DASH DIET

- ★ Dietary approaches to stopping HTN
- ★ Low sodium, High K+, High Ca+ diet to lower BP and Cholesterol
    - Low Sodium: **NO** canned soups, chips, smoked meats, seasoning, processed foods
    - High K: apricots, bananas, potatoes and tomatoes
- ★ < 2,300 milligrams of sodium recommended

Sexuality

MALES

Erectile Dysfunction

ED is inability to achieve or maintain an erection organically or functionally. Dysfunction must be present for more than 3 months for medical diagnosis.

Organic ED: Gradual reduction in function resulting from diabetes, medications, vascular disease, hyperlipidemia,atherosclerosis, direct injury to penis, and hypertension.

Functional ED: Result of physiological causes - high stress, guilt, and low self-esteem.

- ★ **Risk Factors**
    - Inflammation of seminal vesicles, urethra, and prostate
    - Prostatectomy, spinal surgery, bladder surgery
    - Damage to smooth muscles, nerves, ect
    - Pelvic fracture
    - Vascular disease/HTN
    - Chronic neurologic conditions
    - Endocrine disorders
        - Diabetes, thyroid disorders, low testosterone
    - Smoking/alcohol consumption
    - Antihypertensives
    - Poor overall health that prevents sexual intercourse
- ★ **Pharmacological Interventions**

- PDE-5 Inhibitors: **Sildenafil** and Vardenafil
  - Relax smooth muscle to increase penile blood flow compressing veins to prevent blood loss
  - Take 1 hour before sex
    - More than 1 per day can cause leg/back cramps and N/V
  - Avoid alcohol
  - Adverse Effects:
    - Dyspepsia
    - **Headache, facial flushing**, stuffy nose
    - Leg/back cramps from more than 1 dose/day
    - **Priapism and hypotension**
  - **No Nitrates**
  - **Seek medical attention if erection lasts over 4 hours**
- Vasodilators: Alprostadil, papaverine, Phentaphentolamine
  - Injected into penis to cause erection
- Hormone replacement
  - Testosterone injections, creams

★ **Management of Care**

- Prior to giving medication, cardiovascular workup is recommended
- **Vacuum Constriction Device (VCD):**
  - Draws blood into penis and rubber ring placed at base to maintain erection
- **Penile Implants:**
  - Three piece inflatable device implanted into penis to achieve erection
  - Squeeze pump in scrotum to fill penis with fluid and release button to deflate
  - Education: **observe** surgical site for **bleeding and infection** following insertion
- **Penile Suppository**

        - Relaxes smooth muscle to increase blood flow
        - Inserted **10 min before intercourse**; erection can **last up to 1 hour**; can use **twice a day**

- ★ **Health Promotion**
    - Educate patient that erections achieved after treatment may **not** be the **same as it was before**
- ★ **Complications**
    - Priapism or severe hypotension
        - From medication therapy

Benign Prostatic Hyperplasia

When the prostate gland enlarges and causes urinary dysfunction. Very common in older adult males, non cancerous.

- ★ **Health Promotion**
    - Watch with age
    - Smoking cessation
    - Obesity control, **Exercise!**
    - **Avoid decongestants, antihistamines, and anticholinergics**
        - Decrease bladder contractility, restriction and impairment of urethra
    - Avoid Western diet (high fat, protein, carbs and low fiber)
    - Risk from diabetes and heart disease
    - **Don't hold pee in, pee when felt**
    - **Decrease stress**
- ★ **Medications**
    - DHT Lowering medications: **Finasteride**
        - Decrease production of testosterone in prostate gland
            - Takes 6 mos for effects
        - Decreases libido and impotence
        - Report breast enlargement to provider

        - Pregnancy **Cat X**, can absorb through skin, pregnant women shouldnt touch
    - Alpha-blocking agents: **Tamsulosin**
        - Causes relaxation of the prostate gland and bladder to relieve obstructions
        - Establishes strong urine flow
        - Education:
            - **Causes high HR, syncope, ortho hypotension**

