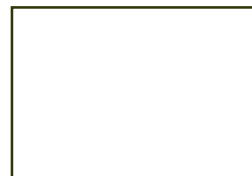


# **HYPERTENSION**

**National  
programme for  
control and  
management at  
primary level**



## INTRO- DUCTION

Hypertension is a major public health problem in virtually all parts of the world, as well as in South Africa.

A consistent blood pressure above 140/90 mmHg carries an increased risk for hypertension-associated diseases such as strokes and heart attacks. The World Health Organisation (WHO) defines being hypertensive as having a blood pressure higher than 160/95 mmHg. The health risk a given level of blood pressure presents is magnified by risk factors: e.g. obesity, unhealthy nutrition, diabetes mellitus, excessive alcohol intake, physical inactivity, and smoking.

These risk factors are primarily the result of following an unhealthy lifestyle and emphasise the societal character of the problem. Effective management of hypertension is further complicated by the asymptomatic nature of the conditions and requires high levels of compliance.

The importance of mobilising society, Government, private sector and other medical and lay organisations, to form true partnerships to control hypertension cannot be over-emphasised. The need to monitor and assess the effects of a hypertension control programme is just as important as defining the best practices.

Primary health care services should be the stronghold of hypertension control.

Hypertension is one of the five major diseases identified in the Reconstruction and Development Programme and identified by the Department of Health as a priority disease.

## VISION

To increase accessibility to health care services and effective management at primary level for patients with hypertension.

## GOALS OF THE POLICY

1. Primary prevention of high blood pressure through integrated measures to facilitate a healthy lifestyle (primordial prevention).
2. Rational, cost-effective, comprehensive management of hypertension.
3. Secondary prevention by reducing cardiovascular disease, cerebrovascular disease, renal and retinal damage associated with hypertension.

## SCOPE OF THE POLICY

### 1. TARGET POPULATION

#### 1.1 *Primary target population for primary prevention*

- Total population
- Pre-school children
- Children of school-going age
- Families
- Adults
- Older persons > 60 years

Refer to policy guidelines on Primary Prevention of Chronic Diseases of Lifestyle (CDL).

**1.2 Secondary target population for primary prevention**

- Schools and other educational structures
- Media
- Occupational health services

**1.3 Primary target population for hypertension control and secondary prevention**

- Persons diagnosed with hypertension

**1.4 Special target groups**

- Persons who have suffered a stroke, transient ischaemic attack or heart attack
- Persons with a family history of hypertension
- Pregnant women
- Older persons
- Hypertensive persons with diabetes mellitus
- Persons with prior renal disease

**1.1 Measurement of blood pressure (BP)**

Accurate assessment of blood pressure is essential.

- (a) BP should be recorded with the patient in a sitting position, after

**MANAGEMENT OF HYPERTENSION**

**1. DIAGNOSTIC PROCEDURES**

resting for at least five minutes. Patients should not have smoked, drunk coffee or tea or had food in the previous 30 minutes. In patients over 60 years of age, the BP should also be recorded after two minutes of standing to document any postural hypotension.

- (b) An appropriate size cuff should be used, i.e. a standard cuff (12 cm) for normal arm size and a larger cuff (15 cm) for arms with a mid-upper circumference above 33 cm. (If a normal size cuff is used for very fat arms, the BP may be overestimated by 10 - 25 mmHg).
- (c) Both systolic blood pressure (SBP) and diastolic blood pressure (DBP) should be recorded. DBP is measured at the disappearance of the sounds (phase V) except in pregnancy when muffling of sounds occur (phase IV).
- (d) The BP recorded should be the lowest DBP with its matching SBP of two readings taken two minutes apart at one visit. The blood pressure should be repeated three times at intervals of 1 - 2 days before a person is labelled as hypertensive.

The latter may not be possible due to:

- distance to travel to clinic
- economic reasons.

Please adapt accordingly, e.g. repeat once a week or once every two weeks according to blood pressure reading.

In this document: 'INVESTIGATE' applies to medical practitioners and 'REFER' applies to other primary care givers.

## 1.2 *History-taking*

Evaluation of associated cardiovascular risk factors and diseases. (Should ideally be assessed by medical practitioners.)

### **A Existing disease**

- If the patient suffers from angina or has had a myocardial infarction, refer/investigate.
- Target organ damage, i.e. cardiac failure, clinical left ventricular hypertrophy, renal disease (urinary dipstick protein  $\geq 2+$ ), previous stroke (CVA) or transient ischaemic attack (TIA), refer/investigate.
- Diabetes mellitus.

### **B Risk factors**

- (a) Major
  - Smoking (if patient stops smoking, risk factor is reduced).
  - Hyperlipidaemia (significantly high blood cholesterol level, specifically the low-density lipoprotein [LDL]).

- (b) Minor
  - Family history of hypertension or cardiovascular disease.
  - Obesity.
  - High alcohol intake.
  - Sedentary lifestyle (physical inactivity).

Drug treatment should be started if one major risk factor is present, together with repeatedly elevated blood pressure.

Risk factors identified should be treated appropriately.

