

# **CHANDIGARH HEALTHY HEART ACTION PROJECT**

**MANUAL FOR DOCTORS**

## **ADAPTED WHO CVD RISK MANAGEMENT PACKAGE**

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**WHO INDIA & GOI BIENNIUM PROJECT  
(2004-2005)**

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Protocol for counselling on cessation of tobacco use

Patient record card

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# **WHO CVD-RISK MANAGEMENT PACKAGE**

## **for low – and medium – resource settings**

Appropriate assessment and management of cardiovascular risk is vital to prevent fatal and non-fatal heart attacks and strokes and to improve health outcomes in individuals at high risk of cardio-vascular events. Those at high cardiovascular risk include patients with established coronary heart disease and cerebrovascular disease as well as those with risk factors. These risk factors such as hypertension, diabetes, smoking, high blood lipids, physical inactivity, obesity and a positive family history often occur together and need to be treated in a comprehensive manner.

The 'WHO CVD – Risk Management Package' has been designed to make the assessment and management of cardiovascular risk feasible and affordable in low and medium resource settings. It consists of clinical protocols and can be applied in three scenarios with hierarchical resource levels and is sufficiently flexible to be adapted to diverse health care facilities.

# Introduction

Cardiovascular disease (CVD) is a leading cause of global morbidity and mortality and is responsible for one-in-three deaths. The majority of the 32 million individuals who develop heart attacks and strokes every year have one or more cardiovascular risk factors: hypertension, diabetes, smoking, high blood lipids or physical inactivity. Most of these CVD events are preventable if meaningful action is taken against these risk factors. Too frequently, however, the focus is on single risk factors, rather than on comprehensive cardiovascular risk. For CVD prevention and control activities to achieve the greatest impact, a paradigm shift is required from the “treatment of risk factors in isolation” to “comprehensive cardiovascular risk management”. To facilitate this shift, the World Health Organisation (WHO) developed this CVD-Risk management package through an iterative process with collaborating experts.

In addition to the above, the package:

- Enables cardiovascular risk management (in low-resource settings), through affordable approaches and rational resource allocation;
- Promotes evidence-based non-pharmacological treatment and the use of cost-effective generic drugs for managing cardiovascular risk;
- Empowers patients and their families to cope with a long-term illness through self-management protocols; Informs policy makers of the need and feasibility of managing cardiovascular risk in less well-resourced settings.

## Overview of the WHO CVD-Risk Management Package

The package has been designed primarily for the management of cardiovascular risk in individuals detected to have hypertension through opportunistic screening. However, it could be adapted for use with diabetes or smoking as entry points. The package is meant to be implemented in a range of health-care facilities in low – and medium – resource settings, in both developed and developing countries, and for this reason it has been designed for three scenarios that reflect the commonly encountered resource availability strata in such settings. The minimum conditions that characterize the three scenarios, in terms of the skill-level of the health worker and the diagnostic and therapeutic facilities and health services available, are described in Table 1. Before implementing the package, the health-care centres in primary, secondary and tertiary health-care levels should be categorized into one of the three scenarios, depending on the level of available facilities (See Table 1). Thereafter, the respective protocols and referral pathways should be used for CVD risk assessment and management. While the basic elements of the package remain the same across the three scenarios, the specific thresholds for clinical intervention differ across the three resource settings according to the level of personnel and facilities available. Furthermore, given the variability of conditions across countries and/or geographical areas, the tools of the package may need to be adapted to local needs.

**Table 1 : Characteristics of the three scenarios in the WHO CVD – Risk Management Package**

<b>Resource Availability</b>	<b>Scenario One</b>	<b>Scenario Two</b>	<b>Scenario Three</b>
Human resources	Non physician health worker	Medical doctor or specially trained nurse	Medical doctor with access to full specialist care
Equipment	Stethoscope Blood pressure measurement device  Measuring tape or weighing scale  Optional: test tubes, holder, burner, solution or test strips for checking urine glucose	Stethoscope  Blood pressure measurement device  Measuring tape or weight scale  Test tubes, holder, burner, solutions or test strips for checking urine glucose and albumin	Stethoscope  Blood pressure measurement device  Measuring tape and weighing scale  Electrocardiograph  Ophthalmoscope  Urine analysis  Blood analysis: fasting blood sugar, electrolytes, creatinine, cholesterol and lipoproteins
Generic drugs	Essential: thiazide diuretics  Optional: metformin (for refill)	Thiazide diuretics  Beta blockers  Angiotensin converting enzyme inhibitors  Calcium channel blockers (sustained release formulations)  (Reserpien and methyldopa if the above antihypertensives are unavailable)  Aspirin  Metformin (for refill)	Thiazide diuretics Beta blockers  Angiotensin converting enzyme inhibitors  Calcium channel blockers (sustained release formulations)  (Reserpine and methyldopa if the above antihypertensives are unavailable)  Aspirin  Insulin  Metformin  Glibenclamide

			<p>Statins (if affordable)</p> <p>Angiotensin receptor blocker</p> <p>(if affordable)</p>
Other facilities	<p>Referral facilities</p> <p>Maintenance and calibration of blood pressure measurement devices</p>	<p>Referral facilities</p> <p>Maintenance and calibration of equipment</p>	<p>Access to full specialist care</p> <p>Maintenance and calibration of equipment</p>

## Contents of the WHO CVD – Risk Management Package

Some of the key components of the package are:

- The **core module**. This contains easy-to-follow protocols for assessing and managing cardiovascular risk, and for counseling on diet, physical activity and smoking cessation in the three scenarios.
- A **training manual** contains protocols for training health-care providers to implement the package (separate publication).
- The **self-management module** is a collection of educational materials and patient self-monitoring protocols, to help patients and families manage cardiovascular risk (separate publication).

### Core module content

- **Scenario One : (Non Physician health worker)**
  - Protocol for assessment and management of cardiovascular risk.
  - Protocols for counseling on diet, physical activity and cessation of tobacco use.
  - Patient record card.
- **Scenario Two : (Medical doctor or specially-trained nurse)**
  - Protocol for assessment of cardiovascular risk.
  - Protocol for management of cardiovascular risk.
  - Protocols for counseling on diet, physical activity and cessation of tobacco use.
  - Patient record card.
- **Scenario Three : (Medical doctor with access to full specialist care)**
  - Protocol for assessment of cardiovascular risk.
  - Protocol for management of cardiovascular risk.
  - Protocol for management of cardiovascular risk in diabetics.
  - Protocols for counseling on diet, physical activity and cessation of tobacco use.
  - Patient record card.

# Scenario One

## Protocols applicable for implementation of the Package

1. Protocol for CVD-Risk Assessment and Management
2. Protocol for counselling on diet and physical activity
3. Protocol for counselling on cessation of tobacco use
4. Patient record card

The health care facility should be tobacco-free and support a tobacco-free environment.

- Care of patients with cardiovascular disease or very high levels of blood pressure or other complications related to hypertension should be accomplished at a better equipped facility. Refill metformin in well-controlled diabetics and refer for periodic blood sugar and specialist advice.

**Abbreviations:**

SBP = Systolic blood pressure (mmHg)

