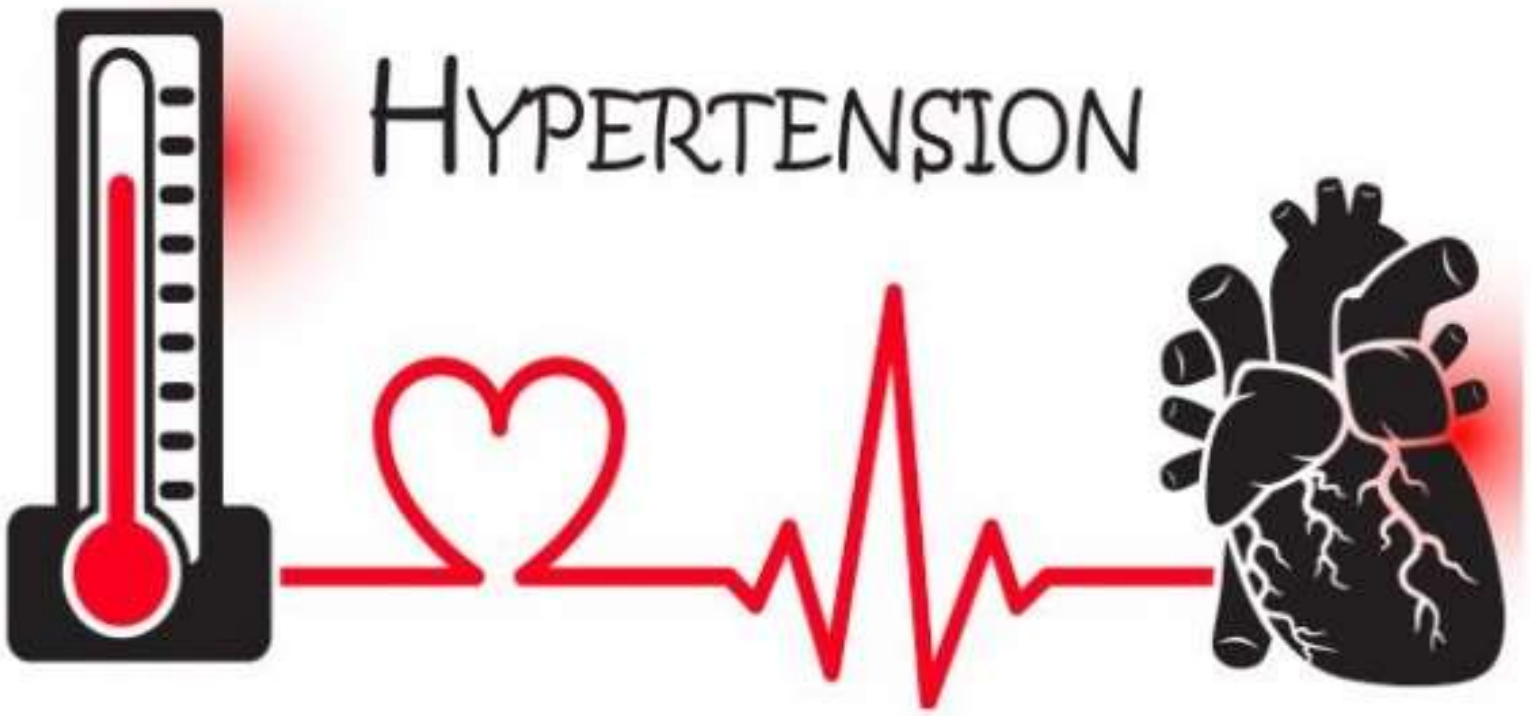

HYPERTENSION

DEFENITION

- Hypertension is defined as abnormally high blood pressure (more than 120/80 mm Hg) in the arteries. Persistent increase in systemic arterial blood pressure is known as hypertension.
- Usually a mean arterial pressure greater than in 110mm Hg under resting conditions is considered to be hypertensive; this level normally occurs when the diastolic blood pressure is greater than 90 mm Hg and the systolic pressure is greater than about 135-140 mm Hg.

- Hypertension is generally symptom less, but increases the risk of various other cardiovascular diseases like stroke, heart attack and non-cardiovascular diseases like renal damage, end stage of renal failure, etc.
- Hypertension is often called "the silent killer" because it generally has no symptoms until serious complications develop.

