

HEART CARE DISCRPTION

● **Introducation**

High blood pressure is not a disease, but one indicator of a generalized systemic disease, which affects blood vessels supplying blood to most vital organs. It rarely makes people feel ill. No wonder more than half the person who have high blood pressure are not aware of its presence and half of those who are aware of it take no action as they do not feel ill. But the consequences of high blood pressure are deadly as it can strike suddenly in the form of a heart attack or a stroke.

"The social cost of sickness is incalculable. The prevention of disease is for the most part a matter of education, the cost is moderate, the results certain and easily demonstrated."

● **What is blood pressure?**

The term "blood pressure" is applied to the pressure of blood in the arteries (small vessels or tubes), which carry blood from the heart to the rest of the body. The circulation of blood requires pressure to maintain the flow.

● **What is high blood pressure?**

High blood pressure (or 'hypertension' as it is called by doctors) is a common condition, which affects between one in six and one in five of the adult urban population and one in twenty and one in twelve of rural population.

Chest Pain

(1) Angina

It is described as a transient pain or discomfort due to a temporary imbalance between the demand for oxygen by the heart muscle and the ability of the coronary arteries to supply enough blood to meet that demand. Angina can be experienced at rest but oftenly it is experienced during exertion which increases heart rate and blood pressure. As the narrowing in these blood vessels increase, the amount of exertion needed to cause anginal pain decreases. With severe coronary artery disease, angina can occur at rest. Symptoms of angina can be midsternal chest pain that is described as crushing, pressing, constricting, oppressing or heavy. It may radiate to one or both (more often the left) shoulders and/or arms. Neck, jaw, back and epigastric pain without midsternal chest pain can also be angina. Even shotness of breath, fatigue and dyspnea on exertion is equivalent to angina. It is a steady discomfort, most commonly lasting 2-15 minutes.

WHAT TO DO

MAKE PATIENT TO REST.

DO NOT DRIVE

LOOSEN THE CLOTHES

IF HE IS KNOWN FOR HEART DISEASE GIVE NITROGLYCERIN TABLET

INFORM DOCTOR IMMEDIATELY

PLEASE REMBER IT IS A REVERSIBLE CONDITION SO TIMELY INTERVENTION CAN SAVE COMPLETE HEART FUNCTION OR EJECTION FRACTION

(2) Heart attack(Myocardial infarction)

when the demand of the heart muscle far exceeds the supply. It usually results from severe narrowing or complete blockage of a coronary artery and results in death of the heart muscle cells supplied by that vessel. Often the narrowing causes slowed blood flow through the artery which leads to the formation of a clot. This clot completely blocks the artery and a heart attack occurs. If this occurrence is caught early, "clot busting" drugs and "ballooning open the arteries" are common treatments to interrupt a heart attack. The usual symptom of an attack is the pressure or pain described above. Other associated symptoms include sweating, clamminess, lightheadedness, nausea, vomiting and shortness of breath. If this type of discomfort lasts for 2 minutes or more, emergency action should be initiated.

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● **Systolic and diastolic pressure**

The heart is not a continuous pump. It beats (contracts) and then relaxes. Each heartbeat produces a pressure wave and expels blood from the heart. The peak of this wave is called the systolic pressure and the trough or lowest point between beats is the diastolic pressure. The height of the systolic pressure is due to the amount of blood expelled when the heart contracts and also the resistance to flow of blood produced by the arteries. In young people the larger arteries are fairly elastic and produce less resistance, compared to the arteries of older subjects.



