

The American Society of Hypertension REFERENCE LIST IN CLINICAL HYPERTENSION

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Introduction

This *REFERENCE LIST IN CLINICAL HYPERTENSION* is produced and published by the American Society of Hypertension, Inc. (ASH). The ASH *REFERENCE LIST* is designed as (a) a comprehensive outline and updated reference guide to the clinical hypertension literature, and (b) an outline of material to be covered in the ASH Clinical Hypertension Review Course. The *REFERENCE LIST* is not designed to improve test scores on the Hypertension Specialist Examination, which is prepared by an entirely separate organization (ASH Specialist Program, Inc.) The previous 2005 document has been revised and updated by Dr. Norman Kaplan, with Dr. Ronald Victor revising the Introduction and updating the sections on Pathophysiological Mechanisms and Hypertensive Heart Disease. Most references are from 2002-2007.

Due to escalating obesity and population aging in both developed and developing countries, the global burden of hypertension is rising and projected to affect 1.5 billion persons, one-third of the world's population, by 2025. Thus, hypertension remains the leading cause of death worldwide and one of the world's great public health problems.

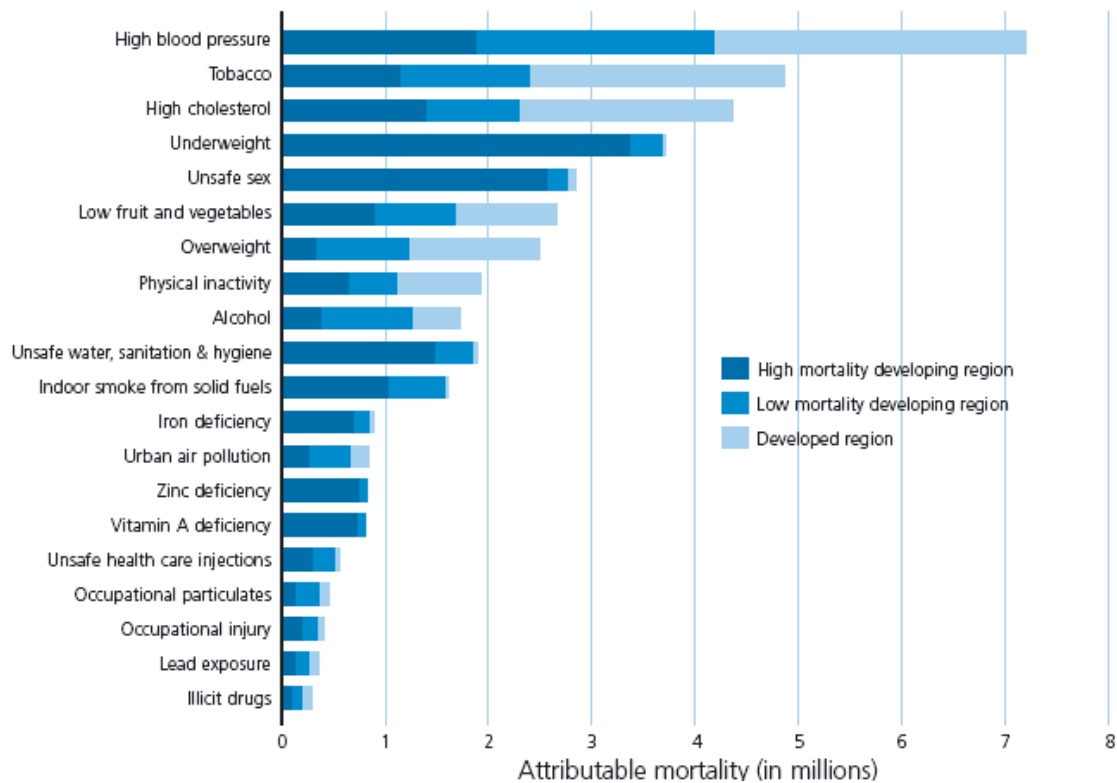


Figure Legend: Global distribution of mortality attributable to 20 leading selected risk factors. Source: WHO, 2002 <http://www.who.int/mdg/publications/04MDGChapter4.pdf>

This REFERENCE LIST emphasizes (a) state-of-the-art scientific principles, (b) the application of those principles into daily clinical practice, and (c) evidence from randomized clinical trials that serves as the basis for current practice recommendations.