COMPLICATIONS

- Myocardial infarction
- Stroke
- Cerebral/brainstem infarction
- Cerebral haemorrhage
- Lacunar syndromes
- Multi infarct disease
- Hypertensive encephalopathy/ malignant hypertension
- Dissection aortic aneurysm
- Hypertensive nephroscelrosis
- Peripheral vascular disease

CLASSIFICATION

Based on JNC guidelines hypertension can be classified as:

BP CLASSIFICATION	SBP (mm/Hg)	DBP (mm/Hg)
NORMAL	<120	<80
PRE HYPERTENSION	120-139	80-89
STAGE 1 HYPERTENSION	140-159	90-99
STAGE 2 HYPERTENSION	≥160	≥100

TYPES OF HYPERTENSION

Primary hypertension:

Also called essential hypertension ,the cause of this type is unknown.

Secondary hypertension:

Secondary hypertension have specific identified cause for elevated B.P that is due to any other medical problem or medication.

Pseudo hypertension:

Osler’s sign of pseudo hypertension, is a falsely elevated blood pressure reading due to calcification of blood vessels which cannot be compressed.

White coat hypertension:

A syndrome whereby a patient's feeling of anxiety in a medical environment results in an abnormally high reading when their blood pressure is measured.

ETIOLOGY

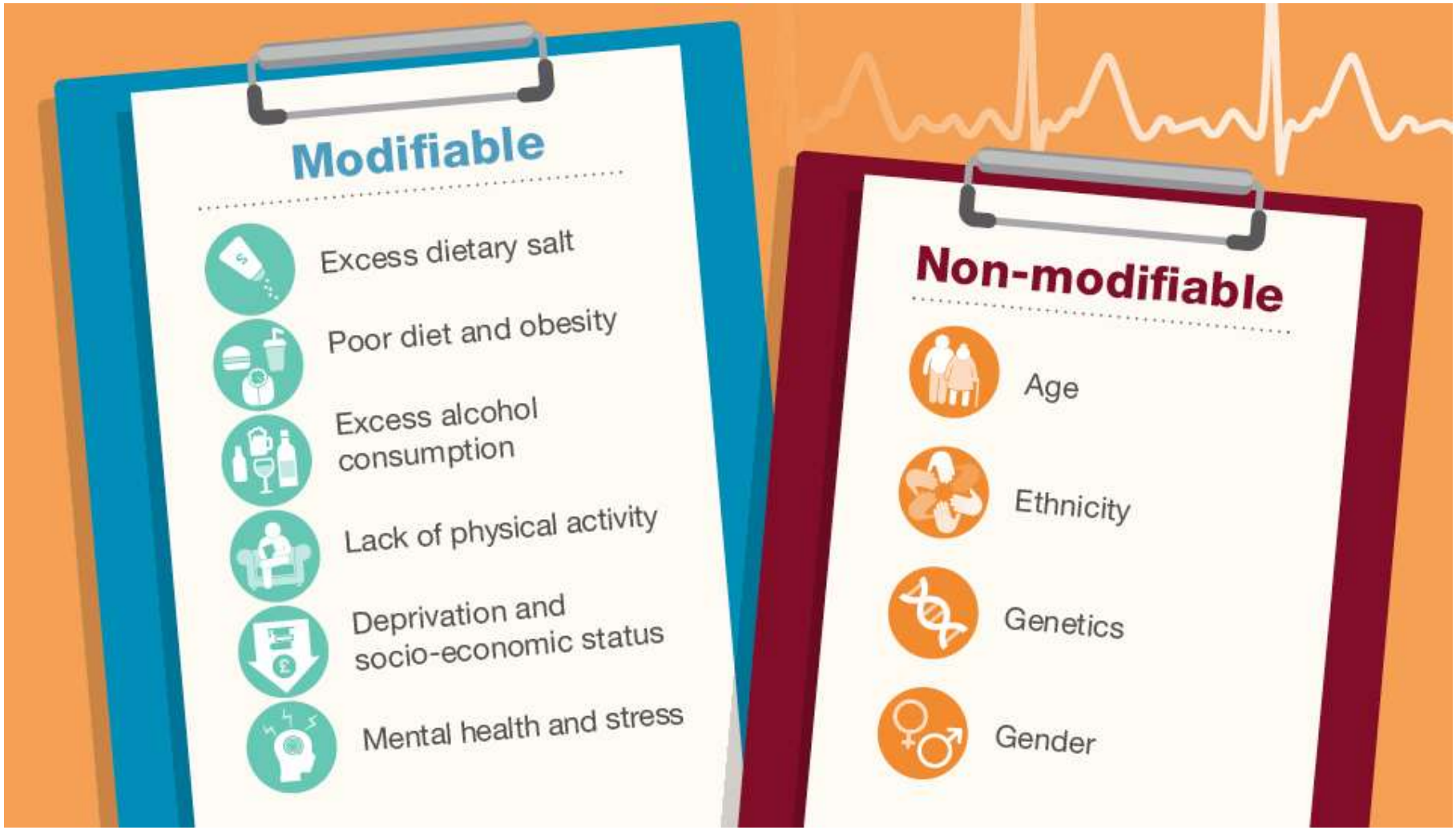
Essential(primary) hypertension:

