Hypertension
(2012)

Philippine Society of Hypertension

Unit 309 Amberland Plaza, Julia Vargas St., Ortigas Complex, Pasig
Telephone Nos.: 631-7970; 687-7073; 687-2841
Fax No.: 631-7970
E-mail: phihyper@pldtvibe.net
Website: http://www.psh.org.ph

PPD
CPM
Compendium of Philippine Medicine
15th Edition
2013

New Guideline

Philippine Society of Hypertension

Unit 309 Amberland Plaza, Julia Vargas St., Ortigas Complex, Pasig
Telephone Nos.: 631-7970; 687-7073; 687-2841
Fax No.: 631-7970
E-mail: phihyper@pldtvibe.net
Website: http://www.psh.org.ph

Officers and Board of Trustees 2011-2013

President	Dante D. Morales, M.D
Vice President	Romeo A. Divinagracia, M.D.
Secretary	Lynn A. Gomez, M.D.
Treasurer	Vicente V. Tanseco, Jr., M.D.
Trustees	Leilani B. Mercado-Asis, M.D.
	Eugenio Jose F. Ramos, M.D.
	Alberto A. Atilano, M.D.
Immediate Past President	Abdias V. Aquino, M.D.

PHILIPPINE CLINICAL PRACTICE GUIDELINES ON THE DETECTION AND MANAGEMENT OF HYPERTENSION – 2011 (also known as the 140/90 Report)

NELSON S. ABELARDO, MD, FPCP, FPCC
For the Multisectoral Task Force Consensus on the Detection and Management of Hypertension in the Philippines

DISCLAIMER: The recommendations contained in this report are intended to GUIDE practitioners in the detection and management of hypertension in adult patients. In no way should the guidelines be regarded as ABSOLUTE RULES, since nuances and peculiarities in individual cases or particular communities may entail specific approaches. In the end, the recommendations should supplement, and not replace sound clinical judgment.

The Multisectoral Task Force Consensus on the Detection and Management of Hypertension in the Philippines

Chair : Dr. Nelson S. Abelardo

Members : Dr. Adoracion N. Abad
Dr. Mary Ann Lim VA Abrahan
Dr. Ramon F. Abarquez Jr.
Dr. Abdias V. Aquino
Dr. Joselito L. Atabug
Dr. Alberto A. Atilano
Dr. Esperanza I. Cabral
Dr. Eduardo Vicente S. Caguioa
Dr. Homobono B. Calleja
Dr. Rafael R. Castillo
Dr. Antonio Miguel L. Dans
Dr. Romeo A. Divinagracia
Dr. Bun Yok O. Dy
Dr. Ruby T. Go
Dr. Lynn A. Gomez
Dr. Raul D. Jara
Dr. Ruby G. Lim
Dr. Agnes D. Mejia
Dr. Leilani B. Mercado-Asis
Dr. Dante D. Morales
Dr. Deborah D. Ona
Dr. Elizabeth Paz-Pacheco
Dr. Gregorio B. Patacsil Jr.+
Dr. Felix Eduardo R. Punzalan
Dr. Eugenio Jose F. Ramos
Dr. Eugenio B. Reyes
Dr. Vicente V. Tanseco Jr.
Dr. Tommy Ty Willing
Dr. Norbert Lingling D. Uy
Dr. Rody G. Sy
Dr. Antonio S. Sibulo Jr.
Dr. Jorge A. Sison
Dr. Wilson L. Tan- De Guzman
Dr. Emma G. Trinidad
Dr. Milagros E. Yamamoto

Partner Agencies or Coordinating Committee Member Organizations

- Department of Health (DOH)
- Philippine Medical Association (PMA)
- Philippine College of Physicians (PCP)
- Philippine Heart Association (PHA)
- Philippine Lipid and Atherosclerosis Society (PLAS)
- Philippine Society of Endocrinology and Metabolism (PSEM)
- Diabetes Philippine
- Stroke Society of the Philippines (SSP)
- Philippine Society of Nephrology (PSN)
- Philippine Neurological Association (PNA)
- Philippine Society of Vascular Surgery (PSVS)
- Philippine Academy of Family Physicians (PAFP)
- Philippine Association of Military Surgeons (PAMS)
- Philippine College of Occupational Medicine (PCOM)
- Philippine Association for the Study of Overweight and Obesity (PASOO)
- Institute for Studies on Diabetes Foundation Inc. (ISDF)
- Philippine Nurses Association (PNA)
- Occupational Health Nurses Association of the Philippines (OHNAP)
- Food and Nutrition Research Institute (FNRI)
- Nutritionist-Dietitian Association of the Philippines (NDAP)

CONTENTS

FOREWORD

The Board of Trustees of the Philippine Society of Hypertension and all those who contributed to the realization of the Guidelines express their sincere appreciation to all who joined us in our efforts to control the hypertension epidemic in our country.

The convenors of the multisectoral task force were composed of representatives mainly from the Philippine Society of Hypertension as well as the major subspecialty societies that had hypertension as one of their primary field of interest. They have worked long and hard to evaluate the evidence, decided on the practicalities of the recommendations and matched these with the best practices of the Filipino physicians.

The contents of this document centered on the simplification of our threshold for diagnosis and treatment of hypertension at 140/90 mmHg and this is the major reason why this document is also called the 140/90 Report.

