

Heart Disease

Introduction to Heart Disease

What is it?

- Heart disease includes numerous problems, many of which are related to a process called atherosclerosis. Atherosclerosis is a condition that develops when a substance called plaque builds up in the walls of the arteries. This buildup narrows the arteries, making it harder for blood to flow through. If a blood clot forms, it can stop the blood flow. This can cause a heart attack or stroke.

What variations are there?

- Heart failure
 - Heart doesn't pump blood efficiently enough. Blood doesn't circulate and bring necessary oxygen and nutrients
 - The heart has to enlarge and beat faster to keep up, but eventually these processes don't work
- Arrhythmia
 - heart beats at irregular rhythm, may affect blood circulation. Tachycardia = more than 100bpm, bradycardia = less than 60bpm
- Heart valve problems
 - need blood flow to be in one direction, issues arise when valve either doesn't allow enough out or lets blood flow back into the heart

Statements & Information Outline

- **“Heart disease doesn't affect people who are fit or strong.”**
 - Fit & strong men and women can have heart disease or at least the precursors
 - Postmortem test of on American soldiers 15-19 y.o. from Korean War showed that many showed signs of atherosclerosis (fatty stuff collects along artery walls, thickens + can block arteries)
 - Study in 2008 showed 62% Armed Forces on active duty had prehypertension
 - Stress is a significant cause of hypertension and can affect anyone
 - There are a lot of risk factors for heart disease that have nothing to do with your current state of health: genes, gender, age, race
 - Heart disease is #1 cause of death for men and women
 - With high rates of physical inactivity, poor diet, obesity, smoking, it is important to always consider how you can decrease risk of heart disease, especially as we get older
- **“I'd feel sick if I have high blood pressure or cholesterol.”**
 - Hypertension is silent killer
 - Asymptomatic chronic disorder
 - Sometimes have headache, but research shows no correlation btw episodes & blood pressure fluctuations
 - Important to get blood pressure checked by nurse or physician regularly to track any increases in blood pressure that may lead to hypertension

- Some symptoms of heart disease: chest pain, shortness of breath, pain/numbness/weakness/coldness in legs or arm (especially while walking, relieved by rest)
 - Although some experience sx, for many, the only indication that they have heart disease is when they suffer their first heart attack, stroke, or heart failure
- Many ignore the signs of heart disease because of fear that it will mean that they have to start medications or have surgery
 - Realistically, may just have to take aspirin or be monitored by physician
 - If need medications and/or surgery, at least have caught illness before it becomes debilitating or fatal
- **“Smoking is the biggest risk factor for developing heart disease”**
 - Risk factors
- Your family’s history is a risk factor.
 - Hypertension = 2x common if 1 or more parents have it
 - Genetic factors contribute to 30% of differences in BP in people
 - (UpToDate “Genetic factors in the pathogenesis of essential hypertension”)
- Nicotine and alcohol constrict arteries and increase chances of heart disease.
 - Tobacco use = most common cause of cardiovascular death in world
 - Smoking stiffens arteries and thickens blood, BP/HR rise with each cigarette, can continue up to 10 yrs after stopping
 - More hypertension cases in people smoking >15 a day
 - For chronic smokers, BP decrease from decreased body weight
 - Stop smoking: can decrease risk of coronary heart disease by 35-40%
 - Second-hand smoke also increases risk of heart disease
 - (UpToDate: “Cardiovascular effects of nicotine”)
 - No more than 2 alcoholic drinks a day for men, 1 for women
 - (American Family Physician: “High blood pressure”)
- also: alcohol (associated with high blood pressure when used in excess), exercise, stress, diet (discussed below), also weight, cholesterol, triglycerides (all linked)
- **“Medications are the only thing that can prevent heart disease”**
 - Risk factor modification
 - In addition to smoking cessation, controlling diet, exercise, weight loss
 - Healthy stress management techniques
 - Adding more exercise into your life whenever you can
 - Deep breathing
 - Progressive muscle relaxation
 - Confiding in friends when able to see them
 - Diet
 - Ex: DASH diet (promoted by National Heart, Lung, and Blood Institute)
 - low in sodium, processed/refined sugars

- high in complex carbohydrates
 - in addition to high in fruits/vegetables, foods rich in potassium, magnesium, and calcium
 - low fat dairy foods, high fiber, high protein; high in whole grains, poultry, fish, nuts, low in fat, red meat, sweets (inc sodas)
- Classes of antihypertensive drugs
 - Diuretics: help kidneys eliminate excess salt, water (thiazide/thiazide-like drugs often first-line treatment, but associated with new-onset diabetes)
 - Adrenergic receptor antagonists
 - beta, alpha blockers- block action of epinephrine and norepinephrine
 - mechanisms not known, and adverse effects
 - calcium channel blockers
 - block entry of calcium into cardiac muscle cells, decreased intracellular Ca^{2+} → red in muscle contraction
 - ACE inhibitors, angiotensin II receptor antagonists, aldosterone antagonists, vasodilators (for use in hypertensive emergencies, ie sodium nitroprusside)
- **“Atherosclerosis, or hardening of the arteries, only puts you at risk for heart attacks”**
 - Atherosclerosis can lead to, in addition to heart attacks: strokes, PAD, aortic dissection, aortic aneurysm
 - Atherosclerosis = hardening of arteries due to build up of plaque
 - Plaque made up of fat, cholesterol and other substances in blood that can attach to and collect on wall of artery
 - arteries supply nutrients and oxygen to various parts of body - without good blood flow can cause organs to fail
 - Can cause:
 - Blockage of arteries supplying heart with blood
 - can lead to blood clots that block blood flow
 - may cause chest pain, or heart attack
 - Blockage of arteries supplying head and brain
 - reduced blood flow to brain can lead to stroke which can result in problems with movement, speech, vision
 - Blockage of arteries supplying organs and other parts of body
 - can cause numbness, pain, or infections (if injury to area occurs and sufficient blood flow is not available)
 - blockage of arteries to kidneys can cause chronic kidney disease and eventual kidney failure
 - Plaques can cause weakness in arteries also lead to very serious conditions such as aortic dissection or aortic aneurysm, which if ruptured can lead to death
- **“If I’ve had a heart attack in the past, I am at greater risk for having a second one in the future”**

- Secondary prevention (what to do if you've had a heart attack or stroke before)
 - 21% of men and 33% of women who have suffered one heart attack will suffer another within 6 years
 - 20% of all patients within one year
 - second heart attacks account for 30-50% of all deaths from heart attack
 - Unfortunately, 2/3 of heart attack patients don't take necessary steps to prevent second heart attack
- Lifestyle modifications
 - Aim for blood pressure less than 130/80 mmHg
 - Control dietary cholesterol
 - reduce intake of saturated fats
 - increase "good" fats by eating more fish
 - "Bad" cholesterol (LDL) should be less than 100mg/dL
 - Exercise for 30-60minutes 5-7 days a week
 - Stopping smoking
 - Prescription drugs such as those Pete mentioned - follow doctor's instructions
 - Aspirin may be recommended, but physician should be consulted because of risk of blood thinning
 - Weight management
 - Men's waist circumference less than 40 inches, women less than 35inches, BMI less than 25