

HIGH BLOOD PRESSURE

WHAT IS BLOOD PRESSURE?

The body's circulatory system must have enough pressure to supply the whole body with blood. The body's arteries are strong and elastic in order to stand up to this pressure. The smaller arteries (arterioles) also contain muscles which can contract and narrow the vessels, increasing the blood pressure or dilate to open the vessels, decreasing the pressure. This system helps to maintain a fairly constant blood flow and can divert blood to parts of the body as needed.

The amount of pressure of the blood depends on three things:

- the strength and rate of the heart's contraction,
- the amount of blood in the circulatory system, and
- the elasticity of the arteries and arterioles.

Blood pressure varies with activity. It is lowest during sleep and highest during hard exercise or when a person is excited or under stress.

HOW IS BLOOD PRESSURE MEASURED?

The flow and pressure of blood in the arteries rise with each contraction of your heart and fall when the heart relaxes and refills with blood.

The highest point in the blood pressure rise is known as the *systolic* blood pressure while the lowest point in the blood pressure fall is known as the *diastolic* pressure.

High blood pressure occurs when there is increased pumping of blood by the heart or a narrowing of the arteries. Despite a great deal of research, scientists are not sure why most of these changes occur.

RECORDING BLOOD PRESSURE

Blood pressure is usually recorded with an instrument called a *sphygmomanometer*. This consists of an inflatable cuff attached to a mercury or air pressure gauge. Normally, blood pressure is measured in millimetres of mercury.

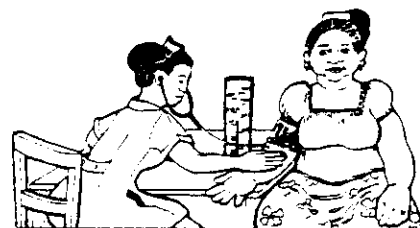
To record blood pressure the patient must be in a relaxed sitting position for at least five minutes. This is very important since a person's blood pressure may vary considerably while lying down or standing after a stressful waiting period at the clinic or hospital. The cuff is firmly wrapped around the arm above the elbow, then inflated. This compresses the artery under the cuff until it stops the blood flowing through it. A bigger cuff is used for obese patients.

A stethoscope is placed over the artery just below the cuff. Through the stethoscope the pulsation of blood through the arteries can be heard.

The pressure is then gradually released from the cuff while listening for the first 'thudding' sound and watching the gauge. The 'thudding' sound is caused by small amounts of blood flowing through the artery under the cuff with each heartbeat.

The reading from the blood pressure gauge at this moment is the systolic pressure.

Another reading is taken after more air has been released from the cuff and the 'thudding' sound disappears. This is the diastolic pressure.



WHAT IS NORMAL OR HIGH BLOOD PRESSURE ?

When blood pressure is recorded in a relaxed healthy person, normal systolic pressure is found between 100 and 140 millimetres of mercury and normal diastolic pressure between 60 and 90 millimetres. This might be recorded for example as 100/60 or 'one hundred over sixty'.

However blood pressure readings which are consistently over 160 for the systolic or 95 or over at any time for the diastolic are considered abnormal. This is high blood pressure and must be referred to a practitioner for clinical management. Any person whose blood pressure is above 140 systolic and/or 90 diastolic is considered borderline and should be under the regular care of a physician or nurse practitioner for surveillance.

IS HIGH BLOOD PRESSURE A PROBLEM IN THE PACIFIC?

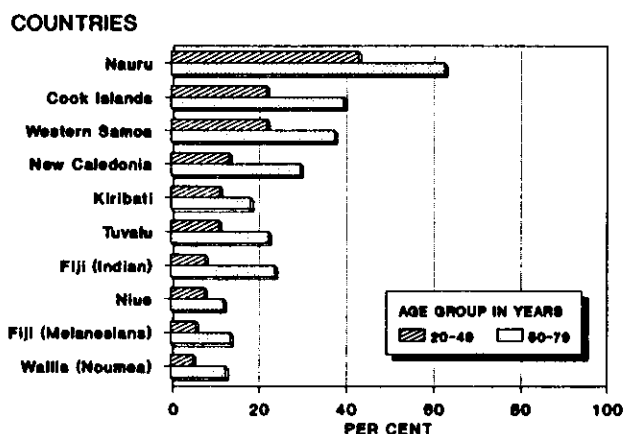
High blood pressure is a major public health problem in many Pacific Island countries. In general, countries with more urbanisation and a 'westernised lifestyle' have a higher percentage of high blood pressure than more traditional societies.

A study of 11 South Pacific island countries (J. Tuomilehto et al., 1989) showed that the percentage of men and women with high blood pressure in the 20 — 49 year age group varied from 5 to 43 per cent. This percentage increased in the 50 — 79 age group to 12 to 63 per cent. In this older age group, women tend to have a higher percentage of high blood pressure than men.

HOW SERIOUS IS HIGH BLOOD PRESSURE ?