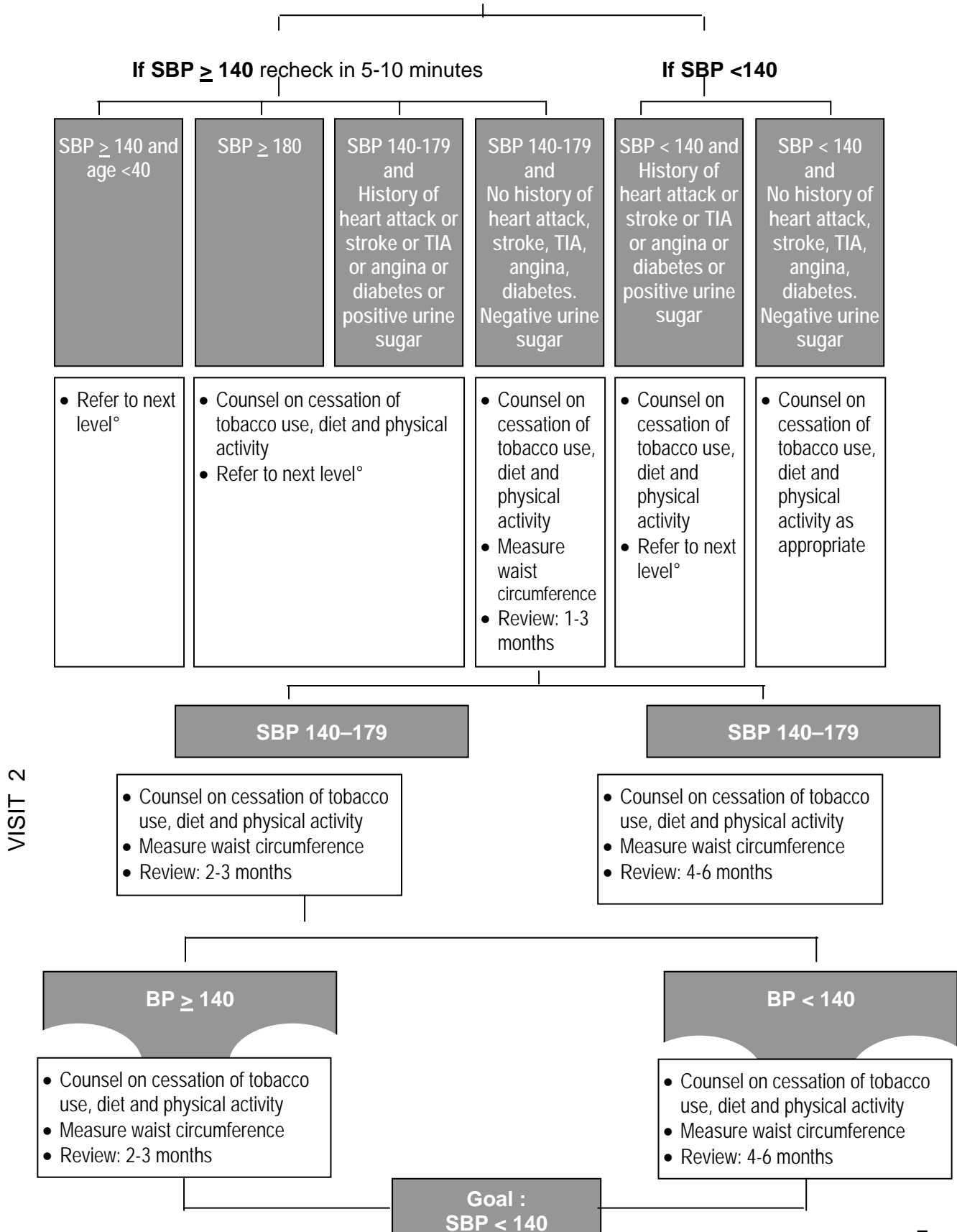
TIA = Transient ischemic attack

# Scenario One: Protocol for CVD-Risk Assessment and Management (Non physician health worker)

Measure SBP in all adults >30 years

Take history of heart attack, angina, stroke, TIA, diabetes

Check urine sugar if facilities available



VISIT 2

**Scenario One: Protocol for counselling on diet, physical activity  
(Non physician health care worker)**

**Counsel your patient to**

**Eat a “heart healthy” diet**

**Stop tobacco use  
(see protocol  
page 11)**

**Take regular  
physical activity**

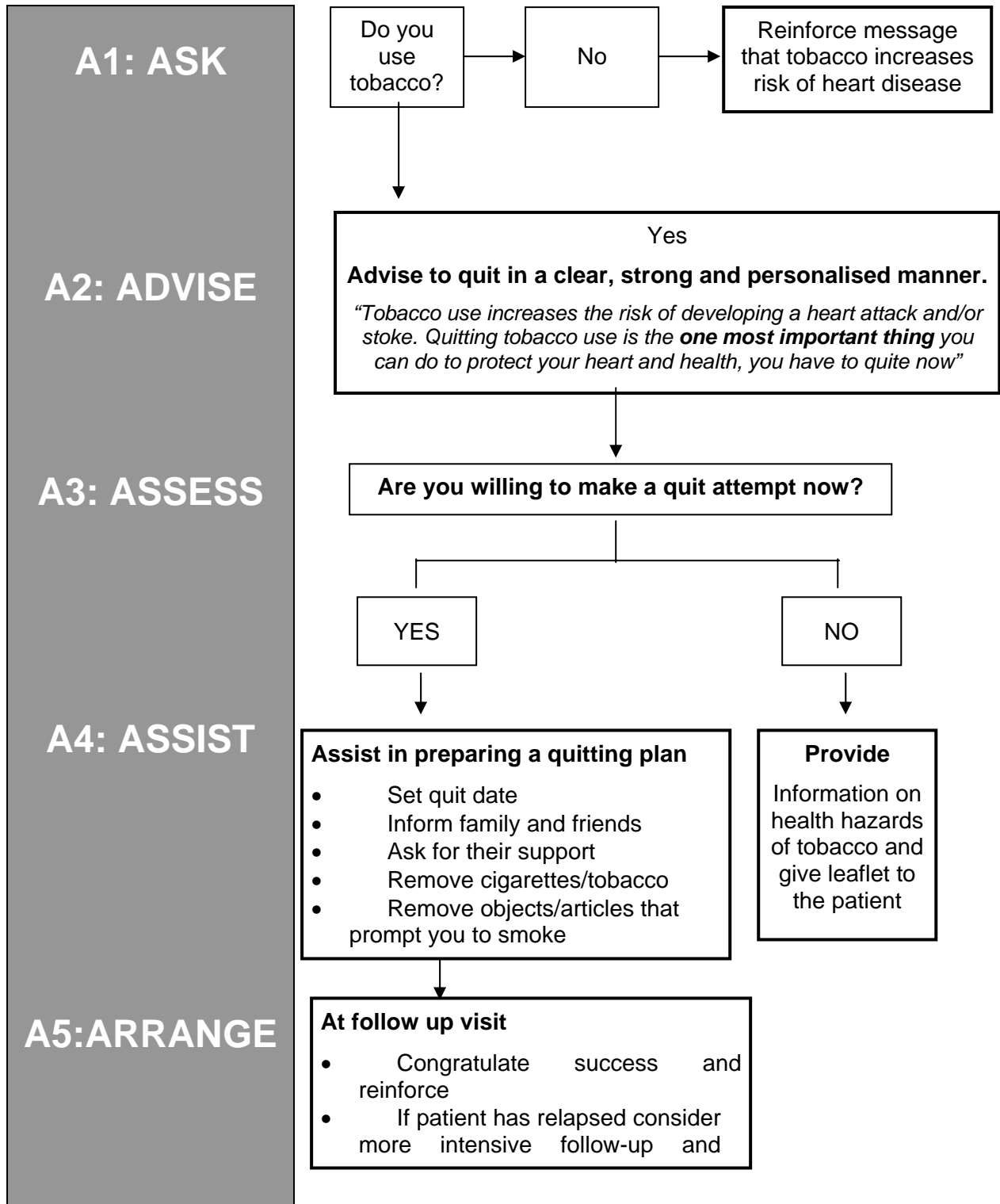
- SALT (sodium chloride)**  
Restrict to less than **5 grams** (1 teaspoon level) per day  
Reduce salt when cooking, limit processed and fast foods
- FRUITS AND VEGETABLES**  
**5 servings** (400-500 grams) of fruits and vegetable per day.  
1 serving is equivalent to 1 orange or apple or mango or banana or 3 tablespoons of cooked vegetables.                   or  
2 Katories of vegetables + Salad + 1 fruit or 3 katories of vegetables if fruit not available.
- FATTY FOOD**  
Limit fatty meat, dairy fat and cooking oil (less than two tablespoons per day) 500-900gm per person per month.  
Replace palm or coconut oil with olive/soya/ corn/rapeseed/safflower oil.  
Oil should be used in rotation/ mixture of oil.  
Replace other meat with chicken (without skin)
- FISH**  
Eat fish at least **three** times per week, preferably oily fish such as tuna, mackerel, salmon. Fried fish to be avoided. Preferably, it should be roasted.
- Any dry fruit but not more than 6 pieces per day. Walnut is the best.
- ALCOHOL**  
No alcohol intake.

**Remember DPT :**  
Diet, Physical activity, No Tobacco.

- PHYSICAL ACTIVITY**  
Progressively increase moderate physical activity such as brisk walking, cycling to at least **30** minutes per day

## Scenario One: Protocol for counselling on cessation of tobacco use The 5 steps – 5As

(Non physician health care worker)





**Please complete this part only if patient needs referral**

Date .....

Reason for referral .....

.....

Current medications .....

## **Questionnaire to determine probable angina, heart attack, stroke, TIA**

### **Angina or heart attack**

1. Have you ever had any pain or discomfort or any pressure or heaviness in your chest?

**Yes**     **No**

If no go to Q8, if yes proceed to the next question:

2. Do you get the pain in the center of the chest or left chest or left arm?

**Yes**     **No**

If no go to Q8, if yes proceed to next question:

3. Do you get it when you walk at an ordinary pace on level or when you walk uphill or hurry?

**Yes**     **No**

4. Do you slowdown if you get the pain while walking?

**Yes**     **No**

5. Does the pain go away if you stand still or if you take a tablet under the tongue?

**Yes**     **No**

6. Does the pain go away in less than 10 minutes?

**Yes**     **No**

7. Have you ever had a severe chest pain across the front of your chest lasting for half an hour or more?

**Yes**     **No**

***If the answer to questions 3 or 4 or 5 or 6 or 7 is yes patient may have angina or heart attack and needs referral.***

#### **Stroke and TIA**

8. Have you ever had any of the following: difficulty in talking, weakness of arm and/or leg on one side of the body or numbness on one side of the body?

