▶ [www.heartfoundation.org.au](http://www.heartfoundation.org.au)
- ▶ [www.strokefoundation.com.aue](http://www.strokefoundation.com.aue)

ItsMyHealth.com.au