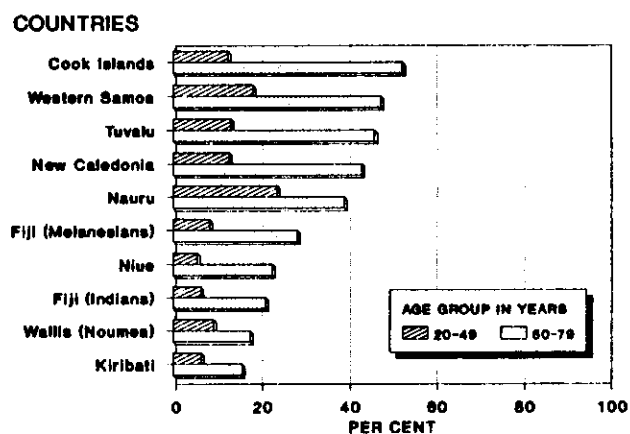
When blood pressure is high, the heart must work harder to circulate the blood. This will lead to thickened heart muscle and an increased demand for blood by the heart. The heart's own blood supply may not be met because of this increased demand.

This problem is made worse by the constricted arteries supplying blood to the heart muscle. In time, the constantly overworked heart may



Men with high blood pressure

Source: J. Tuomilehto et al., 1989.



Women with high blood pressure

Source: J. Tuomilehto et al., 1989.

grow weak, leading to tiredness, shortness of breath, and possible swelling of the feet and ankles. This condition is called congestive heart failure.

High blood pressure may also accelerate the widespread development of atherosclerosis (hardening of the arteries). When this occurs in the arteries which supply the heart, the result could be a heart attack. If atherosclerosis occurs in the arteries of the brain, it can lead to a stroke. High blood pressure may also affect arteries leading to

other parts of the body, causing damage to the eyes, kidneys and legs. People with untreated hypertension die prematurely, most commonly from heart disease, strokes and kidney failure.

WHAT CAUSES HYPERTENSION AND HOW CAN WE PREVENT IT?

The cause of over 90 per cent of hypertension cases is unknown. Hypertension with no obvious cause is called primary or essential hypertension. Hypertension can also be caused by some other health problem, for example kidney disease or a hormone problem. It is then called secondary hypertension.

A high salt diet and overweight are associated with the development of high blood pressure.

Drinking alcohol and smoking are also associated with high blood pressure and interfere with its effective treatment.

Hypertension can best be prevented by a well-balanced diet (cutting down on salt and fat intake), regular exercise, reducing weight, giving up smoking and reducing the amount of alcohol consumed.

HOW IS HYPERTENSION TREATED?

High blood pressure has no clear warning symptoms as do other diseases, except that a person may feel drowsy when the blood pressure rises. Therefore, blood pressure must be measured regularly — this can prevent serious complications by allowing early treatment of high blood pressure before it reaches severe levels.

As a guideline, high blood pressure is treated when blood pressure readings are consistently over 160 for the systolic or at any time 95 or over for the diastolic. When the blood pressure is high during the first measurement, it should be measured again after the patient has been sitting quietly for 10 minutes. If the blood pressure is still elevated the patient should return in two weeks to have his/her blood pressure retested. Repeated testing will help eliminate high blood pressure caused by acute and/or temporary conditions such as stress, anxiety and discomfort. Patients with consistently high blood pressure over two

weeks have hypertension and need to be advised to lose weight, limit the amount of fat and salt in their diet, take more exercise (if overweight), stop smoking and limit their consumption of alcohol.

Advice on limiting salt in the diet should include:

- don't put salt on the table,
- reduce or omit salt in cooking,
- eat fresh foods (especially fruit and vegetables),
- avoid processed foods with added salt (read the food label).

Taking more exercise will also help to control weight. Exercise should be taken regularly (at least three times a week) for 20 minutes or more. Check with a health care provider before beginning an exercise programme that requires a lot of physical exertion. Good exercise includes:

- walking/jogging/running,
- working in the garden,
- swimming,
- bicycling,
- active sports (soccer, rugby, etc.).

Patients with a systolic blood pressure over 160 and/or a diastolic pressure over 95 after a total of four weeks of follow-up must have drug therapy under a physician's care.

There are three main types of drugs used to control hypertension: diuretics, beta-blockers and converting enzyme inhibitors. Diuretics are believed to be effective because of their ability to increase the loss of sodium in the urine and thereby reduce water held in the body. Beta-blockers are effective in reducing heart rate and lowering arterial pressure. Converting enzyme inhibitors work in part by limiting the production of substances that narrow the blood vessels while delaying the breakdown of agents that dilate the vessels.

Drug therapy for hypertension usually begins with the use of diuretics or a beta-blocker, with diuretics preferred because of their low cost. If hypertension is not controlled, therapy progresses to a combination of these drugs and finally to adding a converting enzyme inhibitor and other drugs.

Compliance of hypertensive patients in correctly and fully taking prescribed medication is at best about 50 per cent. It is always difficult to have patients take medication over an indefinite period (often years) several times a day. It is even more difficult to motivate them to take medication when they have no symptoms. Patients should be educated on the seriousness of hypertension and the importance of taking their medication correctly. The patient and

his/her family should be actively involved in negotiating the best treatment schedule to encourage good compliance.

Monthly visits are recommended to check blood pressure status and to modify dietary therapy as necessary. During these checkups, the patient should be counselled to continue medication and to lose weight, reduce fat and salt intake, stop smoking and reduce alcohol consumption.

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