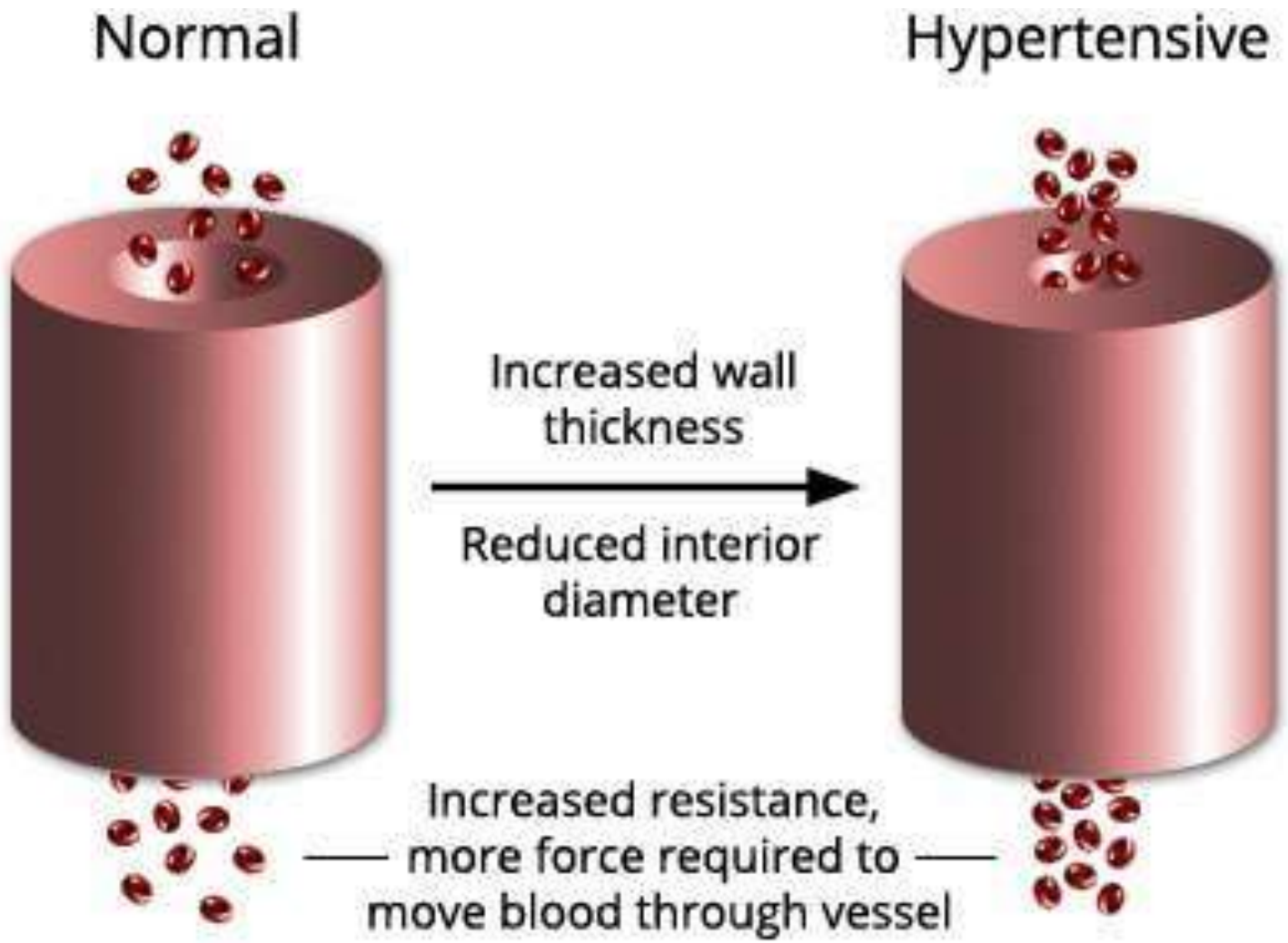
- Increased peripheral resistance.
- stress , hormonal, neural
- Life style, Genetic.