**Yes**     **No**

***If the answer to question 8 is yes the patient may have had a TIA or stroke and needs referral.***

**PLEASE REFER TO THE TRAINING MANUAL FOR FURTHER INSTRUCTIONS**

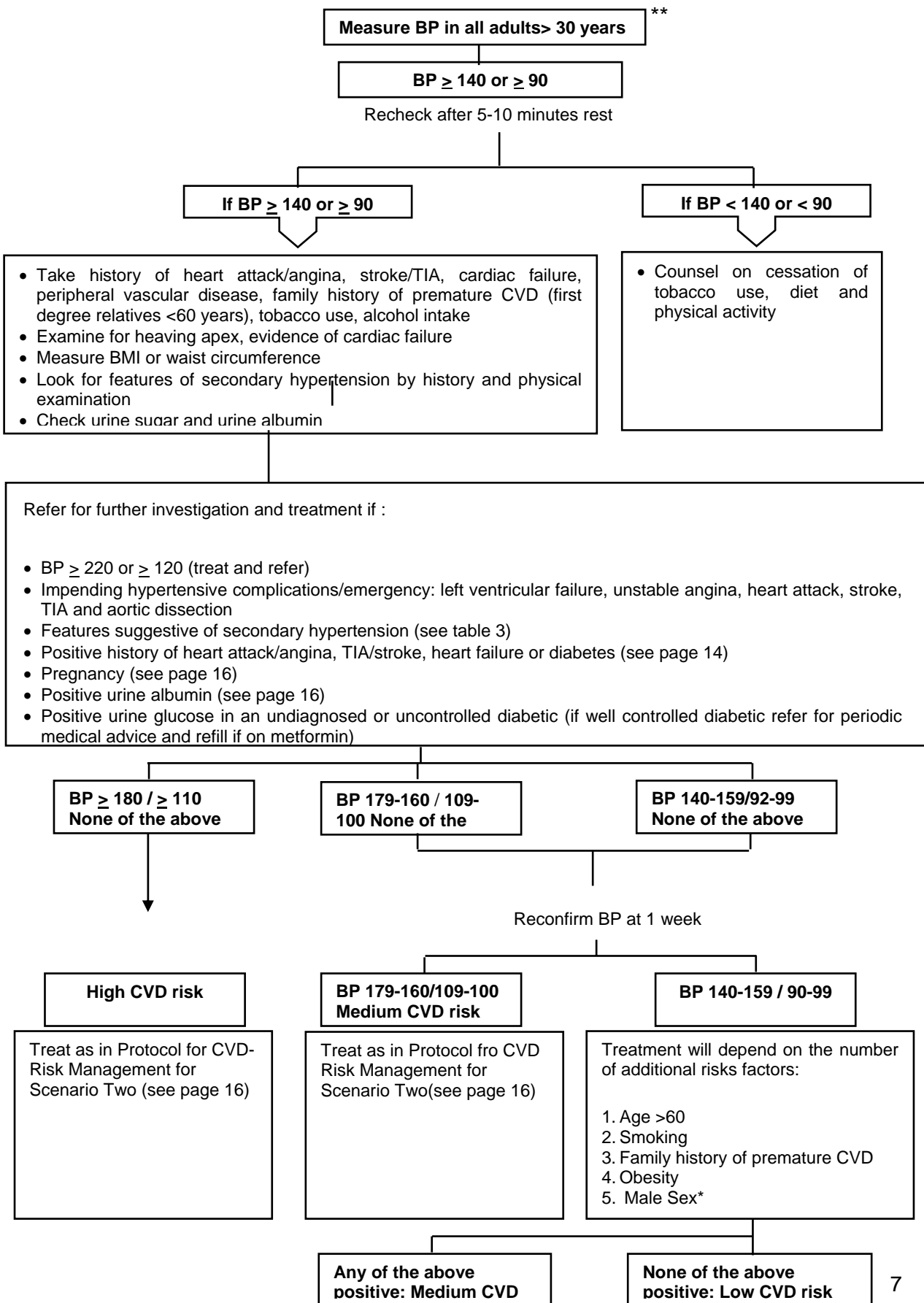
# Scenario Two

## Protocols applicable for implementation of the Package

1. Protocol for CVD-Risk Assessment
2. Protocol for CVD-Risk Management
3. Protocol for counselling on diet and physical activity
4. Protocol for counselling on cessation of tobacco use
5. Patient record card

The health care facility should be tobacco-free and support a tobacco-free environment.

## Scenario Two: Protocol for CVD-Risk Assessment (Medical doctor or specially trained nurse)



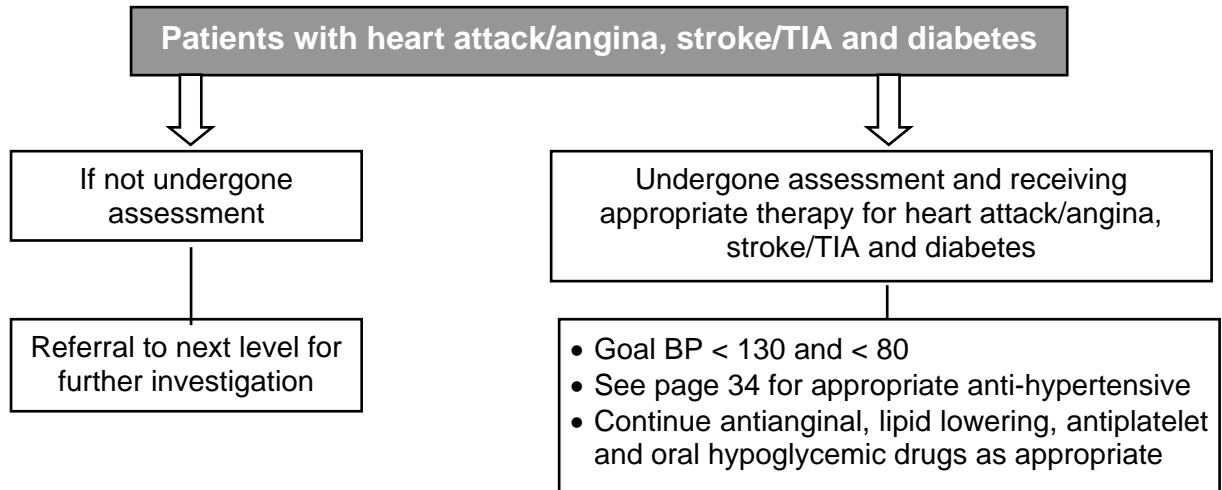
\* in areas where coronary heart disease rates exceed stroke rates

Treat as in Protocol for CVD-Risk Management for Scenario Two (see page 4)

Treat as in Protocol for CVD-Risk Management for Scenario Two (see page 4)

Two (see page 4)

\*\* All the doctors should measure BP in adults >30 years attending OPD atleast once.

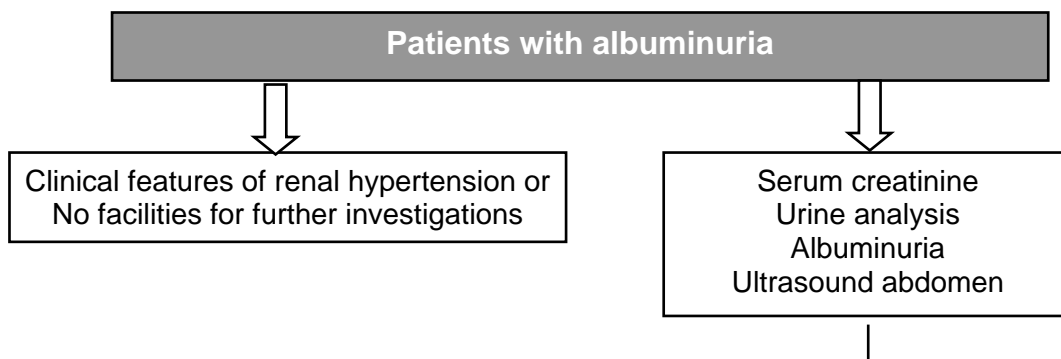


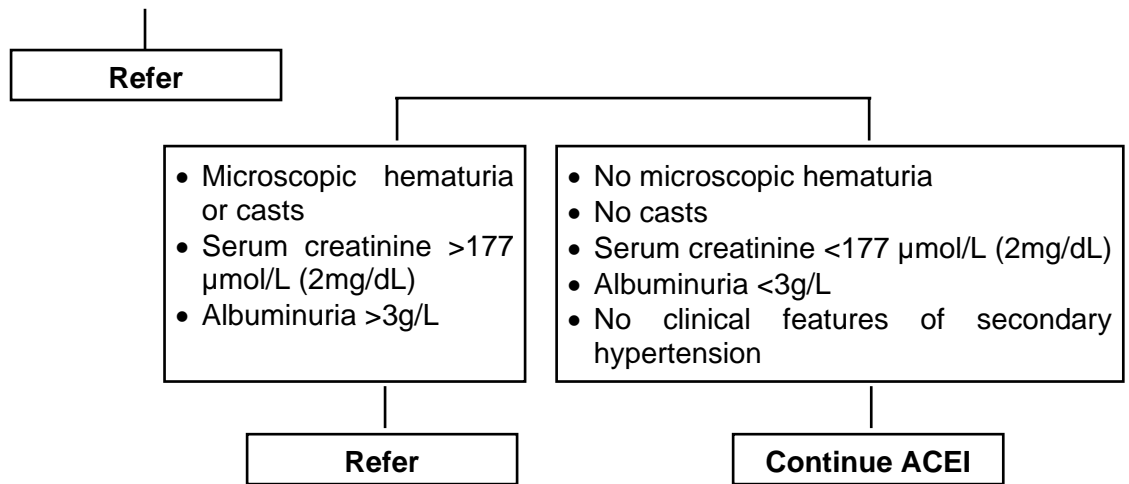
<b>Hypertension in pregnant women</b>		
	<b>Preeclampsia*</b>	<b>Chronic hypertension</b>
Age (years)	Young (<20)	Older (>30)
Parity	Primigravida	Multipara
Onset	After 20 weeks of pregnancy	Before 20 weeks of pregnancy
Weight gain and edema	Sudden	Gradual
Proteinuria	Present	Absent

\* Preeclampsia may also occur in women who already have chronic hypertension

**Urgent Referral**

- Drug of choice: Methyldopa
  - Other drugs that can be used: Calcium Channel Blocker Diuretics
- Beta Blockers: (safe and effective in late pregnancy only)
- Contraindicated drugs ACEI and ARB





\* Thiazide diuretic: Hydrochlorothiazide starting dose 12.5 mg (log-dose) to be increased up to 25 mg (maximum dose).