The initial organization was in 2008 and the report was completed a year later. Subsequently, the contents of this report have been presented in various fora, scientific meetings, conventions, lectures, consultations and discussions in order to elicit responses from as many stakeholders as possible.

In the end, the recommendations may represent a truly Filipinized document for the detection, diagnosis, treatment and follow-up of hypertension whose utilization will cut across various sectors of the medical profession. This document has the format of a report but hopefully will have the spirit of a guideline.

Nelson S. Abelardo, MD
Head
Multisectoral Task Force

INTRODUCTION

The Philippine Society of Hypertension (PSH) recognizes that about 16.4% of the adult Filipino population (NNHeS 2003) have hypertension.[1] This represents roughly 50% of total population of 84 million Filipinos. Only 75% of this group are aware of the problem and only about 65% of them are getting advice and treatment. However, among those who are being treated, only about 23% will have acceptable blood pressure control.[2] Thus, 4.4 million adults can potentially benefit from monitored management. This number represents a considerable proportion of the productive sector of the country.

The PSH came up with a clinical guideline on hypertension in 1996. However, due to recent developments with landmark trials and ground-breaking researches, as well as consideration of the practical aspects for adherence to the guidelines, the PSH found the need to update the present guidelines.

Thus, the multi-sectoral task force for the Control of Hypertension was convened by the Philippine Society of Hypertension last January 12, 2008 at the Club Filipino, Greenhills, Mandaluyong City based on the need to update local guidelines on the detection and management of hypertension. The group recognized the need to simplify the guidelines to make them easier to comply with especially for the broad segment of our medical practitioners. Based on the results of focused group discussions, the participants of the 2008 meeting updated the statements put forth in the 1996 guidelines. This document discusses in detail the statements adapted during that meeting.

I. How should blood pressure be measured?

A. APPARATUS FOR BLOOD PRESSURE MEASUREMENT

1. The standard method for blood pressure measurement is the use of indirect sphygmomanometry. The most accurate and reliable technique is the auscultatory method using a mercury manometer.[3,4]
2. The Department of Health of the Republic of the Philippines issued a memorandum in year 2009 that all mercury manometers are to be banned from clinical use due to the toxic effects of mercury.[5]
3. In the absence of a mercury manometer, aneroid[6] digital and other self – monitoring devices may provide acceptable alternatives, provided they have passed technical requirements for accuracy and are calibrated or checked regularly. The PSH conducts validation studies of non-mercurial types of sphygmomanometers for the purpose of certifying the accuracy and precision of commercially available models of blood pressure measurement devices.

B. METHOD FOR INDIRECT MEASUREMENT OF BLOOD PRESSURE

1. A mercury manometer is ideal for accurate measurement. Aneroid, digital or other automated devices provide reasonable alternatives, provided that they satisfy technical requirements for accuracy, and are calibrated and tested on a regular basis.
2. The manometer cuff should cover at least 2/3 of the length of the patient's arm, while the bladder should cover at least 80% of the arm circumference.
3. The patient should be seated (or supine) with arms bared, supported, and at the heart level. He or she should have rested for at least 5 minutes, and should not have smoked or ingested caffeine within 30 minutes before measurement.
4. The edge of the cuff should be placed 1 inch above the elbow crease, with the bladder directly over brachial artery.
5. The bladder should be inflated to 30 mm Hg above the point of radial pulse extinction as determined by a preliminary palpatory determination. It should then be deflated at a rate of 2 mm Hg/beat, with the stethoscope bell placed directly overall the brachial artery.
6. Systolic pressure should be recorded at the appearance of the 1st clear tapping sound (Korotkoff phase 1). Diastolic blood pressure should be recorded at the disappearance of these sounds (Korotkoff phase V), unless these are still present near 0 mm Hg, in which case, softening of the sounds should be used as diastolic pressure (Korotkoff phase IV).[7]
7. For every visit, the mean of 2 readings, taken at least 2 minutes apart, should be regarded as the patient's blood pressure. If the first 2 readings differ by 5 mm Hg or more, a 3rd reading should be included in the average.
8. If blood pressure is being taken for the first time, the procedure should be repeated with the other arm. Subsequent determinations should then be performed on the arm with a higher pressure reading.

II. How should hypertension be diagnosed?

A. STRATEGIES FOR DETECTION

It is important that all Filipinos should know their blood pressure. By whatever method of detection, physicians and patients alike should realize that knowing their BP may result in early detection and treatment. General strategies for detection consist of:

1. Case Finding – Opportunities for case – finding abound in daily practice. Health practitioners from all fields should be encouraged to take BP measurements at each patient visit even if the patient consults for unrelated symptoms
2. Mass Screening – All should undergo mass screening such as industrial screening, examination of school based children and screening of family members.[8]

B. DEFINITION OF HYPERTENSION

There are as many definitions of hypertension as there are potential investigators or committees. Roughly, the definition of hypertension should be that level of blood pressure where cardiovascular risk begins to rise. By convention, the Joint National

Committee for the Detection, Diagnosis, Treatment and Follow-Up of Hypertension (JNC VII)[9] or the European Society of Cardiology-European Society of Hypertension (ESC-ESH)[10] consensus guidelines are used as standard references for definition of hypertension but individual countries or even academic/research institutions may adopt some modifications.

Table 1. Definition of Hypertension

Systolic BP	Diastolic BP	Conditions
≥140 mm Hg	≥90 mm Hg	Measurements done in at least 2 visits taken at least 1 week apart
≥140 mm Hg	≥90 mm Hg	Seen in the first visit but with evidence of target organ damage.