● **How is blood pressure measured?**

Pressure is measured with an instrument called a sphygmomanometer. A cuff containing a rubber balloon is placed around the upper arm and inflated to a pressure, above the systolic so that no blood can get through. Pressure in the cuff is then slowly released while an observer listens over the artery at the elbow below the cuff. As the blood starts to flow again, at the height of the pressure wave, it creates a thumping noise and the pressure in the cuff at this time is equal to the systolic pressure. As the pressure in the cuff falls further the sound suddenly becomes muffled and then disappears as the flow is no longer obstructed. The majority of doctors use the point at which the sound disappears, as the diastolic pressure. When your pressure is being recorded, it is important that you should have rested for at least 10-15 minutes, you should feel relaxed and not tensed up, you should let yourself go floppy and concentrate on slow deep breathing. You should be lying or sitting comfortably. When you visit your doctor for recording of your blood pressure: 1) you should not be wearing a shirt or a blouse with tight sleeves, 2) you should not have smoked in the previous half hour, 3) your arm, around which the cuff is applied should be comfortably supported and be placed at the level of your heart, 4) if the pressure is high, the doctor would probably take three readings at 1-2 minutes intervals and record the average of the last two readings, 5) ideally, if the readings are high these must be confirmed on at least two subsequent visits 1-2 weeks apart. The doctor may also record your pressure in the standing positions, with the arm held horizontally, at the level of the heart, and well supported.

● **What is normal blood pressure (B.P.)?**

Blood pressure values are expressed in millimetres of mercury and are recorded as systolic/diastolic e.g. 120/80. Optimal B.P. is < 120 systolic and < 80 diastolic, < 130 systolic and < 85 diastolic is referred to as Normal B.P. while readings of 130-139 systolic and 85-89 diastolic would be called High-Normal B.P. All readings > 140 systolic and or > 90 diastolic are classified as various grades of hypertension. Blood pressure in an individual is not fixed but varies from minute to minute depending on activity, mental status and time of day. It falls to low levels when you are asleep at night and may become very high when you are angry, in pain, startled or under stress: intense mental arithmetic for instance has quite a profound effect. In some subjects, blood pressure may rise transiently in response to anxiety generated by the doctor measuring the pressure. In most cases the blood pressure measured on the first occasion is higher than that recorded on subsequent visits, when patients are more at ease. Blood pressure, particularly the systolic pressure, tends to rise with age. This is partly due to the fact that the larger arteries become harder and lose some of their elasticity. A systolic blood pressure of 140 would be abnormal in a woman of 18, but would be quite acceptable in someone of 70.

● **What is the cause of high blood pressure?**

In nine out of ten patients with high blood pressure, no underlying disease can be found, and for this we use the term "essential hypertension". This means that high blood pressure is a sign or an expression of an underlying disease process, which is as yet ill understood. There is no definite cause to which 'essential hypertension' can be attributed to. Genetics or heredity certainly plays an important role. If your parents' blood pressure was high, then chances of your developing hypertension are increased. In addition, there are several risk factors, which are commonly associated with high blood pressure. These factors are: obesity, diabetes mellitus (sugar diabetes), excessive alcohol intake, and excessive salt intake.



● **Are there any definite causes of high blood pressure?**

On rare occasions a definable cause may be identified, such as narrowing of the artery to a kidney or abnormal production of hormones from the adrenal gland. Occasionally high blood pressure may be due to other forms of severe kidney disease or congenital narrowing of the major artery leaving the heart. These situations are very unusual however and can be easily identified by blood tests and X-rays.

● **Are there any drugs, which can cause high blood pressure?**

Occasionally blood pressure may be worsened by certain medications. Some tablets used in treating ulcers, arthritis, depression, cough and cold, nose drops, steroids or oral contraceptives may raise blood pressure. If you are taking medicine which your doctor may not know about (either bought at a chemist's or prescribed by another doctor), it is vital that you tell your doctor. It is preferable to take these with you when you go for blood pressure measurement.

● **The Pill and Pressure**

Some oral contraceptives (the pill) increase blood pressure in a small proportion of women. For this reason measurements of blood pressure should be made at regular intervals. Although some contraceptive tablets have little influence on pressure, it is usually preferable

for patients with high blood pressure to practice other methods of birth control. Advice on this aspect may be obtained from your own doctor or from Family Planning Clinics.

● **Pregnancy and Blood Pressure**

Pregnancy may have an important effect upon blood pressure. Normally blood pressure falls in the first months, even in women who have been hypertensive and then rise again in the later stages of pregnancy. High blood pressure may also develop for the first time in pregnancy (pre-eclamptic toxemia).