### **1.3 Physical examination**

Execute detailed physical examination

NB. Signs and symptoms of an enlarged heart, heart failure and previous strokes, oedema, refer/investigate.

### **1.4 Routine investigations, first visits and following visits**

(a) Body weight should be recorded at each visit when BP is measured.

(b) Urine dipstick analysis for protein, blood and glucose should be done.

If normal, repeat every 12 months.

If abnormal, repeat at the next visit. Then, if protein > 2+ and/or haematuria > 1+ refer/investigate.

If glycosuria and/or diabetic symptoms (polyuria, polydipsia) are present, start dietary control. If diabetic symptoms persist for two months, refer/investigate.

### **1.5 Special investigations**

Should ideally be assessed by medical practitioners.

- (a) If blood-testing facilities are available in the primary health care setting (e.g. urea, creatinine, potassium, glucose), use them in conjunction with dipstick analysis as part of the full investigation of the hypertensive patient by a general practitioner.
- (b) If ECG and chest X-rays are available, these should be obtained as part of the full investigation of the hypertensive patient by a general practitioner.

### **2.1 When to treat (adults aged 18 years)**

#### **2.1.1 DBP 90 - 99 mmHg and/or SBP 140 - 169 mmHg**

Start lifestyle modification and patient education.

- (a) Weight reduction in the overweight patient.

## **2. TREATMENT OF HYPERTENSION**



- (b) Salt restriction (i.e remove salt cellar or Aromat from the table, avoid processed foods, gradually reduce additional salt in food preparation) with increased potassium intake from fresh fruits and vegetables.
- (c) Reduce alcohol intake to no more than two standard drinks per day. Stop alcohol consumption if possible.
- (d) Follow a prudent diet (low fat, high fibre and unrefined carbohydrates, with adequate vitamins and trace elements).
- (e) Regular moderate physical activity (e.g 30 minutes walking 3 - 5 times a week).
- (f) Stop smoking.

Repeat BP measurement monthly for six months.

If DBP is still 90 - 99 mmHg and/or systolic is still 140 - 169 mmHg after six months, with NO major risk factors, continue lifestyle modification. Review annually, ensuring the patient is not lost to follow-up.

If DBP is still  $\geq$  90 mmHg and/or systolic is  $\geq$  140 mmHg after six months with at least ONE major risk factor (see section 1.2 B(a)), start drug treatment while continuing lifestyle modification.

*2.1.2 DBP 100 - 114 mmHg and/or SBP 170 - 199 mmHg*

Start lifestyle modification and repeat BP after two weeks.

If DBP is still 100 - 114 mmHg and/or SBP is still 170 - 199 mmHg, start drug treatment while continuing lifestyle modification.

*2.1.3 DBP  $\geq$  115 mmHg and/or SBP  $\geq$  200 mmHg*

Keep the patient in the clinic and repeat BP after one hour at rest.

If the second DBP and/or SBP reading is also  $\geq$  115 mmHg and/or  $\geq$  200 mmHg, start drug therapy and lifestyle modification together and refer/investigate within one week.

*2.1.4 DBP 130 mmHg or more*

If malignant hypertension is suspected, it needs urgent referral for hospitalisation on the same day, and immediate initiation of nifedipine therapy as required.

*2.1.5 Isolated systolic hypertension, with DBP  $<$  90 mmHg*

This condition carries risk in its own right and should be managed according to the guidelines.

## 2.2 Drug treatment

### Step 1

Low-dose hydrochlorothiazide (12.5 - 25 mg once a day).

Review after three months.

### Step 2

Add one of the following agents to the thiazide if blood pressure is not controlled after three months with Step 1.

- \* *reserpine*  
Dose: 0.1 mg daily  
(Precaution: depressed patients)
- \* *a beta-adrenergic blocking agent*  
(Precaution: asthma, [contra-indicated] chronic obstructive pulmonary disease, heart failure, diabetes, hyperlipidaemia)
- \* *a calcium channel blocker*  
(Long-acting preferred)  
(Precaution: heart failure, low doses in the elderly)  
Nifedipine for severe hypertension.
- \* *an ACE Inhibitor*  
(Contra-indication: women at risk for pregnancy).

If Step 2 fails to control the hypertension after three months, move to Step 3.

Step 3

- (a) After reserpine or beta-adrenergic blocking agent:  
Add calcium channel blocker or ACE inhibitor.
  
- (b) After calcium channel blocker or ACE inhibitor:  
Add a third agent from Step 2 drugs.  
If uncontrolled after two months, and all possibilities and responses have been checked, refer/investigate.