The multisectoral group decided to simplify the definition of hypertension to reflect the threshold with which clinicians would be alerted and be ready to institute pharmacologic management (Table 1).

Hypertension is defined as sustained systolic BP elevation of 140 mm Hg or more, OR sustained diastolic BP elevation of 90 mm Hg or more, based on measurements done during at least 2 visits taken at least 1 week apart or hypertension in one visit but with evidence of target organ damage.

Circumstances where hypertension is suspected:

1. White coat hypertension is defined as BP elevation in the clinic setting but repeatedly normal out of the office.[11]
2. Isolated systolic hypertension is defined as systolic blood pressure of 140 mm Hg or more and a diastolic pressure of less than 90 mm Hg.
3. Masked hypertension is defined as a clinical condition in which a patient's office blood pressure (BP) level is <140/90 mm Hg but ambulatory or home[12] BP readings are in the hypertensive range.[13]

III. How should hypertension be worked up?

A. OBJECTIVES OF WORK-UP

The objectives of a thorough hypertension work-up include the following:

1. To determine the etiology whether hypertension is primary or secondary;
2. To determine the presence of target organ damage (Table 2);
3. To detect and treat other risk factors for cardiovascular disease (Table 3); and
4. To determine the most appropriate form of management.

With these objectives in mind, physicians should pay close attention to all aspects of the clinical evaluation, including extraction of a detailed history, performance of a thorough physical examination, and requisition of relevant laboratory tests.

Table 2. Manifestations of Target – Organ Damage

Organ system	Manifestations
Cardiac	Clinical, electrocardiographic or radiologic evidence of coronary artery disease Left ventricular hypertrophy by electrocardiography of echocardiography Left ventricular dysfunction or cardiac failure
Cerebrovascular	Transient ischemic attack or stroke
Peripheral vascular	Absence of one or more major pulses in the exteremities (except the dorsalis pedis) with or without intermittent claudication; arterial aneurysms
Renal	Serum creatinine >130 umol/ L (1.5 mg/dL) Proteinuria (1 + or greater) Microalbuminuria (300 mcg)
Ophthalmologic	Retinal arteriolar attenuation Hemorrhages &/or exudates, with or without papilledema/optic nerve edema

1. A detailed history and physical examination should be done in all patients with hypertension. Aspects of the history and PE which should be emphasized are summarized below.

Items to emphasize in the clinical history and physical examination of hypertensive patients:

Clinical History

a. Previous symptoms of cardiovascular, cerebrovascular, pulmonary, or renal disease, diabetes mellitus, gout, or dyslipidemia;
b. Family history of hypertension, premature cardiovascular death, stroke, diabetes mellitus, or dyslipidemia;
c. Personal and social history of smoking or tobacco use, occupational or domestic stress, substance abuse, psychosocial stress;
d. Usual BP range with and without medication;
e. Medications tried for hypertension, including response and adverse effects;
f. Other medications being taken which may affect BP or response to treatment (e.g., contraceptives, steroids, NSAIDs, decongestants, appetite suppressants, immunosuppresants (cyclosporine), erythropoietin, beta-agonists, anti-depressants and MAO-inhibitors.
g. Elicit history of intake of certain herbals and supplements that may contain substances which may raise blood pressure.

Table 3. Risk Factors for Cardiovascular Disease

Modifiable factors	Non-modifiable factors
smoking	age
hypertension	male sex
dyslipidemia	family history of
diabetes mellitus	premature CAD
obesity	
physical inactivity	

Physical Examination

a. Height and weight measurement, waist-hip ratio, body mass index
b. Head and Neck – funduscopic examination, examination of the neck for bruits, distended veins or thyroid enlargement;
c. Chest and Lungs – examination of the heart for heart rate; point of maximal impulse, apex beat, heaves, clicks, murmurs, arrhythmias, gallops; examination of the lungs.
d. Abdomen – examination of the abdomen for truncal obesity; purple striae, bruits, enlarged kidneys, masses, and abnormal aortic pulsation;
e. Examination of the extremities for diminished or absent peripheral arterial pulsations, bruits and edema; arm BP discrepancies greater than 10 mm Hg or when indicated, similar discrepancies between leg BPs; examination for presence of postural hypotension in the elderly, i.e., decrease in BP greater than 10 mm Hg on assumption of upright position from recumbent position;
f. Neurologic assessment for stroke residuals or encephalopathy.

2. The following tests should be routinely performed in newly diagnosed hypertensives:

a. fasting plasma glucose
b. serum creatinine
c. serum potassium
d. urinalysis

3. The following examinations may be performed particularly only if there are specific indications:

a. ECG
b. Chest X-ray
c. Determination of lipid profile
d. Uric acid
e. Hematocrit
f. Test for microalbuminuria

4. 2D echocardiography is not required for the routine evaluation of all hypertensive patients. Use is recommended to patients in whom anatomic or functional abnormalities are suspected.

