

## UNIT NO. 1

## SIGNIFICANCE OF HYPERTENSION IN PRIMARY CARE

Prof Chia Boon Lock

**Epidemiology**

Hypertension is a major health problem globally. In many countries around the world, the prevalence of hypertension in the adult population aged 45 to 55 years is about 15 to 30%. This percentage rises to 60%-70% in those who are over 75 years. Hypertension is therefore a very common cardiovascular problem, causing an enormous economic burden to the community and the government.

Using the 1996 WHO classification which defines hypertension as having a blood pressure (BP)  $\geq 140/90$  mmHg, the 1998 Singapore National Health Survey found that 27% of Singapore residents aged between 30 and 69 years have hypertension as compared to the 22% in 1992. As shown in Table 1, the prevalence of hypertension clearly increases with age, being 10% in the age group of 30-39 years and 64% in the age group of 60-69 years. Hypertension is more common among males (30%) than females (24%). Chinese males as compared to Malay and Indian males and Indian females as compared to Chinese and Malay females have the highest prevalence of hypertension. The 1998 Survey also found that of the hypertensive subjects, only 47% had been previously diagnosed, and of the known hypertensive subjects, only 30% had adequately controlled BPs. These statistics highlight the enormous challenge that lies ahead in the control of hypertension in Singapore.

**Table 1: Age-Specific Prevalence (%) of Hypertension in Singapore by Gender**

Age (years)	Males	Females	Total
30-39	14.7	5.0	9.9
40-49	26.6	18.6	22.7
50-59	51.6	47.3	49.5
60-69	63.3	65.2	64.3
30-69	30.5	24.0	27.3

Source: Singapore National Health Survey 1999

**Hypertension as a Risk Factor**

Landmark studies in the past 3 decades have strongly confirmed that hypertension is a major risk factor for strokes (atherothrombotic and haemorrhagic), coronary heart disease, heart failure, left ventricular hypertrophy, renal failure and peripheral vascular disease. The higher the blood pressure, the greater will be the risk for these complications. The other modifiable major risk factors for cardiovascular disease are dyslipidaemia (eg high LDL-cholesterol and low HDL-cholesterol), diabetes mellitus, cigarette smoking, obesity, lack

of exercise and increased stress. The non-modifiable major risk factors are increasing age, male gender, inheritance of unfavourable genes and Indian ethnic race. Risk factors are additive in their effects. The more risk factors an individual has, the greater will be his likelihood of having a cardiovascular complication. Therefore in the management of hypertension, a holistic approach is necessary consisting of an evaluation and treatment of not only the blood pressure abnormality but also all the other pre-existing risk factors such as dyslipidaemia, diabetes mellitus, obesity, cigarette smoking etc.

**Isolated Systolic Hypertension/Hypertension in the Elderly**

Isolated systolic hypertension (ISH) is defined as a situation where the diastolic blood pressure is normal (i.e.  $< 90$  mmHg) but the systolic blood pressure is elevated (i.e.  $\geq 140$  mmHg). Systolic blood pressure increases with age and this occurs right up to 80 years of age. On the other hand, although diastolic blood pressure also increases with age, it reaches a plateau at around 60 years and thereafter it starts to fall. Because of this discrepancy in the age-related changes of systolic and diastolic blood pressure after the sixth decade, ISH becomes increasingly frequent in the elderly who are  $\geq 60$  years. For example, ISH accounts for two thirds of all hypertension in those  $> 65$  years. The prevalence of ISH is about 8% in individuals who are 60 years, 15% in those who are 70 years and 30% in those who are 80 years.

The above issues are especially important for Singapore because it has one of the fastest aging populations in the world. Multiple studies including the renowned Framingham study in America have clearly shown that ISH is an independent risk factor for strokes, coronary heart disease, congestive heart failure, left ventricular hypertrophy and renal failure. All these studies have shown that ISH is as important as an elevated diastolic blood pressure in increasing the risk for hypertensive complications.