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- American Society of Hypertension: www.ash-us.org
International Society of Hypertension in Blacks: www.ishib.org
National High Blood Pressure Education Program: www.nhlbi.nih.gov/index.htm
National Kidney Foundation: www.kidney.org
American Heart Association: Heart and Stroke Facts: www.americanheart.org

Section 1: Epidemiology of Hypertension

- I. **Blood pressure risk as a continuous variable and JNC 7 classification of blood pressure**
- II. **Ethnic and geographic variation in hypertension prevalence and cardiovascular risk**
- III. **Predominance and importance of systolic hypertension**
- IV. **Conundrum of poor hypertension control rates**

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Section 2: Prevention of Hypertension

I. Population versus individual approaches

- A. Impact of small population-wide effects
- B. Results of Trials
- C. Current Recommendations

II. Pre-natal influences

- A. Intrauterine growth retardation
 - 1. Congenital oligonephropathy
 - 2. Other mechanisms

III. Environmental exposures and exogenous substances

- A. Weight gain: obesity, sleep apnea
- B. Dietary sodium intake
- C. Other minerals: potassium, calcium, magnesium
- D. Other dietary components: carbohydrate, fat, protein, fiber, antioxidants
- E. Physical activity
- F. Alcohol consumption
- G. Smoking
- H. Stress
- I. Hormones: estrogen, adrenal steroids
- J. Sympathomimetic agents: cocaine
- K. Therapeutic agents: NSAIDs, erythropoietin, cyclosporine, tacrolimus
- L. Others: caffeine, licorice, lead, etc.

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Section 3: Genetics of Hypertension

I. Monogenic causes of human hypertension

- A. Glucocorticoid remediable aldosteronism
- B. Liddle's syndrome
- C. Apparent mineralocorticoid excess
- D. Congenital adrenal hyperplasias
 - 1. Caused by mutations in 11- β -hydroxylase
 - 2. Caused by mutations in 17- α -hydroxylase
- E. Pseudohypoaldosteronism Type II
- F. Hypertension + brachydactyly syndrome
- G. Gain of function mutation of the mineralocorticoid receptor

II. Genetics of human primary hypertension

- A. Risk of primary hypertension in population
- B. Risk of primary hypertension in individuals with positive family history
- C. Polygenic nature
- D. Familial clustering of other cardiovascular risk factors
- E. Renal involvement
- F. Pharmacogenetic implications

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Section 4: Pathophysiologic Mechanisms of Hypertension

- I. Hemodynamic Subsets**
- II. Neural Mechanisms**
- III. Renal Mechanisms**
- IV. Vascular Mechanisms**
- V. Hormonal Mechanisms**
 - A. Renin-Angiotensin-Aldosterone System
 - B. Endothelin
 - C. Insulin Resistance/Obesity

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Section 5: Diagnostic Assessment

I. Accurate and adequate measurement of blood pressure (BP)

- A. Office
- B. Automatic ambulatory monitoring
- C. Home, self- recorded

II. Additional assessment of prognosis

- A. Nocturnal pattern of BP
- B. BP on arising
- C. BP during exercise
- D. Masked hypertension

III. White coat hypertension

IV. Initial evaluation

- A. Purposes
 1. Recognize specific identifiable causes of hypertension
 2. Assess target organ damage
 3. Determine overall cardiovascular risk status
- B. Procedures
 1. History
 2. Physical examination, including fundoscopic
 3. Laboratory testing: routine and additional as indicated

V. Overall cardiovascular risk stratification

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I. Accurate and adequate measurement of blood pressure (BP)

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Section 6: Metabolic Abnormalities and Hypertension

I. Obesity related hypertension

- A. Prevalence of the association
- B. Pathophysiology
- C. Evaluation
- D. Management

II. Dyslipidemia

- A. Prevalence of the association
- B. Mechanisms
- C. Management

III. The metabolic syndrome

- A. Components of the syndrome
- B. Pathophysiology
- C. Management

IV. Diabetes mellitus

- A. Prevalence of the association with types 1 and 2 diabetes
- B. Pathophysiology
- C. Evaluation
- D. Management

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Section 7: Target Organ Damage

I. Cardiac

- A. Manifestations
 1. Left ventricular hypertrophy
 2. Systolic and diastolic dysfunction
 3. Congestive heart failure
 4. Coronary artery disease
- B. Pathogenesis: the role of hypertension
- C. Consequences
- D. Effect of antihypertensive therapies on regression or prevention

II. Cerebrovascular

- A. Manifestations
- B. Pathogenesis: the role of hypertension
- C. Treatment of hypertension
 1. Acute stroke
 2. Chronic stroke