5. Ambulatory BP monitoring is not routinely required for the work-up of all hypertensive patients except for white coat hypertension, resistant hypertension and masked hypertension.[14,15]

6. Confirmatory tests for secondary hypertension should be performed when clinical clues to their existence are present. Physical findings which should lead to the suspicion of these rare conditions are summarized below (Table 4):

Table 4. Clinical Clues to Secondary Causes of Hypertension

Clinical clues	Suspected condition
Abdominal or flank masses, family history of adult polycystic kidney	polycystic kidney
Abdominal bruits, especially if a diastolic component is present	renovascular disease
Truncal obesity with purple striae	Cushing's syndrome
Tachycardia, tremor, orthostatic hypotension, sweating, flushing and pallor	pheochromocytoma
Anemia, edema, azotemia, casts	chronic kidney disease
Pulse deficit, unequal pulses	Takayasu's arteritis, coarctation of the aorta
Cramps, body malaise, hypokalemia	hyperaldosteronism
Use of contraceptive pills	contraceptive-induced HPN
Neck mass with bruit, lid lag, tremors; With or without exophthalmos	thyrotoxicosis
Poor BP control with drug therapy	any of the above
Sudden onset of hypertension	any of the above
Sudden deterioration of BP control	any of the above

IV. What advice should be given to hypertensive patients regarding lifestyle modification?

A. CESSATION OF SMOKING

All smokers should stop smoking. Several cohort and case-control studies provide unquestionable proof of the hazards of smoking. As a recognized risk factor for the development of coronary artery disease, smoking aggravates this risk in hypertensive patients.[16]

B. WEIGHT REDUCTION

1. Overweight patients (excess of >10% of ideal body weight, with a waist hip ratio of ≥0.9 in males and ≥0.8 in females and an abdominal circumference of ≥90 cm in males and ≥80 cm in females should attempt weight reduction at a rate of 1.0 lb or 0.5 kg per week.
2. Weight reduction can be achieved by total caloric reduction and regular aerobic activities (see item 3). Caloric reduction can be achieved through dietary prescriptions from a nutritionist. However, in the absence of a professional nutritionist, patients can be advised to decrease their total caloric intake by 15%.

C. Regular physical activity

Hypertensive patients should engage in regular aerobic physical activity unless contraindicated. This may be achieved by lower extremity aerobic exercise such as brisk walking, jogging or cycling for 30-60 minutes 3-4 times per week.

D. Moderation of alcohol intake

Alcohol drinkers should moderate their consumption. A reasonable limit would be 30 cc (1 oz or 28 grams) of ethanol per day (equivalent to 60 cc or 2 jiggers of 100-proof whiskey, 240 cc or 2 wine glasses, or 720 cc or 2 bottles of beer). For people who have never been initiated to alcohol, it is prudent not to start drinking.[17]

E. Optimization of dietary intake

Adopt the Dietary Approaches to Stop Hypertension (DASH)[18] eating plan (cite) which is a diet rich in fruits, vegetables and low fat dairy products with a lower content of dietary cholesterol as well as saturated and total fat.

F. Moderation of salt intake

Moderation of dietary sodium to 100 mmol/day (2.3 g Na or 5 g NaCl) may be attempted in all hypertensive subjects to see if this can lead to significant BP reduction. However, such restriction is absolutely necessary among patients with chronic kidney disease and congestive heart failure.[19,20,21]

G. Miscellaneous

There are no good studies to justify recommendations regarding relaxation and biofeedback nor an increase in dietary K, Ca, or Mg.

V. How should hypertension be treated?

The goal of treatment is to normalize BP and to reduce the increased risk of future cardiovascular events. The following recommendations suggest priority therapeutic options, depending on the underlying circumstances (Table 5). The initial choice of antihypertensive agent should be directed towards the most probable pathophysiologic abnormality or presence of compelling indications. Monotherapy is recommended as an initial option to control blood pressure but if the patient has co-morbid conditions and / or target organ damage, it is prudent to start combination therapy to achieve goal BP.

Another consideration which may affect drug selection is patient compliance. In some situations, this may take precedence over the given recommendations. When this becomes a problem, maneuvers to improve compliance may take into consideration the following 1) the drug's dosing schedule, 2) cost, 3) side effects profile of drugs, and 4) an individual's preference for a particular regimen.

Lastly, patients' education must include the need for maintenance medications despite normalization of blood pressure as well as regular follow-ups.

Table 5. Summary of Pharmacologic Recommendations

Compelling Indication	Medication	Outcome
Uncomplicated Hypertension	Any	Reduction in: a. stroke incidence by 35-40% (average) b. Myocardial Infarction by 20-25% c. Heart Failure by >50% Sustained reduction of 1 2mmHg in SBP for over 10 years will prevent 1 death for every 11 patients treated.
Hypertension + Ischemic Syndrome	Beta blocker, ACE inhibitor	Reduction in mortality and coronary events
Hypertension + Heart Failure	All except CCBs	Reduction in total mortality and coronary events
Hypertension + Diabetes Mellitus	ACE inhibitor or an ARB	Achieve a target BP≤130/80 Reduction in: a. diabetes related mortality by 15% b. MI by 11% c. Microvascular complications of retinopathy and nephropathy by 13% d. Improves CVD outcome esp. stroke
Hypertension + CKD with >1 gm albuminuria	ACE inhibitor or an ARB in combination with a loop diuretic	Achieve target BP ≤125/70 Slows progression of CKD
Hypertension + Acute Stroke	See Stroke Society of the Philippines Guidelines (cite)	
USE with CAUTION the following DRUGS		
Peripheral Vascular Disease	Beta-blockers	May exacerbate symptoms of the disease
COPD and Bronchial asthma	Beta-blockers	May exacerbate or precipitate symptoms of the disease

NB In the choice of medications, the clinician should take into account efficacy, tolerability and economics. The use of generic drugs should be guided by bioavailability and bioequivalence studies.