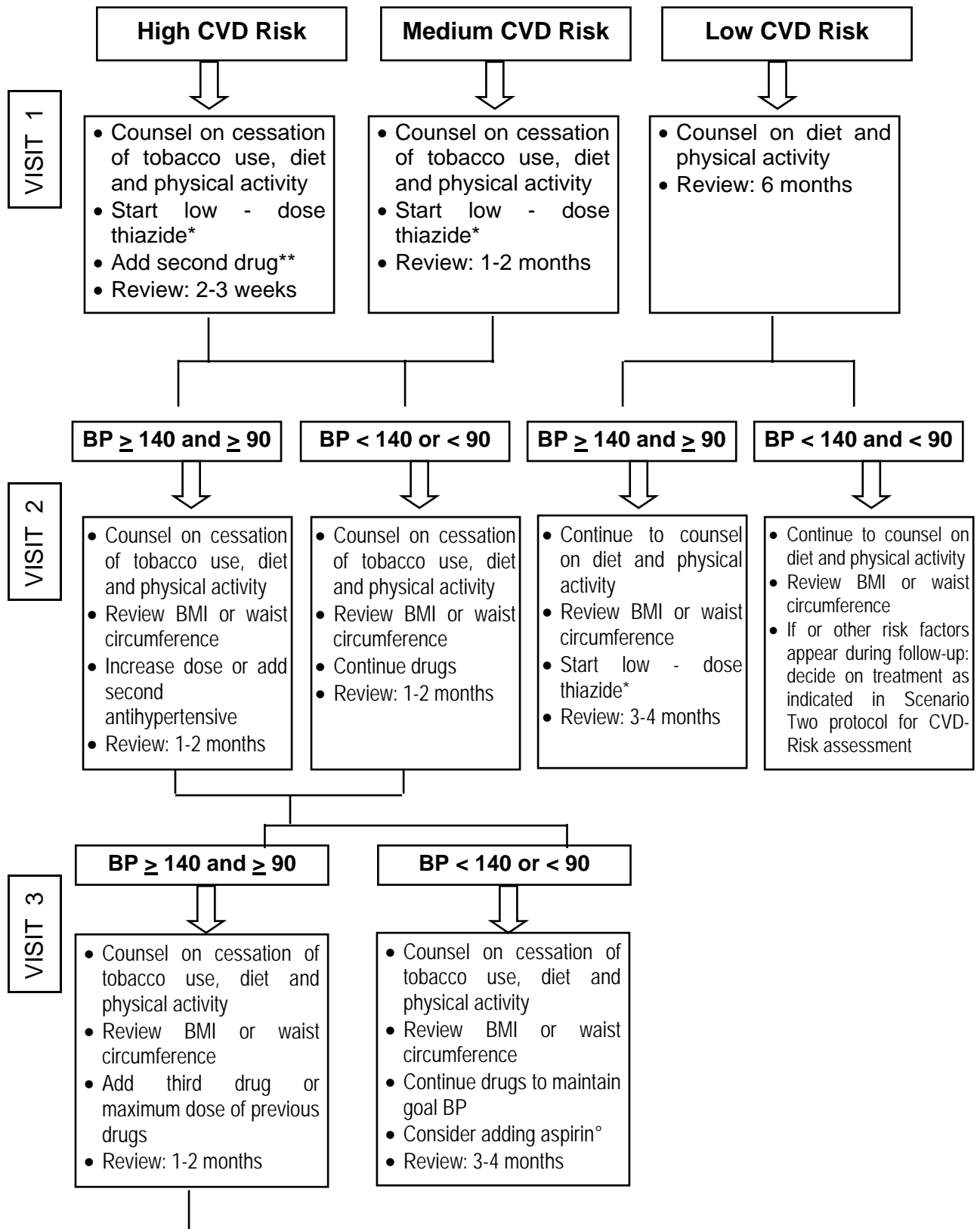
\*\* Second drug option: if no compelling indication, use the cheapest out of beta-blockers or calcium-channel blockers or ACE-Inhibitors.

If drugs given above are not available: use methyldopa or reserpine or fixed dose combination.

° In areas where coronary artery diseases rates exceed stroke rates.

## Scenario Two: Protocol for CVD-Risk Management

(Medical doctor or specially trained nurse)



**If hypertension uncontrolled: consider referral  
(see page 31 for goal BP)**

**Scenario Two: Protocol for counselling on diet, physical activity  
(Medical doctor or specially trained nurse)**

**Counsel your patient to**

**Eat a “heart healthy” diet**

**Stop tobacco use  
(see protocol page 11)**

**Take regular physical activity**

- SALT (sodium chloride)**  
Restrict to less than **5 grams** (1 teaspoon level) per day  
Reduce salt when cooking, limit processed and fast foods
- FRUITS AND VEGETABLES**  
**5 servings** (400-500 grams) of fruits and vegetable per day.  
1 serving is equivalent to 1 orange or apple or mango or banana or 3 tablespoons of cooked vegetables. or  
2 Katories of vegetables + Salad + 1 fruit or 3 katories of vegetables if fruit not available.
- FATTY FOOD**  
Limit fatty meat, dairy fat and cooking oil (less than two tablespoons per day) 500-900gm per person per month.  
Replace palm or coconut oil with olive/soya/corn/rapeseed/safflower oil.  
Oil should be used in rotation/ mixture of oil.  
Replace other meat with chicken (without skin)
- FISH**  
Eat fish at least **three** times per week, preferably oily fish such as tuna, mackerel, salmon. Fried fish to be avoided. Preferably it should be roasted.
- Any dry fruit but not more than 6 pieces per day. Walnut is the best.
- ALCOHOL**  
No alcohol intake.

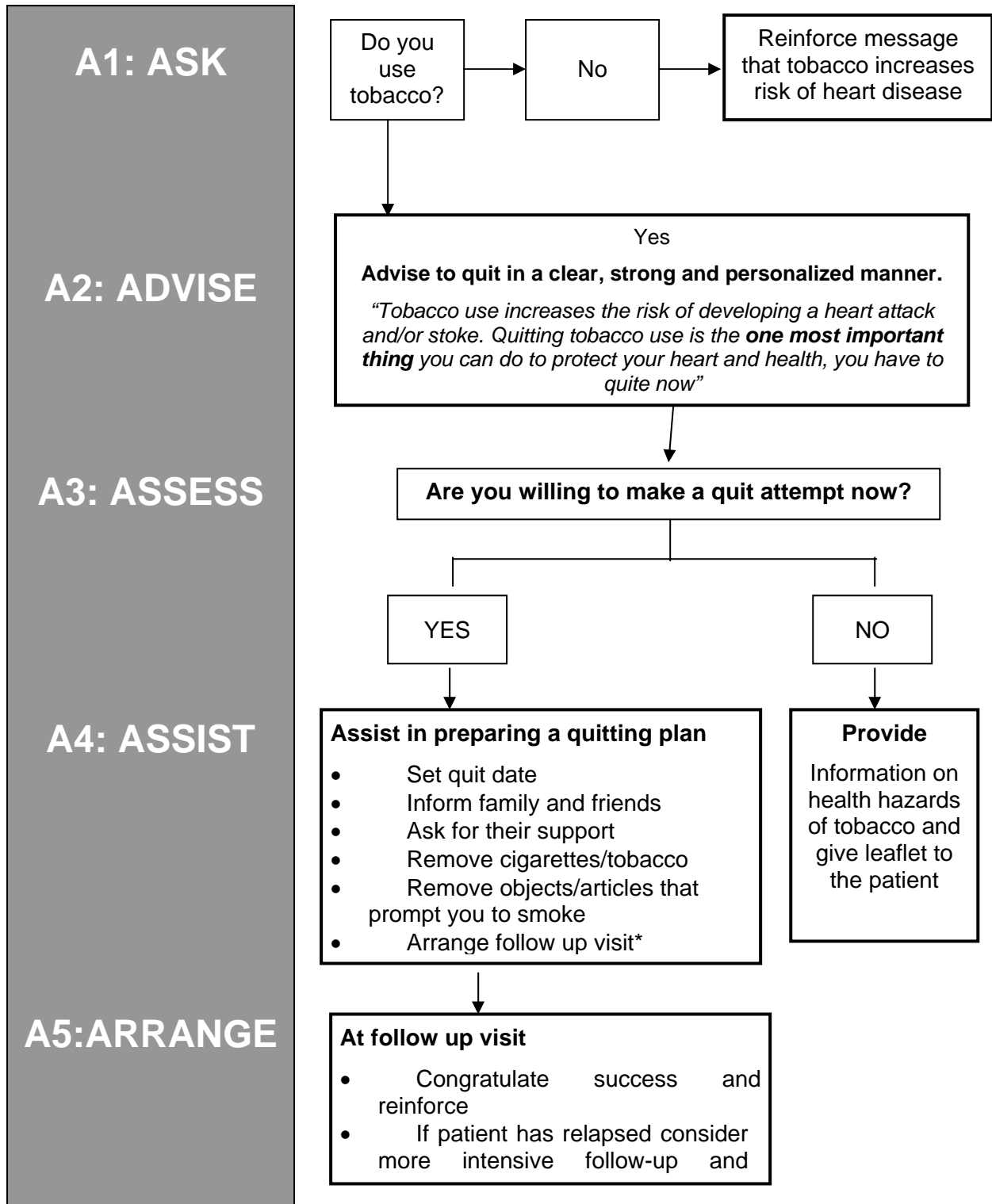
**Remember DPT :**

Diet, Physical activity, No Tobacco.

