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Cardiovascular Disorders 15%

Hypertension

Primary: no underlying symptoms/ overt disease, most common, genetic

- Pathophysiology
 - o Excess sympathetic nervous system with overstimulation of α - & β -adrenergic receptors \rightarrow vasoconstriction, \uparrow cardiac output
 - o Altered function of renin-angiotensin-aldosterone system and its responsiveness to factors – Na intake & overall fluid volume
 - o Interaction between insulin resistance
 - Na retention by kidneys
 - \uparrow CNS activity
 - Hypertrophy of vascular smooth muscle
 - Changes in ion transport across cell membranes

Risk Factors	
Modifiable	Non-modifiable
\uparrow Na intake, \downarrow K, Ca, Mg intake	Genetics
Obesity	Age
Excess alcohol consumption	Family history
Insulin resistance	Race

- Complications
 - o Cardiovascular – stroke, coronary heart disease
 - o Neurological - IICP
 - o Renal – CKF
 - o Peripheral vascular systems
 - o Retina of the eye
 - Diagnosis
 - o Reducing BP to less than 140mmHg systolic & 90mmHg diastolic
 - o ECG, urinalysis, BGL, haematocrit, serum potassium, creatinine, calcium, cholesterol & lipoprotein profile, HDL, LDL, triglycerides
 - Lifestyle modifications
 - o Diet: \downarrow Na, maintain adequate K, Ca intake, \downarrow saturated fats
 - o Physical activity: at least 30mins a day
 - o Quit smoking, limit alcohol
 - o Stress reduction
 - o Weight loss
 - Medications
 - o ACE Inhibitors: lower BP by preventing conversion of angiotensin I – II. Prevents vasoconstriction and sodium and water retention
 - o Angiotensin II receptor blockers: same effect, **not** by blocking effect of angiotensin II on receptors
 - o α adrenergic blockers: block α receptors in vascular smooth muscle, decreasing vasomotor tone and vasoconstriction
 - o β blockers: reduce BP by preventing β receptor stimulation in the heart, therefore decreasing HR and cardiac output
 - o Calcium channel blockers: inhibit flow of calcium ions across the cell membrane of vascular tissue and cardiac cells. **Therefore** relax arterial smooth muscle, lowering peripheral resistance through vasodilation
 - o Diuretics: inhibit reabsorption of sodium and chloride in the proximal segment of the distal convoluted tubules. Increase urinary secretion of water, chloride, potassium, magnesium
 - Nursing interventions
 - Identify contributing factors
 - Develop a realistic health maintenance plan
 - Educate **pt** – long term effects & **Tx**
 - Refer to dietitian/ weight loss program
 - Monitor fluid intake/ output/ peripheral oedema
 - Vasodilators can cause fluid accumulation in interstitial tissues
- Secondary: elevated BP from identifiable underlying process
- Pathophysiology
 - o Kidney disease
 - o Endocrine disorders: Cushing's, hyperthyroidism
 - o Neurological disorders: IICP
 - o Drug use: oestrogen & oral contraception
 - o Pregnancy
 - Hypertensive crisis: $> 180/120$ – rapidly acting antihypertensive, potent vasodilator: sodium nitroprusside **dehydrate**