More recently, an increased pulse pressure (i.e. difference between systolic blood pressure and diastolic blood pressure) has also been demonstrated to be a strong predictor for cardiovascular complications. Patients with ISH have a substantial increase in pulse pressure because their systolic blood pressures are elevated but their diastolic blood pressures are normal.

**Challenge of Hypertension in the Community**

Although there has been a marked improvement in the treatment of hypertension in a few developed countries such as the United States of America in the past few decades, this condition is still poorly managed in many other communities around the world. In these latter communities, the "rule of half" is an appropriate

CHIA BOON LOCK, Senior Consultant Cardiologist, The Heart Institute, National University Hospital

description of the unsatisfactory situation, as it highlights the current state of under-diagnosis, under-treatment and poor control of blood pressure in the general population. In many communities, only half of the hypertensive patients are diagnosed. Of those who are diagnosed, only half are treated. Of those who are treated, only half are well-controlled. As is stated above, the 1998 Singapore National Health Survey showed that only 47% of our hypertensive subjects have been previously diagnosed and of these, only 30% had adequately controlled blood pressures (< 140/90 mmHg). This is fairly consistent with the "rule of half".

The vast majority of hypertensive patients do not have any symptoms and feel perfectly well. Because of this lack of symptoms, hypertension has been appropriately termed "the silent killer". As hypertensive patients cannot be detected in a casual manner, a strategy where asymptomatic hypertensive patients can be diagnosed is crucial. This must necessarily involve routine measurements of blood pressure in all those who are > 40 years.

### Benefits of Treatment

The benefits of lowering blood pressures (both systolic as well as diastolic) in hypertensive patients are indisputable as shown in Table 2. Several major trials in the past 3 decades have shown that antihypertensive drug therapy reduces the risk of stroke, coronary heart disease, heart failure and renal failure. Non-elderly as well as elderly subjects, men as well as women, those with diastolic hypertension as well as ISH and subjects with mild, moderate and severe hypertension will all benefit from treatment.

### Indicators of Good Hypertension Management

By far, the single most important indicator of good hypertension management is achieving target blood pressure levels. The 2000 Singapore Ministry of Health Clinical Practice Guideline on Hypertension<sup>(1)</sup> has recommended that optimal blood pressure treatment target levels are < 130/85 mmHg in young middle age or diabetic subjects and < 140/90 mmHg in elderly subjects.

The American Diabetes Association has recently recommended that the target blood pressure level for diabetic

Table 2: Effects of Antihypertensive Treatment<sup>2</sup>

Patient group	Absolute risk (CVD* events over 10 years)	Absolute treatment effects (CVD* events prevented per 1000 patient-years)	
		10/5 mmHg	20/10 mmHg
Low risk patients	<15%	<5	<9
Medium risk patients	15-20%	5-7	8-11
High risk patients	20-30%	7-10	11-17
Very high risk patients	>30%	>10	>17

\*CVD = Cardiovascular

subjects should be < 130/80 mmHg. In hypertensive diabetic subjects with proteinuria, an even lower blood pressure target level (e.g. < 125/75 mmHg) is desirable.

Preventing cardiovascular events, heart failure and renal failure, reducing left ventricular hypertrophy are the final goals of reducing elevated blood pressures. Previous trials have shown that if blood pressures are adequately lowered, a reduction in the rates of these complications will also be achieved.

Compliance with medication is an indicator of good management. Non-compliance is a major issue in antihypertensive therapy and this problem is aggravated if the antihypertensive drugs that are given cause significant side-effects or if the therapeutic regimes are complicated.

The cost of treatment must be within the financial means of the subject. In this era of ever-increasing escalation in healthcare cost, the use of affordable drugs is essential.

Finally, since risk factors are additive in their effect and since many hypertensive patients frequently have risk factors other than hypertension, a global approach consisting of an evaluation and treatment of all pre-existing risk factors as well as hypertension is essential to good management.

### REFERENCES

1. Ministry of Health Clinical Practice Guideline on Hypertension. December 2000.
2. 1999 World Health Organisation – International Society of Hypertension Guidelines for the Management of Hypertension. J Hypertens 1999; 17:152-83.