- PHYSICAL ACTIVITY**  
Progressively increase moderate physical activity such as brisk walking, cycling to at least **30 minutes** per day

## Scenario Two: Protocol for counselling on cessation of tobacco use The 5 steps – 5As

(Medical doctor or specially trained nurse)



\* Ideally second follow-up visit is recommended within the same month and every month thereafter for 4 months and evaluation after 1 year. If not feasible, reinforce counselling whenever the patient is seen for blood pressure monitoring.



Date	Blood pressure (mmHg)	Counselling on diet and physical activity (Yes/No)	Tobacco use (Yes/No)	Counselling on cessation of tobacco use	°BMI/ body weight waist circumference	Type of drug	Drug dosage	Compliance	
								Yes	No

° Indicate kg/pounds and cm/inches

**Please complete this part only if patient needs referral**

Date .....

Reason for referral .....  
 .....

Current medications .....

## Scenario Three

### Tools applicable for implementation of the package in Scenario Three

1. Protocol for CVD-Risk Assessment
2. Protocol for CVD-Risk Management
3. Protocol for CVD-Risk Management in Diabetics
4. Protocol for counselling on diet and physical activity
5. Protocol for counselling on cessation of tobacco use
6. Patient record card

The health care facility should be tobacco-free and support a tobacco-free environment.

**Abbreviations:**

BP = Blood Pressure (all values given in mmHg)