Hypertension may require treatment with bed rest or drugs particularly in the weeks before delivery. Amongst the various drugs used for hypertension, ACE inhibitors and Angiotensin II antagonists must be AVOIDED in pregnancy. It is better not to use Diuretics too. High pressure usually returns to normal after the baby is delivered. In all cases, it is important that blood pressures are carefully watched and, if necessary, treated throughout pregnancy. It should be emphasized however that if you have hypertension, you should be able to have a family without undue risk to the mother or baby, although this extra supervision is necessary.

● **How do I know that I have blood pressure?**

Most patients with high pressure have no symptoms. Occasionally patients have symptoms such as headache, but only if the pressure is very high. Symptoms like headaches are far more likely to be due to other causes such as anxiety. Because most people with high blood pressure have no symptoms, the condition commonly goes undetected. To identify hypertension, there is no substitute to having your blood pressure measured. Improved detection of high blood pressure depends on the increase in public awareness of the need to have blood pressure measured. This is particularly true for people approaching middle age when high blood pressure becomes more common and for people who have relatives with high blood pressure. It is often convenient to have a measurement during a routine consultation which has been sought for other reasons.



● **If it causes no symptoms, does it matter?**

It has been known for many years that people with untreated high blood pressure have a greater than normal risk of developing strokes, heart attacks and kidney disease, with a consequent reduction in life expectancy. This was first observed by Life Assurance Companies from follow-up studies of people who had their blood pressure measured during medical examinations for insurance purposes. It was found that the higher the blood pressure, the shorter was life expectancy. If anything, the insurance statistics underestimate the importance of blood pressure since they take no account of the disability which often occurs when patients survive an illness such as stroke. A person at the age of 40, for instance, is 30 times more likely to have a stroke if his blood pressure is high compared with someone with a normal blood pressure. It should also be emphasized that strokes and heart attacks caused by hypertension often occur in individuals who have no symptoms up to the time of the illness.

● **Do I need special tests?**

The doctor would take a full history, including family history of premature cardiovascular disease and carry out a complete physical evaluation. On occasions, this may reveal a cause for high blood pressure or suggest special tests to find such a cause. It also helps to detect any problem and also indicate the type of medicine which may be required. Some commonly used tablets are harmful, for example in patients with chest disease. Simple blood and urine

tests, ECG and chest X-rays may give additional information in selected patients.

● **Factors which determine prognosis**

Presence of high levels of B.P., age > 55 years in men and >65 years in women, smoking, cholesterol levels of >250 mg/dl. Presence of diabetes, family history of premature cardiovascular disease, presence of damage to heart, kidneys, brain or eye arteries at the time of diagnosis or already existing heart, brain, kidney or vascular disease can worsen the prognosis.

● **What difference does treatment make?**

It is now established that blood pressure-lowering drugs are effective in preventing strokes, heart attacks, heart failure and kidney failure due to high blood pressure. In the small proportion of patients with very high pressure and symptoms of headache, blurring of vision and breathlessness, treatment produces rapid relief of symptoms.

However, it should be emphasized that benefit has also been shown in patients with no symptoms and moderately raised pressure. Because the risks of blood pressure are greater when levels are very high, the potential benefits of treatment are greater in these patients. Patients with borderline hypertension have to be closely watched. Those with other risk factors and strong family history may need drug therapy if non-drug measures do not lower blood pressure.



● **What can I do to lower my blood pressure?**

Overweight and blood pressure

"A mature fat man excites pity, like a ship well stocked for its last voyage".

Santiago Ramon Y Cajal (1852-1934)

High blood pressure is particularly common in people who are overweight and successful reduction of weight by a calorie-restricted diet usually helps to reduce blood pressure. Occasionally weight reduction alone is sufficient treatment but more often it assists the tablets.

Alcohol and Blood pressure

"First the man takes a drink, then the drink takes a drink, then the drink takes the man".

----- Japanese proverb.

Heavy drinking alone raises blood pressure. In general, hypertensive patients should therefore avoid alcohol. In case they find it impossible to leave alcohol completely, then the average intake should not exceed one pint of beer a day or its equivalent in other forms of alcohol.