Secondary hypertension:

- Renal disorders-Renin-Angiotensin, Sodium retention, ADH , Aldosterone.
- Endocrine-Cushing's, Pheochromocytoma , Acromegaly.
- Vascular- Coarctation of Aorta, Aortic insufficiency
- Neurogenic - psychogenic , Polyneuritis.

RISK FACTORS




Normal
Hypertensive
Increased wall thickness
Reduced interior diameter
Increased resistance, more force required to move blood through vessel

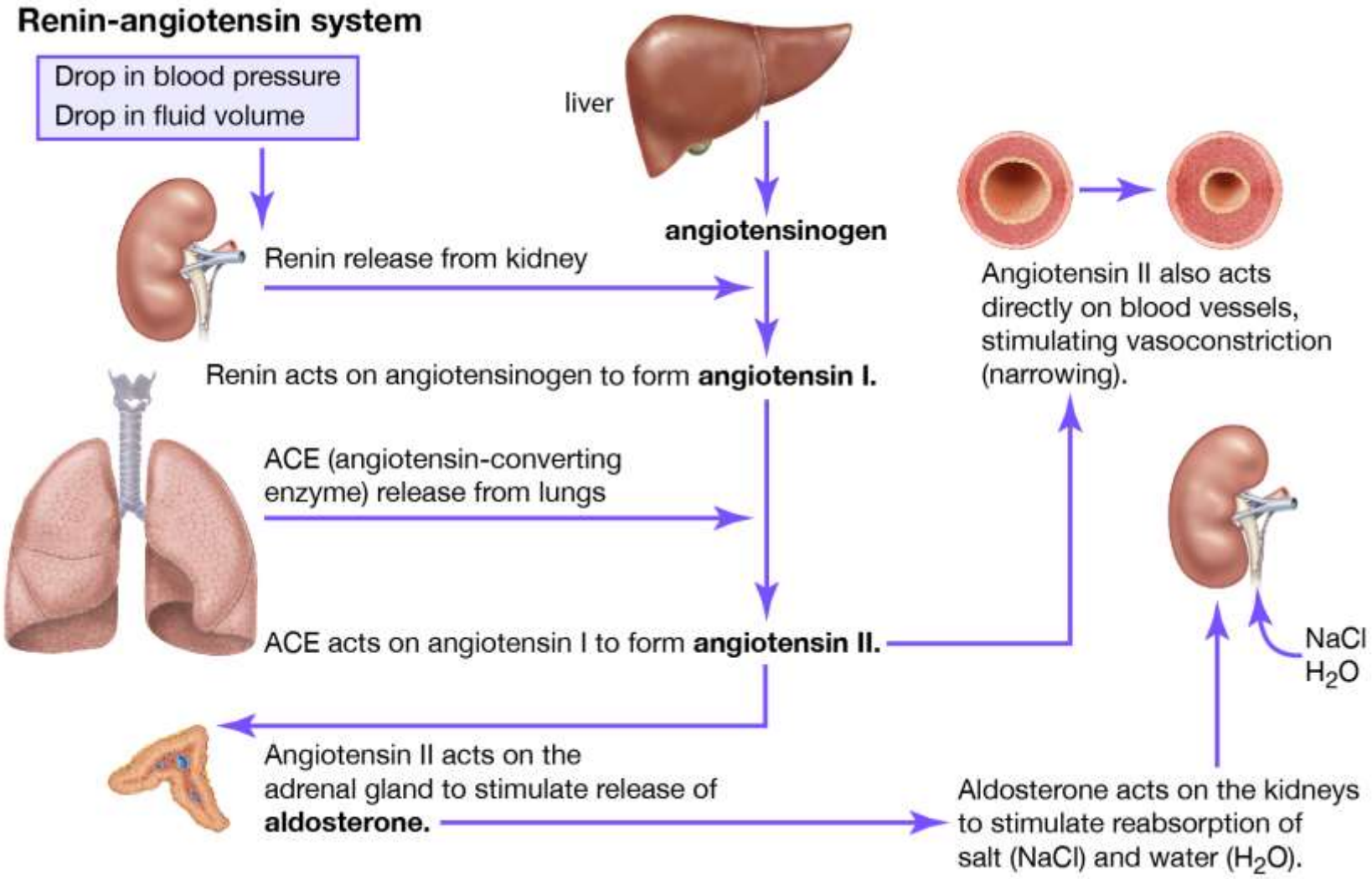
REGULATION OF BP

It is an area which attempt to explain mechanistically the causes of hypertension.

The BP is regulated by

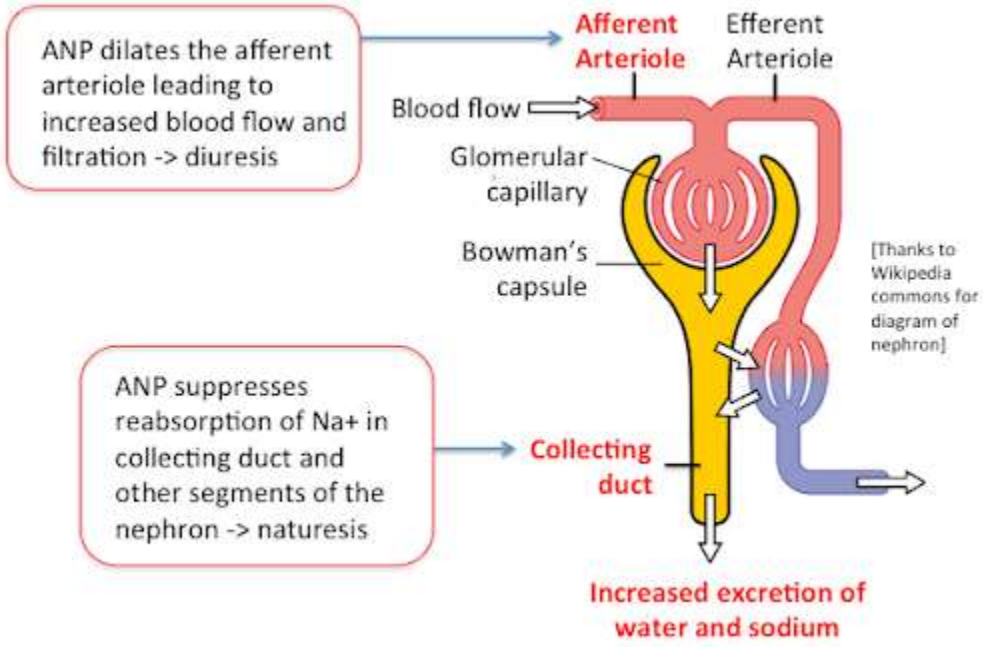
- Humoral mechanism
  - The Renin Angiotensin Aldosterone System (RAAS)
  - Natriuretic Hormone
  - Insulin resistance and hyperinsulemia
- Neuronal regulation
- Peripheral autoregulation
- Vascular endothelial mechanism
- Electrolytes
- salts

RAAS mechanism



Natriuretic Hormone:

- It inhibits sodium and potassium ATPase, and interferes with sodium transport across cell membrane.
- This hormone block the active transport of sodium out of arteriolar smooth muscles.



Insulin resistance and hyperinsulemia:

- Increase insulin concentration led to hypertension because increase renal sodium retention enhanced symphathetic activity.
- Insulin also elevate BP by increasing intracellular calcium.