Uncomplicated Hypertension

1. For all stages of hypertension, lifestyle modification is recommended.
2. For all hypertensive patients, pharmacologic treatment is indicated.
3. In uncomplicated hypertension, any of the five classes of anti-hypertensive drugs (diuretics, ACE inhibitors, ARBs, beta-blockers and calcium channel blockers) are recommended as the initial for monotherapy.

VI. How should hypertension be managed in special populations?

A. Hypertension in the elderly and very elderly

In hypertensive elderly patients, low dose thiazide diuretics and calcium channel blockers are the preferred agents. Beta-blockers may be used as

alternative agents. In the very elderly up to the age 85 years, treatment and control of hypertension is associated with clinical benefits.[22,23,24,25]

B. Hypertension in pregnancy

For pregnant patients with pre existing mild to moderate BP elevations, the value of continued use of anti-hypertensive medications continues to be controversial. These women are at low risk for cardiovascular complications within the short time frame of pregnancy with good maternal and neonatal outcomes and a reduction in blood pressure may impair uteroplacental perfusion and thereby jeopardize fetal development. It is therefore recommended that drug treatment be started when SBP ≥150 or DBP ≥95 mm Hg for patients with pre-existing hypertension.

It is important to differentiate hypertension that is chronic or pregnancy-induced (Table 6). A lower threshold BP of 140/90 mm Hg is indicated for women with gestational hypertension with or without proteinuria, pre-existing hypertension with superimposition of gestational hypertension or hypertension with subclinical organ damage or symptoms at any time during pregnancy. In pregnant patients with mild or moderate hypertension, treatment can be started using oral medications. Alpha methyldopa alone is ineffective, so beta-blockers provide a second option. When these two drugs fail, calcium antagonists such as nifedipine provide a third option.

1. In pregnant patients with SBP ≥170 or DBP ≥110 mmHg, this is considered an emergency requiring hospitalization. IV labetalol, oral methyldopa[26] or oral nifedipine may be given. Intravenous hydralazine should no longer be considered because its use is associated with more perinatal adverse effects compared to other drugs.
2. Calcium supplementation, fish oil supplementation and low dose aspirin have failed to consistently prevent the incidence of gestational hypertension and is therefore not recommended. However, low dose aspirin is used prophylactically in women who have a history of early onset (<28 weeks) pre-eclampsia.

Table 6. Differences between Pregnancy-induced Hypertension and Chronic Hypertension

Parameter Age	**Pregnancy-Induced** Usually younger (<30 y.o.)	**Chronic** Usually older (>30 y.o.)
Parity	Usually primigravid	Usually multigravid
Onset	After 2 weeks AOG	Before 20 weeks AOG
Weight gain & edema	sudden	gradual
Systolic BP	<160 mm Hg	>160 mm Hg
Funduscopic findings	Spasma, edema	AV nicking, exudates
Proteinuria	present	absent
Plasma uric acid	elevated	normal
Eclampsia (seizures)	possible	possible
BP after delivery	normal	elevated

AOG - age of gestation, AV – arteriovenous

C. Hypertension in Emergency and Urgent Situations

Hypertension may be complicated by acute life – threatening conditions such as those listed in table below. In such settings, there is a need for immediate blood pressure reduction. The agents that can be used for rapid control of hypertension are listed in subsequent tables below (Tables 7 and 8).

Oral preparations are now available for the emergency control of hypertension. These include captopril, and clonidine However, these drugs do not provide good control of the rate of blood pressure reduction, a disadvantage blamed for numerous reports of unexpected myocardial or cerebral hypoperfusion. Thus, the parenteral agents listed in the table are preferred, specifically because of a more controlled rate of reduction of blood pressure

In very severe hypertension uncomplicated by situations listed above, oral antihypertensive agents should be given and control of blood pressure should be achieved within 3 days.

D. Current status of herbal preparations
No indigenous herbal preparations have been adequately tested.

Previous studies on sambong and garlic failed to demonstrate a significant effect on blood pressure.[27]

Table 7. Hypertension and Target Organ Disease

Organ System	**Not Acutely Life-threatening**	**Acutely Life-threatening**
Cardiac	Left ventricular hypertrophy Coronary atherosclerosis	Acute coronary events (acute myocardial infarction, unstable angina) Acute LV failure Pulmonary congestion or edema
Cerebro-vascular	Transient ischemic attack Thrombotic stroke	Intracranial hemorrhage Hypertensive encephalopathy
Peripheral vascular	Peripheral occlusive disease	Dissecting aneurysms
Renal	nephrosclerosis	Malignat nephrosclerosis
Ophthalmic	retinopathy	Papilledema / optic nerve head edema

LV – left ventricle

VII. How can hypertension be prevented among normotensives?

Weight reduction among overweight individuals through moderate physical activity and reduced total caloric intake can decrease the incidence of hypertension.