Diabetes and Blood Pressure

Diabetes is a well-known cause for narrowing of the arteries and heart attacks. Diabetes also tends to aggravate blood pressure. About 50% of all diabetics have raised blood pressure and about 15-18% of all high blood pressure patients have varying degree of blood sugar disturbance (DIABETES). When diabetes and high blood pressure are present together, the chances of getting a heart attack or stroke increase several folds. It is very important that both

the diabetes as well as the high pressure be controlled vigorously. The goal of treatment in diabetes is to lower blood pressure to optimal, normal or at least high normal levels.

Salt and Blood Pressure

There is also a connection between salt in the diet and high blood pressure. Salt is certainly important in some forms of high blood pressure, particularly when there is kidney damage. Although severe restriction of salt intake can lower pressure, such diets are difficult for most people to follow for long periods. Moderate salt restriction is more readily achieved, but its effects on blood pressure in the long term are not yet clearly established. Those who take excessive salt should cut back on their intake of added salt. To lower salt intake you should not use salt at the table, use less in cooking and avoid food with a high salt content, e.g. salted nuts, pickles, chutneys, papad, tinned juice, ham, etc. There is also some evidence that salt reduction increases the effectiveness of some blood pressure lowering drugs. There is at the moment no convincing evidence that low salt diets can prevent high blood pressure.



Fat and Blood Pressure

A decrease in total fat consumption and in the proportion of saturated (mainly animal) to unsaturated (mainly vegetable) fats in the diet is currently widely advocated as the means of reduction in the incidence of heart attacks. Since patients with high blood pressure are a particularly high-risk group, this is worth considering seriously. It can be achieved by cutting down on fatty foods (e.g. dairy products and fatty meat) and substituting polyunsaturated fat (e.g. corn oil, Soya and sunflower oil, etc.). Such a dietary change may also slightly lower blood pressure, and may be beneficial in this way as well.

Smoking and Blood Pressure

"Tobacco's an outlandish weed,
Doth in the land strange wonders breed:
It taints the breath, the blood dries,
It burns the head, it blinds the eyes;
It dries the lungs, scourgeth the lights,
It 'numbs' the soul, it dulls the spirits".



Anonymous

If you smoke two cigarettes, your blood pressure goes up by 10-15 mm Hg. It comes to normal half hour after smoking. Whether this short term acute rise of blood pressure can cause permanent hypertension has not been proved. All the same these surges or spurts of blood pressure have been shown to cause damage to blood vessels. Further more, cigarettes themselves undoubtedly, cause coronary heart disease and arterial disease in the legs. Subjects with high blood pressure already have an enhanced risk of developing such problems and cigarettes are therefore particularly harmful. The risks of smoking for patients with high blood pressure are very great indeed and every effort must be made to stop smoking.

Stress and Blood Pressure

Anxiety and vigorous effort can raise blood pressure to quite a high degree. Although at first sight this might seem dangerous, it is a normal response to the circulation "fight or flight",

which probably helped our ancestors to survive. Healthy blood vessels can cope with changes in pressure without any damage.

It is possible however, that repeated exposure of arteries to high-pressure cause thickening of their walls and that this limits the flow of blood through them and so permanently causes high blood pressure. It has been suggested that the repeated 'spikes' of blood pressure produced by the stress of everyday life accounts for the fact that high blood pressure becomes much more frequent when people move from 'primitive' to 'civilized' conditions. Relaxation could therefore theoretically be beneficial. Some studies using relaxation exercises, meditation and bio-feed back have shown that blood pressure is slightly lowered.

Exercise and Blood Pressure

"Those who think they have no time for bodily exercise will sooner or later have to find time for illness".

Edward Stanley, Earl of Derby (1826-1893)

Physical exercise takes one of two forms: dynamic exercise such as walking, running or cycling and isometric exercise, such as heavy weight lifting or sustained handgrip. Carrying a heavy suitcase is a typical example of isometric exercise.

Isometric exercise raises blood pressure. Most blood pressure lowering drugs are ineffective in preventing the rise of blood pressure during isometric exercise. Dynamic exercise is safe for most patients with high pressure once the blood pressure has been brought down from very high levels to mild or moderate levels. Physical exercise helps lowering blood pressure in several ways. It is sensible to avoid excessive isometric exercise such as heavy weight lifting.

