

# A high-risk ailment

Even the WHO is working out a strategy to manage high blood pressure in the 60-plus age group across the world

Dr Mohammad Sharif Monga

modified by an aging process, per se. Thus, an understanding of how aging modifies cardiovascular structure and function is critical to an understanding of high blood pressure in the elderly. Major age-related changes affecting the vessels include large arterial stiffening, which leads to increased systolic blood pressure. There is usually a mild increase in resistance in small arteries. There is also increased left ventricular wall thickness and left ventricular cavity size. Modest focal increase in stiffer collagen fibres also occurs. These changes lead to impaired left ventricular ejection of blood and reserve capacity which in turn leads to an increased load on the heart and reduce myocardial contractility.

Chronic high blood pressure mimics accelerated aging. In this regard, the traditional clinical distinction between normal blood pressure and high blood pressure is quite arbitrary, although it may be useful with regard to cardiovascular risk stratification. In fact, the similarities between aging and high blood pressure are so striking that aging can be considered to be "Muted High Blood Pressure", while high blood pressure can be likened to "Accelerated Aging".

Typical of isolated systolic high blood pressure is a marked reduction in arterial compliance which has recently been shown to involve both elastic-muscle conduit arteries. Age-related changes in aortic stiffness explains the frequent development of isolated systolic high blood pressure. Arterial stiffening and loss of distensibility in large arteries and aorta leads to a progressive elevation in systolic blood pressure, whereas diastolic blood pressure elevation is caused by constriction of small arteries and arterioles. The changes in arterial wall are due both to increase in blood pressure itself and to the active response of arterial wall to this increase in pressure.

The elevated systolic blood pressure increases left ventricular workload and may cause left ventricular hypertrophy, whereas decreased diastolic blood pressure may compromise coronary blood flow. Thus, the increase in systolic blood pressure and decrease in diastolic blood pressure lead to a dual phenomenon: a hypertrophied heart and inadequately perfuse coronary arteries, increasing the likelihood of myocardial infarction, stroke and all cause mortality. At this stage the left ventricular ejection occurs against a

much stiffer and thicker aorta, thereby increasing systolic blood pressure.

Aged heart has difficulty in maintaining cardiac output against a high after-load in the face of impaired contractility. At about the age of 50 years, blood flow during diastole is increased due to stiff arteries and hence leads to an abnormal decrease in diastolic blood pressure. After the age of 65 the diastolic blood pressure tends to decrease markedly and results in a pure isolated systolic hypertension.

Blood pressure is more variable in the older patients and blood pressure measurements confer special problems in the elderly. Pseudo hypertension occurs in an atherosclerotic artery that is incompressible and therefore gives a false high blood pressure reading, in these people very rigid and calcified arteries cannot collapse under the cuff bladder, giving rise to falsely high readings, it is an over estimation of actual intra-arterial blood pressure.

Who has launched a new policy frame-work on active aging defined as "the process of optimizing opportunities for health, participation and security in order to enhance peoples' quality of life as they age.

Clinically it has been established that the reduction of systolic blood pressure in the elderly is accompanied by a

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**T**HE elderly population is arbitrarily defined as individuals aged 65 years or above. The incidence of high blood pressure and its complications increase dramatically with age. Human prospective research indicates that high blood pressure and aging, both cause similar patterns of altered cardiovascular structure; function and gene expression. The interaction of mechanisms that underline cardiac and vascular aging with those that cause high blood pressure, substantially modifies the high blood pressure expression as the organism age.

The population over age 65-years is increasing; the care of the elderly is becoming more important and rewarding. Traditionally, old age has

been associated with sickness, dependence and lack of productivity. This outdated notion does not reflect the reality. Indeed, most people adopt to change with age and remain independent well into old age.

Optimal management of these persons require a general understanding of the effects of aging on the entire human organism and a specific understanding of the development of new treatments for cardiovascular disease in this population. Advanced age should never preclude appropriate therapy. Aggressive medical and surgical approaches should be considered for select individuals.

High blood pressure affects upto 50 per cent of individuals of 65 or above. High blood pressure in the elderly usually confers three to 4-fold increased risk of heart attacks and paralysis attacks, as compared to younger subjects.

A unified interpretation of cardiac changes that accompany advancing age in an otherwise healthy person without clinical high blood pressure, suggests that the observed changes are adaptations to age-related cardiac and arterial changes. In older individuals, specific pathophysiological mechanisms that underline high blood pressure become superimposed on heart and vascular substrates, that are

## Blood pressure: how low to go

“ YOUR blood pressure is 150/90 and that's quite all right for your age”.