A significant risk reduction in the incidence of hypertension was demonstrated among normotensives subjected to weight reduction. Two trials reported odds ratios of 0.77 and 0.66 respectively. The weight reduction program involved a moderate increase in physical activity by brisk walking for 45 minutes 4-5 times a week as well as reduction in total caloric intake.[28,29]

Table 8. Drugs for the Treatment of Hypertensive Crisis

Drugs*	Dose**	Onset of Action (min)	Adverse Reactions	Special Indications
PARENTERAL DRUGS - Vasodilators				
Nicardipine HCl	10-15 mg/h IV	5-10	Tachycardia, headache, flushing, local phlebitis	Acute heart failure Caution with coronary ischemia
Nitroglycerine	5-100 ug/min IV infusion	2-5	Headache, vomiting, methemoglobinemia	Acute LV failure, acute coronary insufficiency, post-operative (esp. coronary bypass) hypertension
Hydralazine HCl	10-120 mg IV	10	Tachycardia, headache, vomiting, aggravation of angina pectoris, fluid retention	Eclampsia, body burns, malignant hypertension, post-operative hypertension
Sodium nitroprusside	0.3-10 ug/kg/min IV infusion, max dose for no more than 10 min	instantaneous	Nausea, vomiting, muscle twitching, methemoglobinemia, cyanide toxicity, hypotension	Hypertensive encephalopathy, acute intracranial hemorrhage, acute cerebral infarction, acute LV failure, acute coronary insufficiency dissecting aneurysm, catecholamine crisis, head injury, extensive body burns, malignant hypertension
PARENTERAL DRUGS – Adrenergic Inhibitors				
Methyldopa	25-500 mg IV infusion	30-60	drowsiness	Eclampsia, perioperative hypertension
ORAL DRUGS				
Captopril	25 mg PO, repeat as required	15-30	Hypotension, renal failure in bilateral renal artery stenosis	
Clonidine	0.1-0.2 mg PO, repeated every hour as required to a total dose of 0.6 mg	30-60	Hypotension, drowsiness, dry mouth	

* Drugs such as Diazoxide, Phentolamine mesylate, Trimethaphan camsylate, and Labetalol hydrochloride are also for hypertensive emergencies but are not available locally.

** IV indicates intravenous; IM intramuscular, PO per orem

References:

1. Velandria FV, Duante CA, Abille ET and Tangco JBM. The National Nutrition and Health Survey (NNHeS 2003-2004). Food and Nutrition Research Institute of the Department of Science and Technology (FNRI-DOST).
2. Sison J, Arceo L, Trinidad E et al. PRESYON 2: Report of the Council on Hyoertension. Philippine Heart Association Annual Convention, May 2007.
3. American Society of Hypertension. Recommendations for routine blood pressure measurement by indirect cuff sphygmomanometry. Am J Hypertens 1992;5:207-209
4. Frohlich, ED, Grim C, Labarthe DR, et al. Recommendations for human blood pressure determinations by sphygmomanometers: report of a special task force appointed by the steering committee, American Heart Association. Hypertension 1988;11:209A-222A.
5. Banatin CA, Go MV, Peñafiel RM and Bituin RA (eds.) Safe Hospitals in Emergencies and Disasters: Philippine Indicators. Administrative Order No. 2008 - 0021 – Gradual Phase-out of Mercury in all Philippine Health Care Facilities and Institutions. Department of Health, Republic of the Philippines, 2009
6. Canzanello VJ, Jensen PL, Schwartz GL. Are aneroid sphygmomanometers accurate in hospital and clinic settings? Ann Intern Med 2001;161:729-31
7. Veterans Administration Cooperative Study Group on Anti-hypertensive agents. Effects of treatment on mortality in hypertension: Results in patients with diastolic BP averaging 90 through 114 mmHg. JAMA 1970; 213:1143-52.
8. Littenburg B, Garber AM, Soc HC. Screening for Hypertension. Ann Intern Med 1990;122:192
9. JNC VII. The Seventh Report of the Joint National Committee on the Detection, Evaluation and Treatment of High Blood Pressure. 2004
10. ESC-ESH Guidelines for the Management of Arterial Hypertension. Journal of Hypertension 2007.
11. Mancia G, Zanchetti A. White coat hypertension misnomers, misconceptions and misunderstandings. What should we do next? J Hypertens 1996, 14:1049-1052
12. Gerin W, Schwartz AR, Schwartz JE, Pickering JE, Davidson KW, Bress J, et al. Limitation of current validation protocols for home blood pressure monitors for individual patients. Blood Press Monit ;2002 7:313-8
13. Pickering TG, Davidson, K, Gerin, W. Schwartz, JE. Masked Hypertension. Hypertension. 2002;40:795
14. Appel LJ, Stason WB. Ambulatory blood pressure monitoring and blood pressure self measurement in the diagnosis and management of hypertension. Ann Intern Med 1993:118:867-882
15. Sheps GS, Pickering TG, White WB, et al. Ambulatory Blood Pressure Monitoring (ACC Position Statement). JACC 1994; 23:1511-1513.
16. Pooling Project Research Group. Relationship of blood pressure, serum cholesterol, smoking habit, relative weight, ECG abnormalities to incidence of major coronary events: Final Report of the Pooling Project. J Chron Dis 1978;31:201.
17. World Hypertension League. Measuring your Blood Pressure. November 2003. http://www.mco.edu/org/whl/bloodpre.html
18. Blumenthal JA, Babyak MA, Hinderliter A et al. Effects of the DASH Diet Alone and in Combination With Exercise and Weight Loss on Blood Pressure and Cardiovascular Biomarkers in Men and Women With High Blood Pressure. Arch Intern Med.2010;170(2):126-135. ENCORE (Exercise and Nutrition interventions for CardiOvasculaR hEalth) study.
19. Kaplan NM. Moderate sodium restriction. Am J Hypertens 1990; 3:518-519.
20. Cutler JA, Follman D, Elliot P, Suh I. An overview of randomized trials of sodium reduction and blood pressure Hypertension 1997; 17 (Suppl 7): 1-27 -1-33.
21. Law MR, Frost CD, Wald NJ. By how much does dietary salt reduction lower blood pressure? III: analysis of data from trials of salt reduction. BMJ 1991;302:879-824.
22. Coope J, Warrender TS. Randomized trial of treatment of hypertension in the elderly in primary care. Br Med J. 1986; 293:1145-51.
23. Beard K, Bulpitt C, Mascie-Taylor H, et al. Management of elderly patients with sustained hypertension BMJ 1992;304:412-416.
24. Thijs L. Fagard R, Lijnen, et al. Why is antihypertensive drug therapy needed in elderly patients with systodiastolic hypertension? J Hvpertens Suppl 199l;12 (6):s25-s34
25. Insua JT, Sacks HS, Tai-Shing et al. Drug treatment of hypertension in the elderly: a meta-analysis. Ann Intem Med 1991; 121(5):355-362.
26. Collins R, Duley L. Methvldopa-based therapy in the treatment of pre-eclampsia in Pregnancy & Childbirth Module (eds Enkin MW, Keirse MJNC, Renfrew MJ, Neilson JP), Cochrane Database of Systematic Reviews": Review No. 03997, 29 July 1992. published thru "Cochrane Updates on Disk", Oxford: Update Software, Spring, 1993.
27. Silagv CA, Neil HAW. A meta-analysis of the effects of garlic on blood pressure. JHvpertens 1991;12: 463-468.
28. Wassertheil-Smoller S, Blaurfox MD, Oberman AS, et al. The trial of antihypertnsive interventions and management (TAIM) study: adequate weight loss alone and combined with drug therapy in the treatment of mild hypertension. Arch Int Med 1992; 152: 131-136
29. Schotte DE, Stunkard AJ. The effects of weight reduction on blood pressure in 301 obese patients. Arch Intern Med. 1990; 150: 1701-1704.