Sex and Blood Pressure

Both heart rate and blood pressure rise substantially during sexual intercourse. This is much more likely if the intercourse is extra marital. In an uncontrolled hypertensive patient the act could be dangerous. However, when the blood pressure is reasonably controlled one can go ahead and enjoy this pleasurable exercise but do consult your doctor before initial sexual activity. In some patients with blood pressure, because of reduction in blood supply to sexual organs, the urge as well as performance can be reduced. This being the case, you must inform your doctor, so that he would avoid using certain drugs, which have the effect of reducing sexual function.



● Medicines for treating Blood Pressure

In the past decade, a large number of blood pressure lowering drugs have been developed. The perfect drug should be effective, simple to take and entirely free of adverse effects. Modern drugs have not quite attained this ideal but represent a considerable advance on the earlier preparations available in the 1950s, which were often not very effective and were unpleasant to take. Different preparations lower blood pressure in quite different ways. One class of drug (vasodilators) relaxes the muscles in the smaller arteries widening their diameter and so reducing the resistance to blood flows. Another drug ('beta-blockers') act upon the nerves which control the circulation whilst a third group of drugs (diuretics or 'water tablets') cause the kidney to excrete more salt and water. Other drugs (ACE-Inhibitors) antagonize a hormone which raises blood pressure. Another class of drug, Angiotensin II receptor antagonists is somewhat similar to ACE Inhibitors, but have fewer side effects. There are also the calcium blockers, which reduce the tone of blood vessels and allow the blood to move more freely. It would be impossible to list all the available blood pressure lowering drugs. The same preparation is manufactured by different pharmaceutical firms under different names. In

addition, each drug has a generic or proper name and a commercial name which is used by the manufacturer. Some commercial tablets contain more than one preparation to make taking of tablets a simpler matter.

● **Why does my doctor keep changing my tablets?**

In general the aim of treatment is to produce gradual lowering of blood pressure over a period of weeks or perhaps months. Unless blood pressure is extremely high there is no great urgency. Doctors usually start with a low dose of tablets and slowly increase the dose. If this is not enough, another different type of drug may be added. sometimes the changes can be achieved by changing the strength of the tablets or by using a combination of tablets which contain two drugs. Controlling the blood pressure effectively is a time consuming process. Your doctor should inform you but not alarm you. Do not get impatient under any circumstances by listening to readings of the blood pressure. Let your doctor do the worrying part. Do not change your doctor and follow his advice for repeated check-ups in the initial stages.

● **Will I suffer side effects?**

Serious side effects of blood pressure medications are now, happily, very unusual. It is natural to attribute any symptom which you have after starting a new treatment to that treatment. This is not necessarily the case. When new forms of treatment are being tested in research, patients are often given a totally inert tablet; this is technically called "placebo effect" and is a well-known factor in assessing treatment. At the same time occasionally, quite unexpected new side effects may be encountered. It is extremely important therefore, to discuss any new symptoms with your doctor. If blood pressure is reduced to low levels, then symptoms of light-headedness, dizziness and even fainting may occur. These effects are particularly noticeable on getting up from a bending or lying posture. In these circumstances, the dose of drug may need to be reduced or an alternative preparation prescribed. Some patients may be allergic to a particular type of preparation and develop a rash. Beta-blockers are highly effective drugs but occasionally side effect such as tiredness, cold hands and feet and wheezing may occur in some people. The heart rate is usually reduced and the response of the heart to fear and anxiety is modified. Drugs of this type may not be suitable for patients with some chest disease such as asthma and chronic bronchitis.



● **How often should I have my blood pressure measured?**

During the initial stage of adjusting your treatment, it may be necessary to have your blood pressure checked frequently, probably at intervals of between one and four weeks. Once blood pressure is satisfactorily controlled, it is usual to measure it every 3-6 months.

● **Is missing the tablets dangerous?**

When most forms of blood pressure treatment are stopped, blood pressure only climbs slowly over days or even weeks. Missing out a single tablet will not therefore have any serious effect unless this is done frequently. In that case, control of blood pressure will be less than perfect. When a tablet is forgotten, you should not therefore take an extra tablet next time, but continue as though you had not forgotten a single dose.

● **Can I continue to take part in sport?**

There is no reason why you should change your activities in any way unless you have an

additional medical problem about which you should consult your doctor.