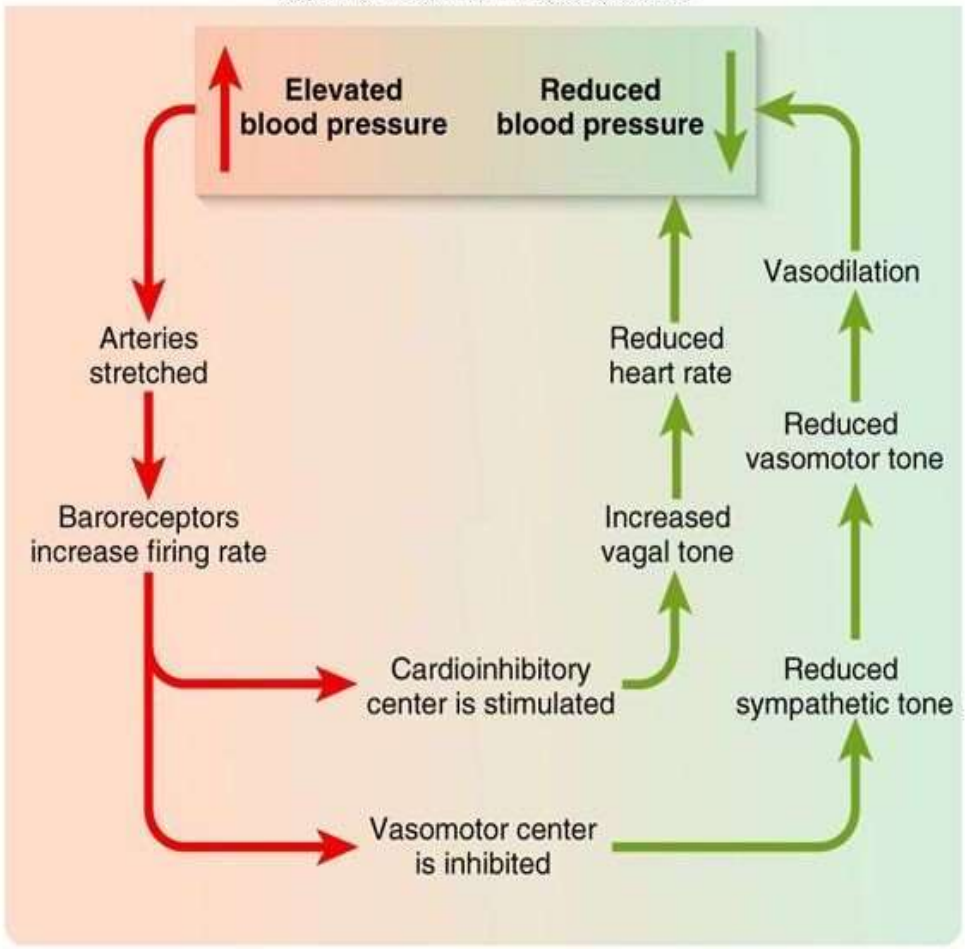
Neuronal Regulation

- Stimulation of presynaptic alpha receptors exerts negative inhibition on norepinephrine release.

- Baroreceptors are nerve endings lying in walls of large arterioles especially in carotid arteries and aortic arch.

- Purpose of this mechanism is to regulate BP and maintain homeostasis.

Baroreflex
Negative Feedback Response



Peripheral Autoregulatory Component

- Renal defect in sodium excretion may develop which can then cause resetting of tissue autoregulatory process.
- Local regulatory process maintain adequate tissue oxygenation.

Vascular Endothelial Mechanism

- These regulatory functions are mediated by vasoactive substance that are synthesized by endothelial cells.
- Deficiency in local synthesis of vasodilating substance or excess vasoconstriction substance contribute to essential hypertension.