TIA = Transient ischemic attack

FBS = Fasting blood sugar

HbA1c = Glycated Haemoglobin

ECG = Electrocardiogram

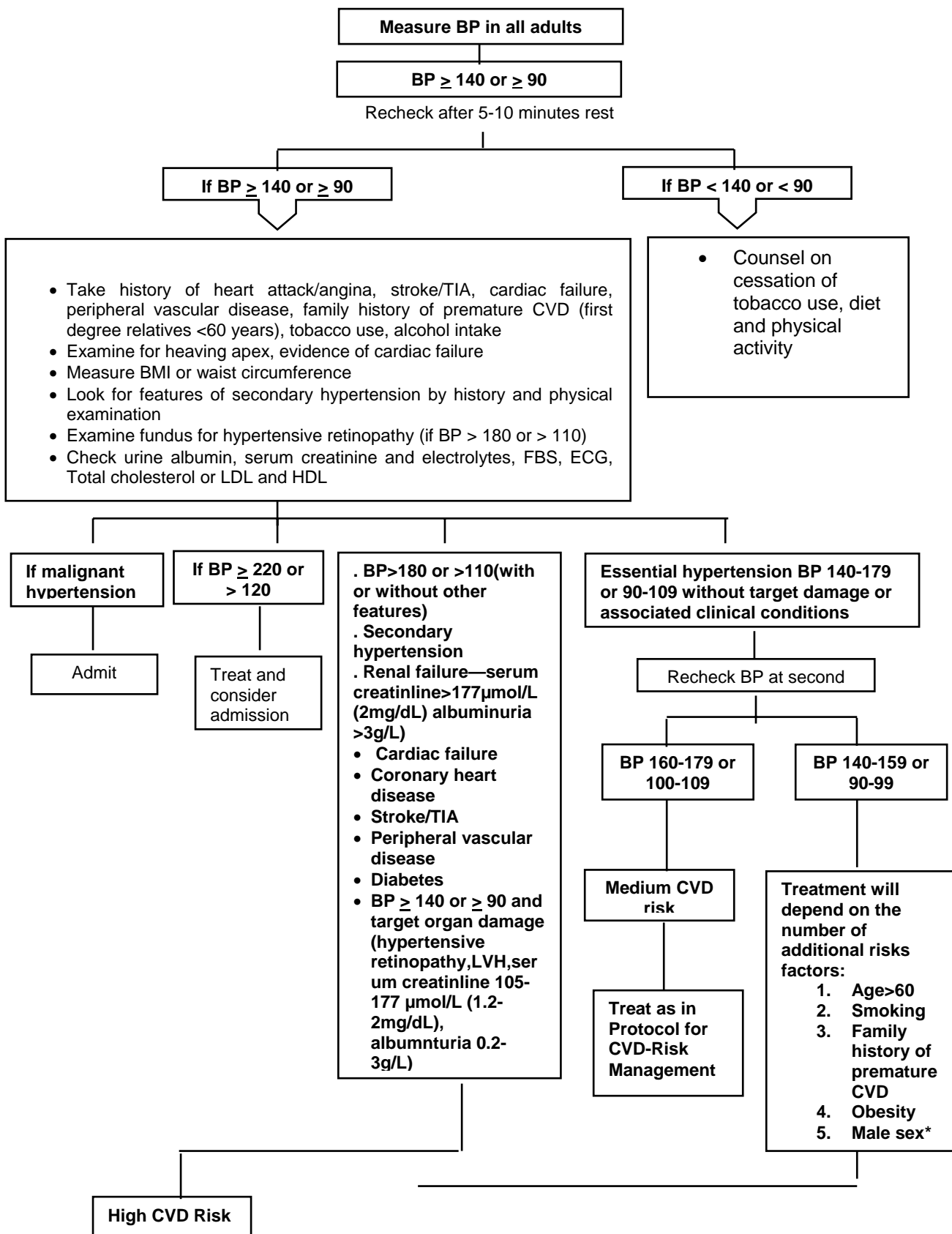
LDL = Low density lipoprotein

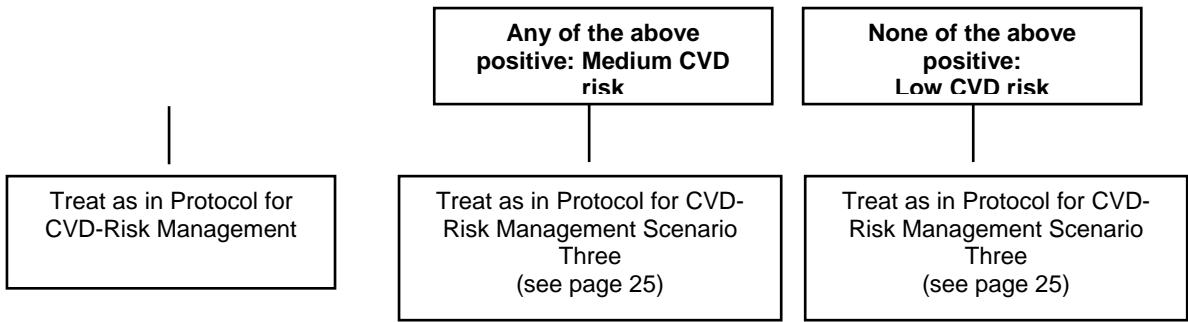
HDL = High density lipoprotein

ACEI = Angiotensin converting enzyme inhibitors

ARB = Angiotensin receptor blocker

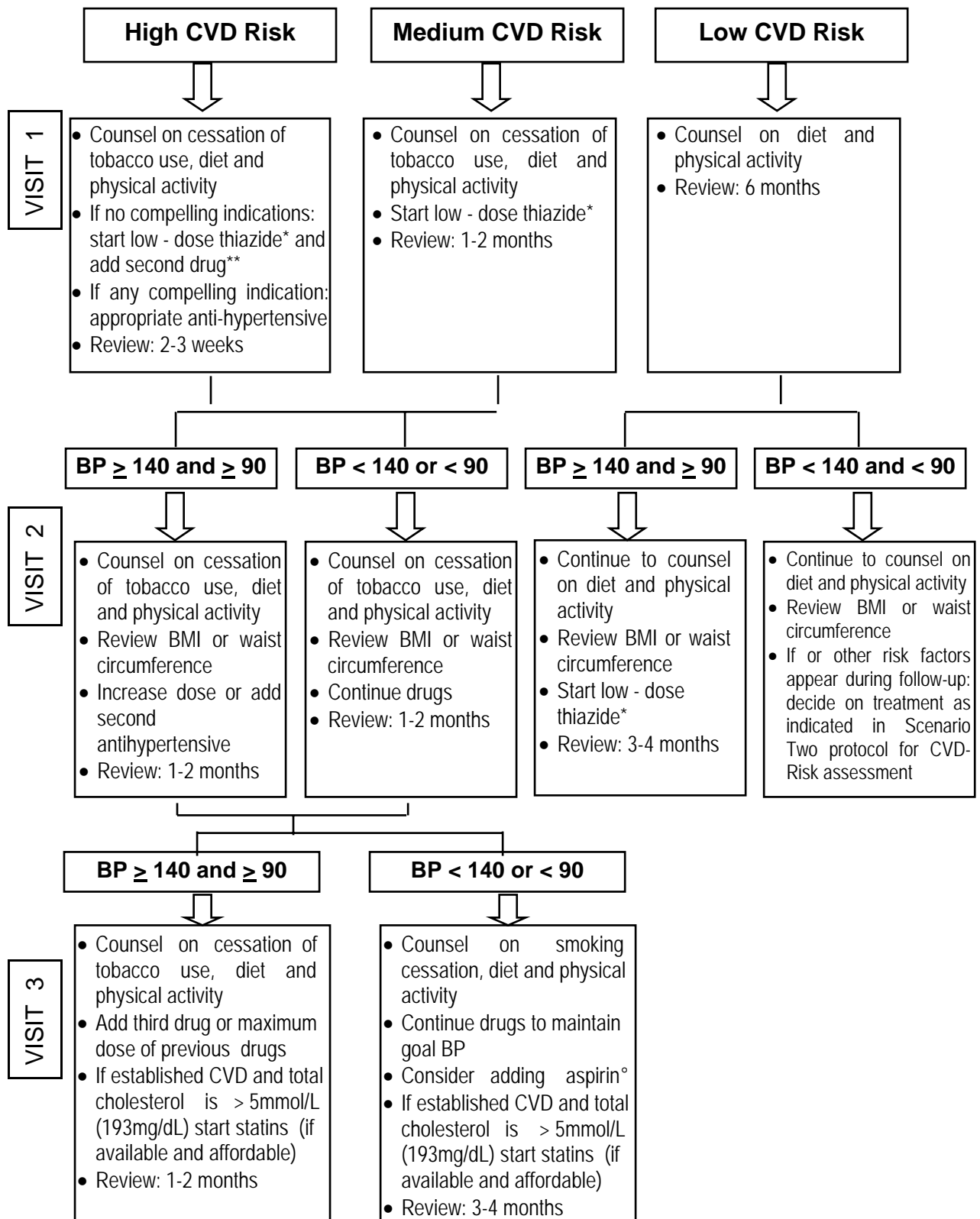
## Scenario Three: Protocol for CVD-Risk Assessment (Medical doctors with access to full specialist care)





## Scenario Three : Protocol for CVD-Risk Management

(Medical doctor with access to full specialist care)



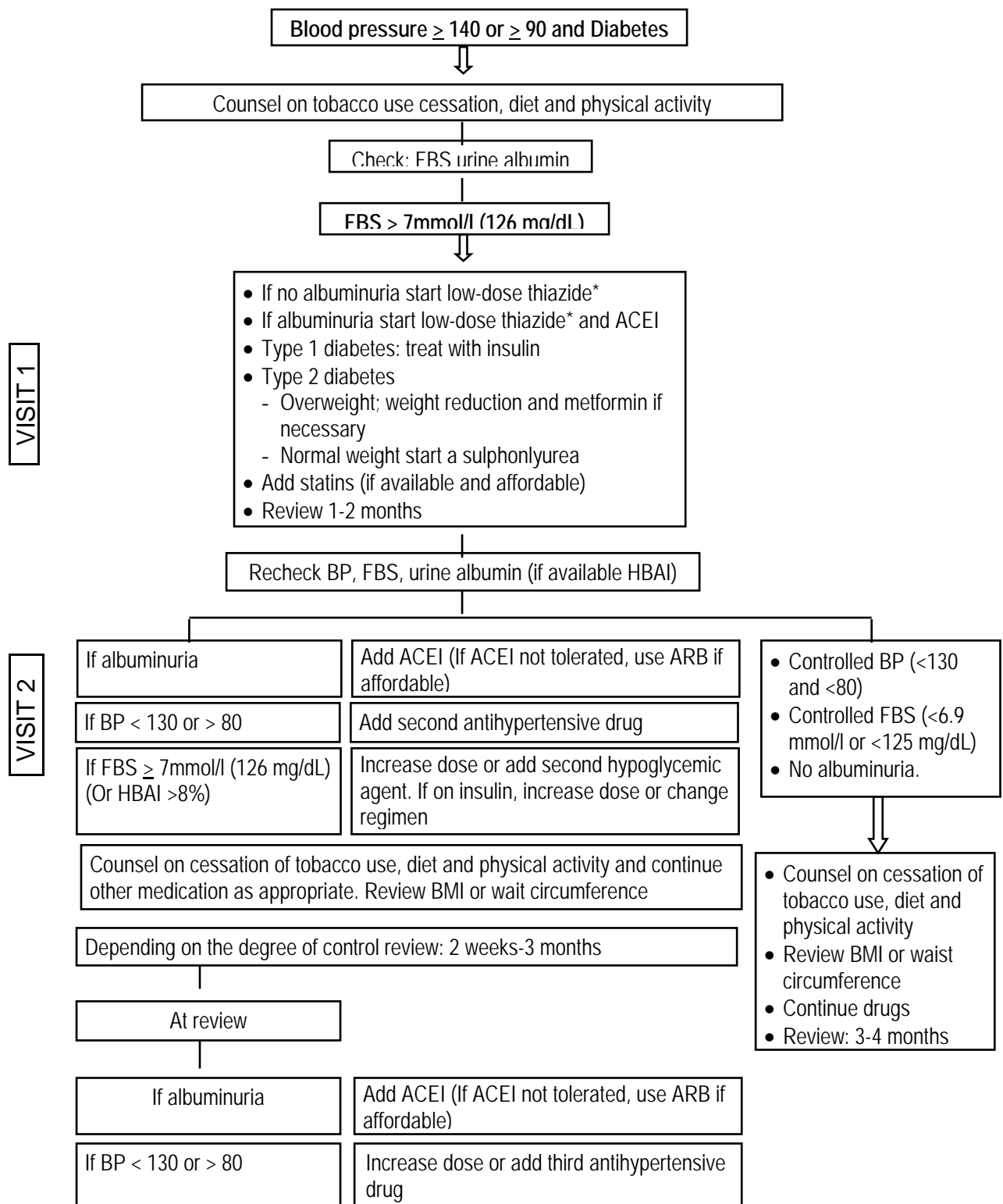
\* Thiazide diuretic: Hydrochlorothiazide starting dose 12.5 mg (low-dose) to be increased upto 25mg (maximum dose)

\*\* Second drug option: use the cheapest out of beta-blockers or calcium-channel blockers or ACE-Inhibitors

If drugs given above are not available: use methyldopa or reserpine or fixed dose combination

° In areas where coronary artery diseases rates exceed stroke rates

## Scenario Three: Protocol for CVD-Risk Management in Diabetics (Medical doctors with access to full specialist care)



VISIT 3

If FBS  $\geq$  7mmol/l (126 mg/dL)  
(Or HBAI >8%)

Maximize dose or add second hypoglycemic agent  
If on insulin, increase dose or change regimen or add short-acting to long-acting insulin

Counsel on cessation of tobacco use, diet and physical activity and continue other medication as appropriate. Review BMI or waist circumference

Depending on the degree of control review: 2 weeks-3 months

## Scenario Three: Protocol for counselling on diet and physical activity

(Medical doctor with access to full specialist care)

### Counsel your patient to

**Eat a “heart healthy” diet**

**Stop tobacco use  
(see protocol  
page 11)**

**Take regular  
physical activity**

- SALT (sodium chloride)**  
Restrict to less than **5 grams** (1 teaspoon level) per day  
Reduce salt when cooking, limit processed and fast foods
- FRUITS AND VEGETABLES**  
**5 servings** (400-500 grams) of fruits and vegetable per day.  
1 serving is equivalent to 1 orange or apple or mango or banana or 3 tablespoons of cooked vegetables. or  
2 Katories of vegetables + Salad + 1 fruit or 3 katories of vegetables if fruit not available.
- FATTY FOOD**  
Limit fatty meat, dairy fat and cooking oil (less than two tablespoons per day) 500-900gm per person per month.  
Replace palm or coconut oil with olive/soya/corn/rapeseed/safflower oil.  
Oil should be used in rotation/mixture of oil.  
Replace other meat with chicken (without skin)
- FISH**  
Eat fish at least **three** times per week, preferably oily fish such as tuna, mackerel, salmon. Fried fish to be avoided. Preferably it should be roasted.
- Any dry fruit but not more than 6 pieces per day. Walnut is the best.
- ALCOHOL**  
No alcohol intake.