● **What if I need surgery?**

There is no reason why a healthy person with well-controlled blood pressure should not undergo a dental or surgical operation. It is however, absolutely essential that both the surgeon (or dentist) and the anaesthetist know that you are receiving treatment for hypertension. Remember that, if your blood pressure is well controlled there may be no indication that you once had high blood pressure.

● **How about driving?**

Once blood pressure is well controlled there is no objection to driving. Please remember that during the early phase of blood pressure control with some of the more powerful drugs, giddiness may occur if blood pressure falls too low. It is therefore worth asking your doctor about this possibility before starting new treatment.

● **Will I feel better or live longer with treatment?**

Generally, you are unlikely to feel any better for having your blood pressure treated, unless you had hypertension related symptoms, prior to treatment. Thanks to modern developments, you should not feel any worse. By cooperating with effective treatment you will be helping yourself. You will be increasing the likelihood of enjoying a healthy active life and reducing the risk of developing some of the most common and dangerous diseases of middle and late life.

"There was temperance in eating and drinking. Their hours of rising and retiring were regular and not disorderly and wild. By these means the ancient kept their bodies united with their souls, so as to fulfil their allotted span completely, measuring unto a hundred years before they passed away".

COMMON HEART DISEASE

High BP

Chest Pain

Blockage in vessels

High Cholesterol

Diabetes

Valve disease

Congenital heart problem

Heart Failure

Chest Pain

ANGINA

It is described as a transient pain or discomfort due to a temporary imbalance between the demand for oxygen by the heart muscle and the ability of the coronary arteries to supply enough blood to meet that demand. Angina can be

experienced at rest but oftenly it is experienced during exertion which increases heart rate and blood pressure. As the narrowing in these blood vessels increase, the amount of exertion needed to cause anginal pain decreases. With severe coronary artery disease, angina can occur at rest. Symptoms of angina can be midsternal chest pain that is described as crushing, pressing, constricting, oppressing or heavy. It may radiate to one or both (more often the left) shoulders and/or arms. Neck, jaw, back and epigastric pain without midsternal chest pain can also be angina. Even shotness of breath, fatigue and dyspnea on exertion is equivalent to angina. It is a steady discomfort, most commonly lasting 2-15 minutes.

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Blockage of Vessel

Blockage of Vessel or Coronary artery disease (CAD) is a chronic disease in which blood flow is obstructed through the coronary arteries that supply the heart. This obstruction is caused by a disease known as atherosclerosis, which is sometimes called "hardening of the arteries." An estimated every one peron in four Indian suffer from CAD. Also referred to as coronary heart disease, CAD is the most

common form of heart disease today. CAD begins when hard cholesterol substances (plaques) are deposited within a coronary artery. (The coronary arteries arise from the aorta, which is adjacent to the heart.) This causes white blood cells to gather at the site of the injury. This in turn provokes an inflammatory immune response that causes further damage to the artery wall. Over time, the endothelium is compromised and large, toxic LDL cholesterol molecules can penetrate into the artery wall. The white blood cells and cholesterol combine to form a lipid foam. The plaques can cause a tiny clot to form which can obstruct the flow of blood to the heart muscle. Symptoms of CAD include

1) chest pain (angina pectoris) from inadequate blood flow to the heart;

2) heart attack (acute myocardial infarction), from the sudden total blockage of a coronary artery; or

3) sudden death, due to a fatal rhythm disturbance. Untreated, CAD usually continues to worsen. Many CAD patients have symptoms such as chest pain (angina) and fatigue, which occur when the heart isn't receiving adequate oxygen. As many as 50 percent of patients, however, have no symptoms until a heart attack occurs. Strategies to help reduce risk factors for CAD, or slow its progression if it has already begun, include:

- Learning your family medical history
- Eating a heart-healthy diet
- Improving your cholesterol ratio
- Controlling homocysteine levels
- Exercising regularly
- Controlling diabetes
- Controlling high blood pressure
- Achieving and maintaining a healthy weight
- Managing stress
- Quitting smoking (or not starting to smoke)
- Controlling chronic depression

Treatment options for CAD include medication, balloon angioplasty (with or without stenting), atherectomy and bypass surgery.