III. Renal parenchymal disease

- A. Association of hypertension with various renal diseases
- B. Role of hypertension in progressive renal insufficiency
- C. Cardiovascular complications

IV. Other vascular diseases

- A. Types
 1. Atherosclerotic: aneurysms, dissections embolization
 2. Vasospastic and inflammatory
 3. Peripheral arterial disease

V. Retinopathy

VI. Sexual dysfunction

- A. Prevalence
- B. Management

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Section 8: Therapy of Hypertension: Lifestyle Modifications and Non-Pharmacologic Therapies

I. The place for combined lifestyle modifications

- A. Preventive potential
- B. Therapeutic efficacy

II. Antihypertensive effects and additional benefits of individual modifications

- A. Cessation of smoking
- B. Reduction of excess weight
- C. Increased physical activity
- D. Moderate reduction of sodium intake
- E. Increased intake of potassium
- F. Moderate intake of alcohol
- G. Maintenance of adequate intake of calcium and magnesium
- H. Other dietary constituents
 - 1. Fiber
 - 2. Protein
 - 3. Dietary fat and fish oil; protein; carbohydrates
 - 4. Caffeine
 - 5. Anti-oxidants
- I. Other therapies
 - 1. Relaxation techniques
 - 2. Acupuncture
 - 3. Surgical decompression of ventrolateral medulla
 - 4. Herbal remedies
 - 5. Breathing-control
 - 6. Cessation of substance abuse

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Section 9: Treatment of Hypertension: Overcoming Barriers to Control

- I. Current Status**
- II. Physician barriers**
- III. Therapy barriers**
- IV. Patient barriers**
- V. Structural barriers**

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I. Current Status

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Section 10: Therapy of Hypertension: Features of Antihypertensive Drugs

- I. General principles of drug therapy**
- II. Individual drug classes used in chronic treatment**
 - A. Diuretics
 - B. Adrenergic inhibitors
 - C. Direct vasodilators
 - D. Calcium-channel blockers
 - E. Angiotensin converting-enzyme inhibitors
 - F. Angiotensin II receptor blockers
 - G. Other Agents
- III. Combination drugs**
- IV. Current patterns of use**
- V. Monitoring adequacy of therapy**
 - A. Need for 24- hour control
 - B. Avoidance of tissue hypoperfusion
 - C. Decision to “step-down” therapy

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Section 11: Clinical Trials: Methods, Results and Consequences

- I. Methodology**
- II. Results of comparative trials**
- III. Meta analyses**
- IV. Goals of Therapy**

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I. Methodology

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Section 12: Hypertension in Special Populations

- I. Infants and children
- II. Women
- III. Pregnancy related
- IV. Older persons with systolic hypertension
- V. African-Americans
- VI. Other ethnic minorities
- VII. The diabetic hypertensive (also see Section 6)
- VIII. Perioperative hypertension

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Section 13: Approach to Resistant Hypertension (also see Section 12)

- I. Definition**
- II. Prevalence**
- III. Causes**
- IV. Evaluation and Therapy**

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Section 14: Hypertensive Crises

- I. Definition and Epidemiology**
- II. Mechanisms**
- III. Clinical features and evaluation**
- VI. Therapy**

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Section 15: Identifiable (Secondary) Causes of Hypertension

- I. Renal parenchymal diseases (see Section 7)**
 - A. Classification
 - B. Management
- II. Renovascular hypertension and ischemic nephropathy**
 - A. Prevalence in different populations
 - B. Mechanisms
 - C. Clinical features
 - D. Diagnosis
 - E. Therapy
- III. Mineralocorticoid hypertension**
 - A. Aldosterone excess
 - 1. Clinical features
 - 2. Differential diagnosis
 - 3. Diagnosis
 - 4. Therapy of primary aldosteronism
 - B. Deoxycorticosterone (DOC) excess
 - C. Cortisol excess
- IV. Pheochromocytoma and catecholamine-secreting paraganglioma**
 - A. Pathophysiology
 - B. Clinical features
 - C. Diagnosis
 - D. Therapy
- V. Adrenal incidentaloma**
 - A. Prevalence and differential diagnosis
 - B. Evaluation and management
- VI. Other hormonal causes**
 - A. Thyroid: Hypo- and hyper-thyroidism
 - B. Hyperparathyroidism and other hypercalcemic states
 - C. Acromegaly
- VII. Other**
 - A. Drug-induced
 - B. Psychogenic
 - C. Sleep apnea
 - D. Coarctation
 - E. Neurovascular compression

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