**Remember DPT :**

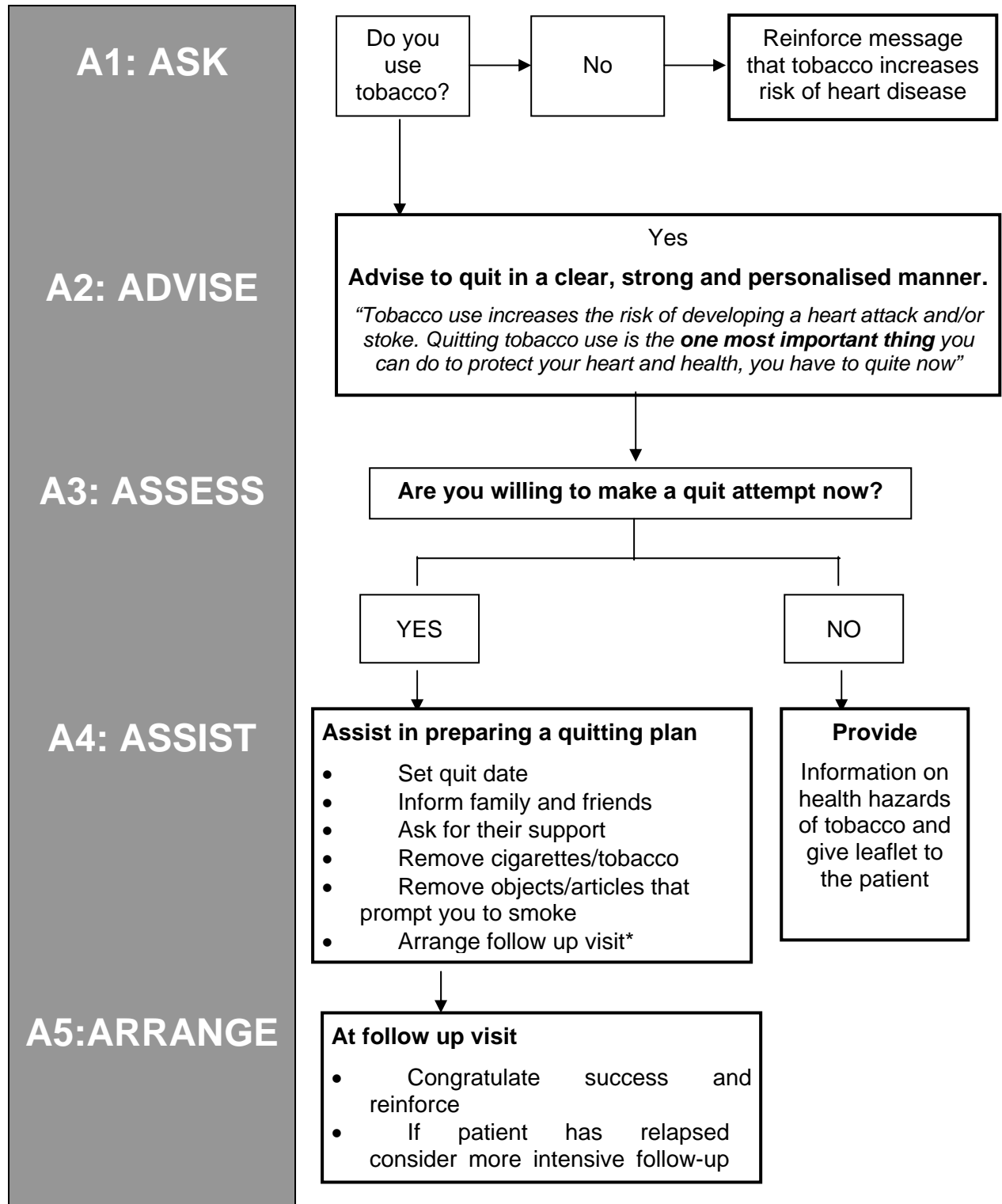
Diet, Physical activity, No Tobacco.

- PHYSICAL ACTIVITY**  
Progressively increase moderate physical activity such as brisk walking, cycling to at least **30 minutes** per day

PLEASE REFER TO THE TRAINING MANUAL FOR FURTHER INSTRUCTIONS

## Scenario Three: Protocol for counselling on cessation of tobacco use The 5 steps – 5As

(Medical doctor with access to full specialist care)



\* Second follow-up visit is recommended within the same month and every month thereafter for 4 months and evaluation after 1 year. If not feasible, reinforce counseling whenever the patient is seen for blood pressure monitoring.

**PLEASE REFER TO THE TRAINING MANUAL FOR FURTHER INSTRUCTIONS**



**Please complete this part only if patient needs referral**

Date .....

Reason for referral .....  
.....

Current medications .....

## Evidence – based recommendations

### Evidence – based recommendations on blood pressure goals

CATEGORY OF PATIENT	GOAL BP	EVIDENCE
Uncomplicated hypertension	<140 and <90 mmHg	Extensive clinical and observational data and limited data from randomized controlled trials
Uncomplicated hypertension with risk factors other than diabetes	<140 and <90 mmHg	Extensive clinical and observational data and limited data from randomized controlled trials
Hypertensive patients with diabetes, coronary heart disease, cerebrovascular disease, peripheral vascular disease or renal disease	<130 and <80 mmHg	Extrapolated from randomized controlled trials

### Evidence – based recommendations on choice of cost-effective drug therapy

RECOMMENDATION	EVIDENCE
In the absence of compelling indications the least expensive of the following classes of drugs should be used to control hypertension as they are equivalent in efficacy and safety:  <ul style="list-style-type: none"><li>• Thiazide diuretics (low dose)</li><li>• Beta-Blocker</li><li>• Calcium channel blocker (sustained-released formulations)</li><li>• Angiotensin converting enzyme inhibitor</li></ul>	Randomized controlled trials

## Evidence – based recommendations on compelling indications for the use of specific antihypertensives

COMPELLING INDICATIONS	PREFERRED DRUG	EVIDENCE
Elderly with isolated systolic hypertension	Diuretic Calcium Channel Blocker	Randomized controlled trials
Renal disease:		
- diabetic nephropathy - non-diabetic	Angiotensin Converting Enzyme Inhibitor	Randomized controlled trials
Cardiac disease:		
- post heart attack - angina - left ventricular dysfunction	Angiotensin Converting Enzyme Inhibitor $\beta$ -blocker $\beta$ -blocker	Randomized controlled trials
- congestive heart failure (diuretics almost always included)	Angiotensin Converting Enzyme Inhibitor $\beta$ -blocker Angiotensin Converting Enzyme Inhibitor	
- left ventricular hypertrophy	Angiotensin Receptor Blocker Spironolactone Angiotensin Receptor Blocker	
Cerebrovascular disease:	Diuretic Angiotensin Converting Enzyme Inhibitor	Randomized controlled trials

# Recommendations on blood pressure measurement devices

- I. When it is not feasible to use validated automatic devices, good quality mercury devices are generally recommended. Provision should be made for servicing and calibration of the devices once a year. Appropriate cuff sizes and adequate training of users are critical to ensure accurate blood pressure measurement. Due precautions need to be taken when servicing and disposing of devices because of mercury toxicity, and the necessary precautions for dealing with mercury spills should be available.
- II. Automated devices should only be used if independently validated devices are available at affordable prices. When arriving at a decision to use automated devices, consideration must be given to the cost and availability of batteries, (usually need replacement after 1000 measurements), annual servicing charges and the durability in addition to the purchase price of the device.
- III. In certain settings aneroid devices may have to be used as they are the least expensive and easily portable. However, they may become inaccurate without the user being aware of it and require calibration every 6 months. Adequate training of users is critical to ensure accurate blood pressure measurement.

For further information, please refer to [www.bmj.com](http://www.bmj.com)

# Useful additional information

**Table 1. Drugs: dosage and contraindications for use**

DRUG	DAILY DOSE	ADVICE FOR PATIENTS	CONTRAINDICATIONS
<b>Thiazide diuretics</b>			
Hydrochlorothiazide	Starting at 12.5mg once daily up to 25mg once daily	Eat fruits and vegetables every day.	Absolute: Gout
<b>Beta blockers</b>			
Propranolol	Starting at 40mg twice daily up to 140mg twice daily		Absolute: Asthma Chronic obstructive pulmonary disease High degree heart block Bradycardia <50/min Raynaud's
Atenolol	Starting at 50mg once daily up to 100mg once daily		Relative: Peripheral vascular disease
<b>Ace-inhibitors</b>			
Enalapril	Starting at 5mg once daily up to 40mg once daily	If persistent cough see the doctor	Absolute: Pregnancy Hyperkalemia
Captopril	Starting at 6.25mg three times daily up to 50mg three times daily		Bilateral renal artery stenosis

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			Relative:
			Proteinuria, renal parenchymal disease (creatinine $\geq$ 2mg/dL use low dose)

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**Ca-channel blockers**

Nifedipine  (sustained release formulations)	Starting at <b>30mg once daily</b> up to <b>120mg once daily</b>		Absolute:  Congestive Heart Failure Aortic Stenosis
Verapamil	Starting at <b>30mg three times</b> <b>daily up to 60mg three times</b> <b>daily</b>		Sino-Atrial Block  Atrio-Ventricular Block  Bradycardia

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DRUG	DAILY DOSE	ADVICE FOR PATIENTS	CONTRAINDICATIONS
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**Nitrates**

Glyceryl trinitrate	Starting at <b>500 micrograms</b> (one sublingual tablet) up to <b>1500 micrograms</b> (three sublingual tablets)	May get headache	None
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Aspirin	Starting at <b>75mg daily</b> up to <b>150mg daily</b>	Should be taken after meals	Absolute:  Peptic ulcer  Relative:  Renal insufficiency Gout
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**Hypoglycemic Agents**

Glibenclamide	Starting at <b>2.5mg twice daily</b> before meals up to <b>5mg twice</b> <b>daily before meals</b>	Meals should not be skipped	None
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Metformin	Starting at 0.5g three times daily with meals up to 1.0g three times daily with meals	Renal damage
		Hepatic disease
		Cardiac failure
		Chronic hypoxic lung disease

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## Table 2. Hypertensives crises: emergencies and urgencies

Hypertensive emergencies are those situation that require urgent blood pressure reduction to prevent or limit organ damage. These patients need urgent referral.