Index of Drugs Mentioned in the Guideline

This index is not part of the guideline. It lists the products and/or their therapeutic classes as mentioned in the guideline. For the doctor's convenience, brands available in the PPD references are listed under each of the classes. For drug information, refer to PPD, PPD Pocket Version, PPD Text, PPD Tabs, and www.TheFilipinoDoctor.com.

CARDIOVASCULAR DRUGS

Antiplatelet Agents
Aspirin
- Aspilets
- Aspilets-EC
- Bayer Aspirin 100 mg
- Bayer Aspirin 300 mg
- Bayprin EC
- Cor - 30
- Cortal
- Rhea Aspirin

Antihypertensives
ACE Inhibitors
Benazepril HCl
- Cibacen

Captopril
- Captril
- RiteMED Captopril

Cilazapril
- Vascace

Cilazapril/Hydrochlorothiazide
- Vascace Plus

Enalapril
- Acebitor
- Hypace
- Naprilate
- Pharex Enalapril
- Renitec

Enalapril/Hydrochlorothiazide
- Co-Hypace
- Co-Renitec

Fosinopril
- BP Norm

Imidapril
- Norten
- Vascor

Imidapril/Hydrochlorothiazide
- Norplus
- Vascoride

Lisinopril
- Zestril

Lisinopril/Hydrochlorothiazide
- Zestoretic

Moexipril
- Univasc

Moexipril/Hydrochlorothiazide
- Uniretic

Perindopril
- Coversyl

Perindopril/Amlodipine Besilate
- Coveram

Perindopril erbumine
- Perigard - 2/4

Perindopril/Indapamide
- Bi-Preterax
- Coversyl Plus
- Preterax

Quinapril
- Accupril

Quinapril/Hydrochlorothiazide
- Accuzide

Ramipril
- Ramipro
- Tritace
- Winthrop Ramipril

Ramipril/Felodipine
- Triapin

Ramipril/Hydrochlorothiazide

Alpha Blocker
Phentolamine mesylate

Angiotensin Receptor Blockers
Azilsartan medoxomil
- Edarbi

Candesartan
- Blopress
- Candez

Candesartan/ Hydrochlorothiazide
- Blopress Plus
- Candez Plus

Eprosartan
- Teveten

Eprosartan/Hydrochlorothiazide
- Teveten Plus

Irbesartan
- Aprovel
- Winthrop Irbesartan

Irbesartan/Hydrochlorothiazide
- CoAprovel
- Winthrop Irbesartan + Hydrochlorothiazide

Losartan
- Actizar
- Amozar
- Angiocard
- Angisartan
- Anzar
- Arbloc
- Bepsar
- Besartan
- Biozaar
- Cozaar
- Doxar
- Ecozar
- Getzar
- Hartzar
- Hylos-50
- Hypertan
- Hyperthree
- Lifezar
- Lipewin
- Losacar
- Losargard
- Losium
- Lozaris
- Lozart 100
- Myotan
- Neosartan
- Normoten/Normoten 100
- Pharex Losartan Potassium
- RiteMED Losartan Potassium
- Vivasartan
- Wilopres
- Winthrop Losartan Potassium
- Xartan
- Zarnat
- Zarpose