This and similar statements were quite common until a few years ago. Now things are different. After years of research it is concluded that the closer the blood pressure is to 120/70 at any age in adults, the better it is. 120 being the systolic when the heart pumps out blood and 70 diastolic when the heart relaxes. In patients who are already diagnosed with high blood pressure, the goal should be a reading of 130/80 most of the time. This is particularly important in patients who have diabetes, heart disease and kidney disease. Heart and kidney disease would be aggravated by high blood pressure and the complications of diabetes will increase. In patients with blood pressure lower than these numbers no changes are necessary and if there are no symptoms and the patient is on medication often no reduction in dosage is necessary. This is important to understand as on attaining “normal blood pressure” patients sometimes feel stoppage of medicine or dose reduction is warranted. This is usually inappropriate.

All this is supported by the publication of the Joint National Committee on prevention detection, evaluation and treatment of high blood pressure. This is a body of experts constituted in the US to provide annual recommendations about blood pressure. Both, the sixth report last year and the seventh report

this year, are increasingly stringent in advocating treatment to lower blood pressure in hypertensives and keep it below 130/80. Similar recommendations have been made in Europe and the UK.

Treatment is only begun if high blood pressure (hypertension) is confirmed by checking the blood pressure on two or three occasions at rest. The intensity and urgency of the treatment would depend upon the severity of the blood pressure. The type of medicine chosen would depend upon the evaluation of the individual and presence of other disease such as diabetes, high blood fats, heart disease or kidney disease. Your doctor after checking you up and obtaining some base-line tests would choose the right medication or combination of medicines for you. Even during treatment at times some medicines have to be changed as they may contribute to weight gain, development or aggravation of diabetes and high cholesterol, rise in uric acid and lowering of potassium that are all problematic in themselves. Indeed diabetes and high cholesterol are themselves independent risk factors for developing heart disease and stroke. Some medicines may cause sexual dysfunctions and others lead to cough, constipation, weakness and dizziness. This does not mean that one should not deny oneself treatment of high blood pressure but just to point out that such treatment be carried out under medical supervision. Side effects are in a

reduction of cardiovascular mortality and morbidity.

Specific cardiovascular changes that occur during aging in health perhaps should not truly be considered to reflect a normal process, because they are so similar to those seen in hypertension and other risk factors that merit intervention. However, systolic blood pressure over 200mmHg and diastolic blood pressure over 95mmHg are always abnormal. No matter what the age, arteriosclerosis, serum cholesterol and cigarette smoking play their roles in determining the extent of atherosclerosis.

Evidence based benefits of therapy in the elderly must include lifestyle modifications. Reducing sodium intake and weight reduction are particularly beneficial for control of blood pressure and often reduce the need for pharmacological therapy.

Elderly should be encouraged for life-cycle changes not only to control blood pressure but also to improve quality of life. In a clinical research trial, restricting salt to 2gms/day favourably reduced systolic and diastolic blood pressure and also 40 per cent of these patients were able to discontinue their medication. Weight reduction and salt restriction, when used together decreased the need for anti-hypertensive therapy in almost half of the participants.

Regular moderate exercise has been shown to be effective in improving left ventricular ejection capacity, reduction in cardiac after-load via reduced arterial stiffness and weight reduction. They should be encouraged to stop alcohol and smoking and avoid psychosocial stress. Result orientated dietary changes would be very important.

As hypertension is "a state of altered haemodynamics", drug selection should be appropriate for the underlying haemodynamic abnormality such as arterial stiffening. ■

# how low to go

Dr Arshad Ahmed

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small percentage of persons in whom the medicine can always be substituted. There are a variety of drugs for high blood pressure available today. They act on different mechanisms to lower blood pressure involving the nervous system, heart, blood vessels and the kidneys. The doctor's art is to choose the right medicine or combination of medicines for you. A combination of medicine is often necessary for optimum blood pressure control. In fact the latest guidelines recommend that for higher blood pressure i.e. 160/100 two drugs be started from the beginning. Luckily preparations are available that have a combination of two medicines that makes things easier for the patient and improves compliance. Diabetics and patients with heart and kidney disease require special care in choosing the appropriate medicine. Indeed there are medicines available that are particularly useful in high blood pressure occurring with these conditions and their benefits go beyond blood pressure control.

In conclusion it is emphasized that blood pressure be adequately controlled to 130/80 or below. Twice-yearly check-ups of blood pressure, even if it is normal and more frequently if it is abnormal, is absolutely necessary. Timely diagnosis and effective treatment can prevent a variety of disease involving the heart, kidneys and strokes. Follow-up treatment diligently and keep your BP under good control.