Electrolytes

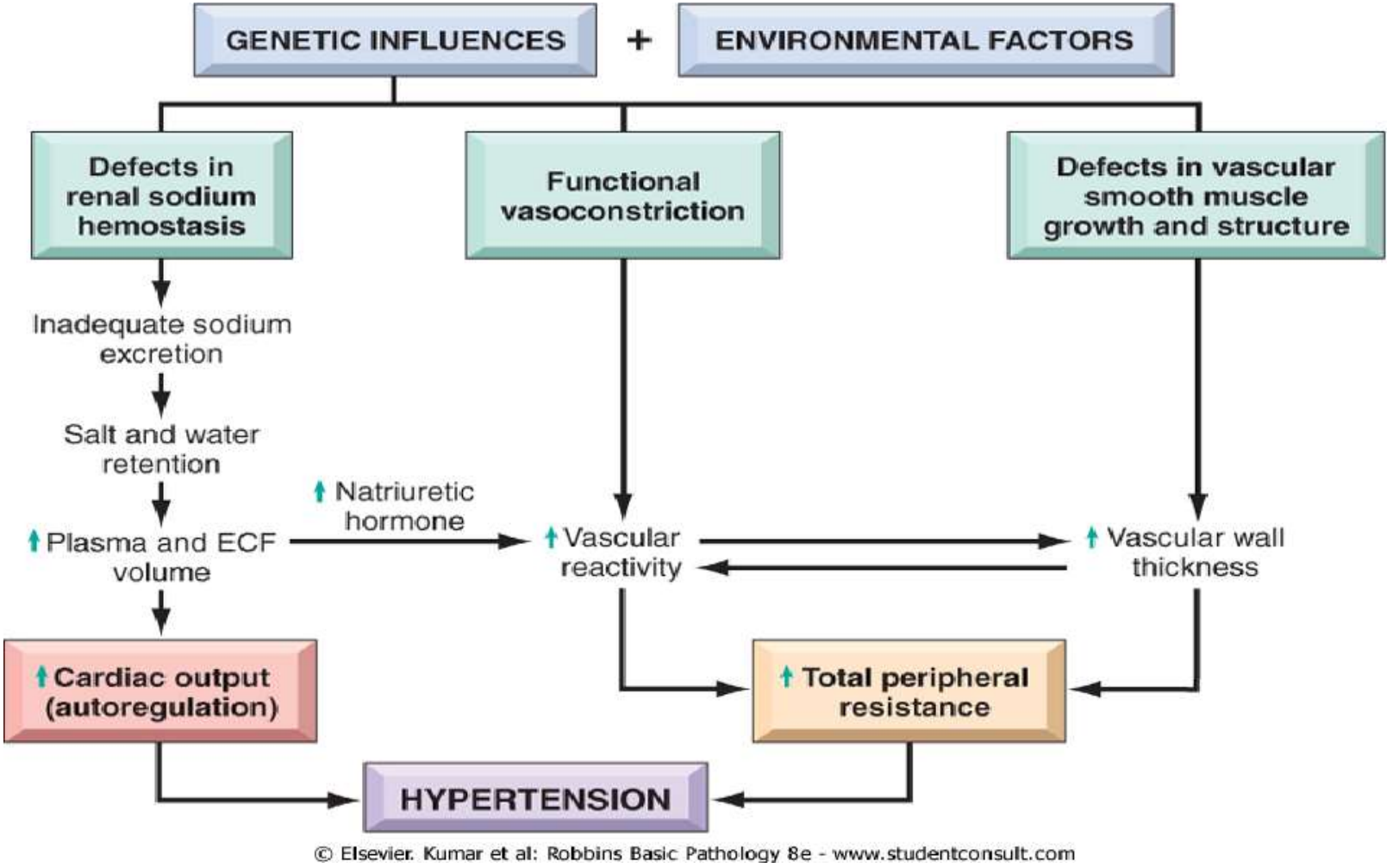
- Population based studies indicate that high sodium diets are associated with high prevalence of hypertension.

- Calcium homeostasis also play an important role in pathogensis of hypertension.

Salt Sensitivity

- Effect of salt intake on blood pressure is not dependent on level of salt intake, but by salt sensitivity.
- Salt sensitive individuals will increase their blood pressure more than insensitive individuals.

PATHOPHYSIOLOGY



SIGNS AND SYMPTOMS

Hypertension is often called the “Silent killer” because it is frequently asymptomatic- meaning “without symptoms” until it has become severe and damage to organs have occurred.

In some people, **severe** high blood pressure can result in nosebleeds, headaches, or **dizziness**

A person with severe hypertension may have symptoms caused by the effects on the blood vessels which may be:

- Fatigue
- Dizziness

- Palpitations
- Reduced activity tolerance
- Irregular heart beat
- Blood in urine
- Pounding in your chest ,neck or ear
- Vision problem
- Angina (chest pain)
- Difficulty in breathing

DIAGNOSIS

BP can be measured by sphygmomanometer


Thank
You