Losartan/Amlodipine
- Cozaar XQ
- Tozam

Losartan/Hydrochlorothiazide
- 2Zaris
- Anzaplus
- Artazide
- Combizar
- Co-Normoten/Co-Normoten DS
- Duosar
- Getzar Plus
- Hyzaar/Hyzaar DS
- Lipewin H Forte
- Losacar-H
- Losargard Plus
- Neosartan Plus
- Pharex Losartan Potassium + Hydrochlorothiazide
- Vivasartan Plus
- Wilopres Plus
- Winthrop Losartan Potassium + Hydrochlorothiazide
- Xartan Plus
- Zarnat Plus

Olmesartan medoxomil
- Cresart
- Olmetec
- Olmezar

Olmesartan medoxomil/Amlodipine
- Normetec

Olmesartan medoxomil/ Hydrochlorothiazide
- Olmetec Plus

Telmisartan
- Micardis
- Pritor

Telmisartan/Amlodipine
- Twynsta

Telmisartan/Hydrochlorothiazide
- Micardis Plus
- PritorPlus

Valsartan
- Diovan

Valsartan/Amlodipine besylate
- Exforge

Valsartan/Amlodipine besylate/Hydrochlorothiazide
- Exforge HCT

Valsartan/Hydrochlorothiazide
- Co-Diovan

Beta blockers
Atenolol
- Cardioten
- RiteMED Atenolol
- Tenormin
- Therabloc
- Velorin

Atenolol/Chlorthalidone

Betaxolol HCl
- Kerlone

Bisoprolol
- Bisoprolol Sandoz
- Concore

Bisoprolol fumarate/ Hydrochlorothiazide
- Ziac

Carteolol
- Mikelan

Carvedilol
- Betacard

Carvedilol Sandoz
Carvibloc
Carvid
Dilatrend
Karvidol 25 mg
Karvidol 6.25 mg
Karvil 6.25/12.5
Vasolexin
Xicard

Esmolol
Labetalol HCl
Metoprolol succinate
Betazok
Betazok 25 mg
Cardiosel-OD

Metoprolol tartrate
Betaloc
Cardiosel
Cardiostat
Metocare
Neobloc
Pharex Metoprolol
RiteMED Metoprolol
Valvexin

Metoprolol/Felodipine
Logimax

Metoprolol/Hydrochlorothiazide
Nebivolol HCl
Nebicar
Nebilet
Toricard-5

Pindolol
Pyndale
Visken

Pindolol/Clopamide
Viskaldix

Propranolol
Inderal

Timolol

Calcium Antagonists

Amlodipine besylate
Actapin
Aforbes
Alodine
Amaday
Ambesyl
Ambloc
Amcal
Amlocor
Amlodac
Amlodine
Amlodipine Besilate
Amlonex
Amvasc BE
Angivas
Biovasc
B-Press
Calbloc
Cardiaz
Coram
Corvex
Dailyvasc
Dilavasc
Godipine
Hartvasc
Lodicor
Lopicard
Norvasc
Omnivas
Pharex Amlodipine Besylate
Ritemed Amlodipine
Sedipin
Vasalat
Wilomax
Winthrop Amlodipine besilate

Amlodipine besylate/ Atorvastatin calcium
Norvasc Protect

Amlodipine besylate/ Hydrochlorothiazide
Amvasc Plus

Amlodipine besylate/Olmesartan medoxomil
Normetec

Amlodipine besylate/Valsartan
Exforge

***Amlodipine besylate/Valsartan*/Hydrochlorothiazide**
Exforge HCT

S-Amlodipine
Amlobes
Asomex

Barnidipine HCl
Hypoca

Benidipine HCl
Coniel

Diltiazem
Dilzem/Dilzem SA/Dilzem OD/ Dilzem SR

Felodipine
Dilahex
Dilofen ER
Felop ER Tab
Felostal-5 ER
Plendil ER
RiteMED Felodipine
Versant XR

Felodipine/Metorpolol
Logimax

Felodipine/ Ramipril
Triapin

Isradipine
Lacidipine
Lacipil

Lercanidipine HCl
Zanidip

Manidipine
Caldine

Nicardipine
Cardepine

Nifedipine
Adalat/Adalat Gitz/Adalat Retard
Calcibloc
Calcibloc OD
Heblopin

Nimodipine
Nimotop

Verapamil
Isoptin/Isoptin SR
Verapamil Sandoz

Verapamil/Trandolapril
Tarka/Tarka Forte

Centrally-Acting Drugs

Clonidine HCl
Catapres

Methyldopa
Aldomet
Dopamet

Diuretics

Carbonic Anhydrase Inhibitors

Acetazolamide

Loop Diuretics

Bumetanide
Burinex

Furosemide
Furolink
Indiurex
Lasix

Osmotic Diuretics

Mannitol
Sahar Mannitol 20% Solution for IV Infusion

Mannitol/Sorbitol

Potassium-Sparing Diuretics

Spironolactone
Aldactone

Spironolactone/Hydroflumethiazide
Aldazide

Thiazides & Thiazide-Like Diuretics

Hydrochlorothizide
Diuzid
Hytaz
Pharex Hydrochlorothiazide

Indapamide
Natrilix SR
Vazamide SR

Other Vasodilators

Diazoxide
Hydralazine HCl
Sodium nitroprusside
Trimethaphan camsylate

Cardioactive Drugs

Organic Nitrates/Nitrites

Nitroglycerin
Deponit NT 5/Deponit NT 10
Nitrostat
Transderm-Nitro