

## Mini Review

# Hypertension

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## Keywords

Renovascular Hypertension; Pheochromocytoma; Hyperaldosteronism

## Abbreviations

HTN: Hypertension; ABI: Ankle-Brachial Index; SBP: Systolic Blood Pressure; DBP: Diastolic Blood Pressure; BUN: Blood Urea Nitrogen; CHD: Chronic Heart Disease.

## Definition

**Hypertension - Defined as any one of the following:** Hypertension is defined as SBP or DBP  $\geq$  95<sup>th</sup> percentile for age, sex and weight persist continuously.

Systolic blood pressure  $>$  140mmHg and/or Diastolic blood pressure  $>$ 90mmHg, Patient taking antihypertensive medications.

**Essential HTN:** When the cause is not known (90 to 95 % cases).

**Secondary HTN:** Specific organ dysfunction is detected (5 to 10 % cases).

## Blood Pressure

Lateral Pressure exerted by column of blood on wall of artery called as blood pressure (Figure 1).

### Risk factor for Hypertension

#### [A] Non-Modifiable risk factors:

- i) Age: As age increases BP increases (Figure 2).
- ii) Gender: Up to 60 years of age BP in Male  $>$  Female. But after  $>$  60 years of age BP in Female  $>$  Male.
- iii) Genetic factor
- iv) Ethnicity/Race: Black African race of same age and sex have more BP in comparison to others.

#### [B] Non-Modifiable risk factors:

- i) Physical activity: At least 30 minutes of activity daily for 5 to 7 days/week will prevent HTN.
- ii) Salt intake: Daily salt intake should be less than 5mg /day.
- iii) Stress

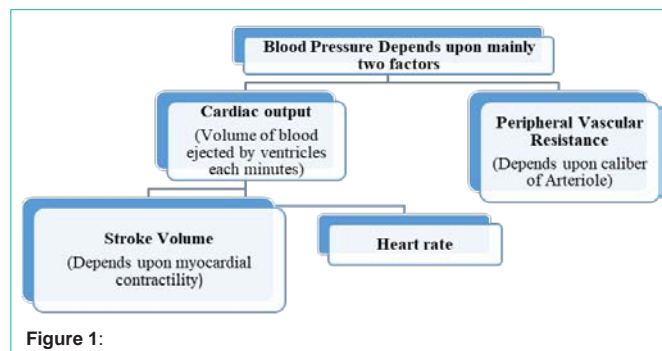


Figure 1:

	Systolic BP	Diastolic BP
Normal	$\leq$ 120mmhg	$\leq$ 80 mmHg
Prehypertensive	$<$ 120-139mmhg	$<$ 80-89mmhg
Hypertensive	$<$ 140-159mmhg	$<$ 90-99mmhg
Severe hypertension	$<$ 160mmhg	$<$ 100mmhg

Figure 2: Range of blood pressure according to severity.

iv) Smoking

v) Alcohol

vi) Obesity: As body weight increases, risk of hypertension and other cardiovascular disease increase. Saturate fat increase blood cholesterol level so, increase risk of hypertension.

### Most common cause of HTN in Children

1. Intrinsic Renal disease
  - a) Chronic glomerulonephritis.
  - b) Chronic pyelonephritis
2. Obstructive uropathy
  - a) Urolithiasis
  - b) Urethral stricture

Most common cause of HTN in Adult or adolescent (13 to 18 year):

## Secondary Hypertension

### Renal artery stenosis (Renovascular hypertension)

Due to either atherosclerosis (older men) or fibromuscular



S4) w/bell over LV Carotid artery palpation, auscultation Jugular venous pressure assessment general lower extremity observation Assess femoral area (palpation for nodes, pulse); auscultation over fem art Knees - color, swelling; popliteal pulse Assess ankles/feet (color, temperature, pulses, edema, cap refill) Wash hands.

### Laboratory investigation

Screening tests for secondary hypertension:

Should be carried out on all patients with documented hypertension:

(1) Serum creatinine, BUN, and urinalysis (renal parenchymal disease);

(2) Serum K<sup>+</sup> measured off diuretics (hypokalemia prompts workup for hyperaldosteronism or renal artery stenosis);

(3) CXR (rib notching or indentation of distal aortic arch in coarctation of the aorta);

(4) ECG (LV hypertrophy suggests chronicity of hypertension);

(5) Other useful screening blood tests including CBC, glucose, lipid levels, calcium, uric acid;

(6) Thyroid-stimulating hormone if thyroid disease suspected.

### Tracking of hypertension

Identification of children in which risk of development of Hypertension greater in adulthood.

**Benefit:** Risk may be reduced by life style modification.

### Metabolic syndrome

Usually HTN and Dislipidemia present together with insulin resistance i.e. resistance to uptake of glucose in tissue by insulin also present. In such cases higher risk of CHD stroke, Diabetes and other cardiovascular disease mortality increase. If family history of Hypertension in parents; then risk of Hypertension in children can be predicted (Figure 3-5).