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UNCONTROLLED (REFRACTORY)  
HYPERTENSION

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Possibility	Response
1. Patient is not compliant	1. Check drug compliance
2. Failure to use diuretics	2. Check medication
3. 'Reactive' hypertension	3. Exclude 'reactive' hypertension with serial measurements every three minutes for at least 15 minutes
4. Secondary hypertension	4. Exclude secondary causes of hypertension
5. Lifestyle	5. Check lifestyle risk factors listed in PHC Guidelines
6. Patient is taking pressor drugs	6. Check medication for * pressor drugs * weight-reduction drugs * non-steroidal anti-inflammatory drugs * steroids, including oral contraceptives, * sympathomimetic decongestants

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If the blood pressure is still refractory, refer

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### **Drug treatment in specific cases**

- (a) Pregnancy: Methyldopa 250 - 500 mg three times a day. Aspirin 75 mg daily to prevent eclampsia after 12 weeks' gestation.
- (b) Diabetes mellitus: ACE inhibitor.
- (c) Severe hypertension (DBP  $\geq$  115 mmHg): nifedipine.

### **3. COMMUNICATION WITH HYPERTENSIVE PATIENTS**

- One-to-one communication
- Group education

People with hypertension have a right to information concerning the status and progress of their condition.

Effective honest and open two-way communication between the care provider and the patient is critically important in the management of chronic lifelong conditions. Acquisition of communication and counselling skills by health professionals is a must.

Empowerment of the patients to actively become involved in the management of their hypertension is the major objective.

- (a) Teach patients the distinction between having a risk factor and having a disease.
- (b) Teach patients to understand hyper-

tension and its consequences if not treated adequately.

- (c) Inform patients of their BP reading at every visit and inform them if it is controlled or otherwise.
- (d) Teach patients to tell any medical practitioner they visit of their hypertension and what drugs they are taking. Encourage them to request a BP measurement at each visit.
- (e) Reassurance may be needed for patients with mild hypertension who have an excessive fear of strokes or other consequences of hypertension.
- (f) Patients must know the name, strength and dose of the drug(s) prescribed, the frequency of dosing and the necessity of regular ongoing use. Ensure patients know this at every visit.
- (g) Ask patients to return drug containers, even if they are empty, at each visit.
- (h) Tell patients to take the morning dose on the day of each visit to the health service.
- (i) Repeat importance of lifestyle modification at each visit.
- (j) Support systems for the patients regarding self-care, emotional needs, cultural differences, discrimination, etc. need to be established.

**4. WHEN PROFESSIONAL CLINICAL NURSE SHOULD REFER HYPERTENSIVE PATIENTS**

**Compliance improvement**

It is essential to ensure that the patient understands the importance of compliance with the treatment regimen. Compliance should be checked and reinforced frequently. Patient education and single daily dose regimens improve compliance.

- (a) URGENT referral: When 'malignant' hypertension is suspected.

DEFINITION: DBP  $\geq$  130 mmHg with target organ damage (e.g. cardiac failure, renal disease, etc.) and symptoms (visual or cerebral disturbances, e.g. severe headaches), immediately start nifedipine 5 mg orally and repeat 6-hourly. Refer urgently for hospital admission.

- (b) If DBP  $\geq$  115 mmHg or SBP  $\geq$  200 mmHg and the patient is asymptomatic, start drug therapy — hydrochlorothiazide and nifedipine. Refer within a week.

- (c) If target organ damage is present.

- (d) In case of 'refractory hypertension' which is defined as BP inadequately controlled after two months on Step 3 drugs.

NB: Check compliance before reaching this conclusion.

- (e) If severe side effects of drugs develop.
- (f) If the hypertensive patient is pregnant, REFER TO DOCTOR OR APPROPRIATE OBSTETRIC SERVICES.
- (g) The following hypertensive patients should be referred:
  - Angina, post-myocardial infarction or stroke.
  - Target organ damage.
  - Diabetes mellitus.
  - Patients aged 18-30 years.
  - Patients with abnormal urinary dipstick results.
  - Children with hypertension.

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NORMAL BLOOD PRESSURE LEVELS FOR CHILDREN

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Age (years)	Blood pressure (mmHg)	
	SBP	DBP
0 - 1	100	65
1 - 3	110	65
3 - 7	120	70
7 - 14	130	75

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The aim of therapy is to achieve and maintain an ideal level of blood pressure of DBP 90 - 95 mmHg and SBP 140 - 160 mmHg, with minimal, if any, side effects.

In the elderly, or in severe hypertension, it is prudent to lower the BP gradually.

In the patients with end organ damage,

**5. TARGET BP FOR HYPERTENSIVE PATIENTS**



**6. ONGOING  
MANAGEMENT**

co-existing risk factors, or diabetes, the target blood pressure should be stricter, i.e < 140/90 mmHg, irrespective of the baseline blood pressure level.

(a) Dose titration or stepwise increase should be carried out after three months on that dose or step.

(b) Once a stable target blood pressure is achieved, follow-up blood pressure measurement should be performed every three to six months.

(c) Drug dose should be reduced if the patient presents with symptoms of postural hypotension, i.e. dizziness or SBP too low on standing.

(d) Consider reduction of the anti-hypertensive drugs if hypertension is well controlled for one year.

**ETHICAL ASPECTS OF A HYPERTENSION CONTROL PROGRAMME**

People with hypertension have a right to the highest quality of life possible and they should be helped to achieve this.

Resources should be used effectively, not only because of the projected increase of the burden of hypertension and related complications on the economic, social and occupational life of a person, but also because of the constraints it places on the social and health services of our country.

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