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Hypertensive emergencies:	Unstable angina
	Acute myocardial infarction
	Acute left ventricular failure with pulmonary edema
	Aortic dissection
	Eclampsia
	Hypertensive encephalopathy

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Hypertensive urgencies include those situations in which it is desirable to reduce blood pressure within a few hours, e.g. hypertension with papilledema, progressive target organ complications. Hypertensive urgencies can be managed with oral antihypertensive drugs.

The initial goal of therapy is to reduce BP to between 160-180/100-110 mmHg within 2 hours, and to <160 and <100 by 6 hours. Excessive fall of BP that may precipitate coronary, cerebral and renal ischemia should be avoided.

Diuretics, beta-blockers, ACEI, calcium channel blocker, methyldopa can be used alone or in combination. Sublingual administration of fast-acting nifedipine should be avoided as degree of fall of BP may be too rapid.

**Table 3. Secondary hypertension: causes and clinical features**

CAUSES	CLINICAL FEATURES
Renal diseases:	History of :
Nephropathy	<ul style="list-style-type: none"><li>• Episodes of blood or proteins in the urine, urinary infections, swelling of body</li></ul>
Renal artery stenosis	<ul style="list-style-type: none"><li>• Kidney disease in the family (polycystic kidney disease)</li><li>• Physical examination: abdomen or loin bruit, palpable kidneys</li></ul>
Phaeochromocytoma	<ul style="list-style-type: none"><li>• Episodic symptoms: headache, flushing, sweating</li><li>• High blood pressure occurs in a sudden way</li><li>• Typical general appearance: truncal obesity, stretch marks</li></ul>
Cushing syndrome	<ul style="list-style-type: none"><li>• Weakness, cramps, polyuria</li><li>• Tall stature, typical facies with prominent lower jaw, broad spade shaped hands</li></ul>
Conn syndrome	
Acromegaly	
Coarctation of the aorta	<ul style="list-style-type: none"><li>• High blood pressure in upper limbs but not in lower limbs. Delayed or weak femoral pulses</li></ul>
Drugs	<ul style="list-style-type: none"><li>• Contraceptive pill, anti-inflammatory drugs, steroids, sympathomimetics, nasal decongestants, appetite suppressants, cyclosporine, erythropoietin, liquorice, antidepressants</li></ul>

## References

1. *Reduction of cardiovascular burden through cost-effective integrated management of comprehensive cardiovascular risk.* World Health Organization Geneva 2002.

# **Job Responsibilities of Health Workers and Medical Officers**

## **RESPONSIBILITY OF HEALTH WORKER :**

1. Screening of the population to identify adults >30 years with raised blood pressure on their routine visits and those having CVD risk factors. A minimum of 50 persons will be screened by every health worker per month.
2. Referral of persons with increased blood pressure for confirmation of diagnosis and hypertensive patients with history of heart attack, angina, stroke and diabetes.
3. Maintenance of CVD prevention cards of confirmed cases of hypertension.
4. Counseling about dietary modification, physical exercise, smoking cessation and motivation for regular treatment of high B.P.
5. Follow up of patients at every month and reinforcement of CVD risk management.
6. To submit the monthly report to medical officer incharge of local civil dispensary.

## **RESPONSIBILITY OF DOCTOR :**

1. Confirmation of cases of hypertension referred by the health worker.
2. Treatment of patients with history of stroke, angina, heart attack and management of these patients according to scenario 2.
3. Referral of complicated cases to appropriate hospital / hypertension clinic, PGIMER.
4. To send the monthly report to Nodal Officer, Chandigarh CVD prevention project General Hospital, Sector 16 by 5<sup>th</sup> of every month.

# **CHANDIGARH CVD PREVENTION PROJECT**

## **MANAGEMENT INFORMATION SYSTEM (MIS)**

### **A) FOR HEALTH WORKER**

Each health worker is supposed to do opportunistic screening of 50 individuals for CVD every month. Taking 25 days as the working days on an average each health worker. How can enroll 2 individuals per day that is atleast 1 family daily. He/She is supposed to fill the patient record card (page 12 of the module) and assess the individual according to scenario 1. At the end of the month he shall submit a report to the respective dispensary mentioning :-

1. No. of Patients screened.
2. No. of Patients with B.P. more than 140/90, smokers, waist circumference >104 in males and >94 in females.
3. No. of Patients referred (with house ID)
4. No. of Patients with reported for treatment.
5. Reason for defaulters.
6. No. of Patients counselled during the month.
7. No. of H.E. sessions conducted/month.
8. Remarks (if any).

## **B) FOR DOCTORS**

The Doctors shall than fill the patient record care (Page 21) of the referred patients by the health worker. By the 5<sup>th</sup> of every month he shall submit the report mentioning

1. No. of patients referred by health worker.
2. No. of patients enrolled – new, old.
3. No. of old patients with controlled and uncontrolled BP.
4. Compliance of the patients.
5. No. of deaths in the area and cause of death.

Every 6 months the photostat record of old patients followup to be made available Nodal Officer, Chandigarh CVD prevention project at General Hospital, Sector 16.

The compiled report of all the dispensaries shall than be submitted to the deptt. of Community Medicine at PGI by the 15<sup>th</sup> of every month. The deptt. shall give its feedback to the Nodal Officer of the project by the 25<sup>th</sup> of every month.

## CHANDIGARH CVD PREVENTION PROJECT

### MONTHLY REPORTING PROFORMA FOR HEALTH WORKERS

Name of health worker \_\_\_\_\_ Code \_\_\_\_\_

Area \_\_\_\_\_ Month \_\_\_\_\_

Date \_\_\_\_\_

1)	No. of Patients Screened	
2)	No. of patients who have / are	
	- B.P. > 140/90	
	- Smokers	
	- Waist circumference	
	* >104 in males	
	* >94 in females	
3)	No. of patients referred with house ID nos.	
4)	No. of patients reported for treatment	
5)	Reason for defaulters	
6)	No. of patients counseled during the month	
7)	No. of Health Education sessions conducted per month	
8)	Remarks (if any)	

To be submitted by 3<sup>rd</sup> of every month to the respective dispensary.

Signature of health worker

**Chandigarh CVD prevention Project**  
**Monthly Reporting Proforma for Doctors**

Name \_\_\_\_\_

Month \_\_\_\_\_

Dispensary \_\_\_\_\_

Dated \_\_\_\_\_

1)	No. of patients enrolled	
	- New	
	- Old	
2)	No. of old patients with	
	- Controlled B.P.	
	- Uncontrolled B.P.	
3)	Compliance of patients	
	- Regular	
	- Irregular	
4)	No. of deaths in your area	
5)	Cause of death	
	- CVD	
	- Non-CVD	
6)	Remarks	

# CHANDIGARH CVD PREVENTION PROJECT

## MONTHLY REPORTING SYSTEM FROM SUB-REGISTRY TO MASTER REGISTRY

Name \_\_\_\_\_

Month \_\_\_\_\_

Date \_\_\_\_\_

1)	No. of patients enrolled	
	- New	
	- Old	
2)	No. of old patients with	
	- Controlled B.P.	
	- Uncontrolled B.P.	
3)	Compliance of patients	
	- Regular	
	- Irregular	
4)	No. of deaths in your area	
5)	Cause of death	
	- CVD	
	- Non-CVD	
6)	Remarks	





1)	No. of Patients Screened by health worker	
2)	No. of patients who have / are	
	- B.P. > 140/90	
	- Smokers	
	- Waist circumference	
	* >104 in males	
	* >94 in females	
3)	No. of patients referred by health worker	

To be submitted by 5<sup>th</sup> of every month to Nodal Officer, Chandigarh CVD Prevention Project, General Hospital, Sector 16.

Signature of Medical Officer

1)	No. of Patients Screened by health worker	
2)	No. of patients who have / are	
	- B.P. > 140/90	
	- Smokers	
	- Waist circumference	
	* >104 in males	
	* >94 in females	
3)	No. of patients referred by health worker	

To be submitted by 15<sup>th</sup> of every month to the department of Community Medicine, PGI.

Signature of Nodal Officer

# Chandigarh CVD Prevention Project

Health Department, Chandigarh Administration

Department of Community Medicine

Internal Medicine, Cardiology, PGI

WHO, India

***Referral Card***

Referred to

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Name of the Patient : \_\_\_\_\_

Age : \_\_\_\_\_ Sex : Male / Female

Son/daughter/wife of : \_\_\_\_\_

Address: House No. \_\_\_\_\_ Mohalla/Street \_\_\_\_\_

Village \_\_\_\_\_ Post Office \_\_\_\_\_

B.P. \_\_\_\_\_

Waist Circumference \_\_\_\_\_

Referred by :

Name: \_\_\_\_\_ Area: \_\_\_\_\_ Signature \_\_\_\_\_

Date: \_\_\_\_\_