★ **Management of Care**

- **Transurethral ablation (TUNA)**
    - Low level radiation used to shrink prostate
- **Transurethral microwave therapy**
    - Heat used to shrink prostate
- ****Both TUNA and TMT used before TURP****
- **TURP** - transurethral resection of the prostate
    - Resectoscope inserted through urethra and trims away excess prostatic tissue, a 3 way indwelling catheter
    - Continuous or intermittent bladder irrigation **(CBI)**
    - **Education/Management of Care:**
        - If bladder becomes obstructed, turn off CBI and irrigate with **50 mL** irrigation solution, using large **piston syringe**
            - **Output should be pink or light colored**
            - If output is bright red = **clots (increases flow rate)**
            - **High flow rate flushes out clots**
        - **Catheter has a large balloon (30-45 ml) that is taped to the leg**
            - **Avoid kinks**
            - Instruct client to **not void around the catheter**
                - Causes bladder spasms/bladder obstruction
        - Control pain with **analgesics**, decrease activity in first 24 hours

- Monitor V/S, I&O (decreased output), infections, overhydration,

★ **Nutrition**

- Consume high-fiber diet and laxatives to avoid straining
- Drink 12 or more 8 oz glasses of water each day
- Avoid caffeine and alcohol
- Avoid drinking large amounts of fluid at one time

FEMALES

Menopause

Permanent (normal physiologic process) cessation of menses, menses has not occurred for 12 months.

First: **perimenopausal**, which can last for years due to decreased estrogen production.

Second: **postmenopausal**, is 1 year after **final** menstrual period.

★ **Health Promotion**

- Weight bearing exercise
- Proper nutrition
- Discuss feelings on sex life
- Improve self esteem and body image
- Take supplements
- NO smoking

★ **Clinical Manifestations**

- **H**ot flashes
- **A**trophy of the vagina
- **V**aginal dryness
- **O**steoporosis risk
- **C**oronary artery disease risk
- Decreased **HDL and LDL**
- Decreased skin elasticity and hair loss
- Mood swings

★ **Diagnostics**

- **FSH**: Follicle Stimulating Hormone
  - Done 1 year after cessation of menses, increased **(>30) during menopause**
- Pelvic exam or **pap smear**
  - Rules out cancer in cases of abnormal bleeding
- Breast mammogram
  - Rule out cancer in cases of fatty tissue change
- **Uterine lining biopsy**
  - Diagnose abnormal uterine bleeding for clients over 40 yrs
- **DXA** (bone mineral density measurement):
  - Determine risk for osteoporosis
  - Baseline needed

★ **Nutrition**

- Increase intake of **high protein and high calcium food**
- Decrease intake of fats
- Avoid Alcohol, caffeine and tobacco
- **Take Ca, Vitamin D and Phosphorus supplements**
  - **Vit D:** Fish, fortified dairy products, egg yolks and sunlight
- Vitamin E and B6 = **decrease hot flashes**
  - **Vitamin E:** vegetable oils, grains, nuts, dark green veggies
  - **B6:** meats, grains, legumes (beans),

Fibrocystic Breast Disease

Painful, tender lumps in breast tissue, common in the upper outer quadrant of the breast. Does not increase risk for breast cancer. Common in younger women and is not cancerous.

★ **Risk Factors**

- Premenopausal status
- Postmenopausal hormone replacement therapy

- ★ **Diagnostic Procedures**
    - Breast ultrasound (confirmation/rules out cancer)
    - Fine needle aspiration (confirmation and reduction in pain from fluid build up)
- ★ **Medications**
    - OTC Analgesics
        - Acetaminophen or ibuprofen
    - Oral contraceptives
        - Suppress estrogen or progesterone secretion
    - Diuretics
        - Decrease breast engorgement
- ★ **Management of Care**
    - Suggest client **reduce intake of salt before menses**
        - **Reduces breast enlargement**
    - Wear supportive bra
    - Apply local heat or cold to temporarily reduce pain
    - Discuss risk of hormone medications (liver disease and stroke)
    - Encourage client to journal effectiveness

Cystocele

Protrusion of bladder into anterior vaginal wall. Weak pelvic muscles and/or structures.

- ★ **Health promotion**
    - Lose weight if obese and at risk
    - Eat high fiber diet and drink adequate fluids to prevent constipation
    - Watch **increased risk from aging and post menopause**
- ★ **Management of care**
    - Anterior Colporrhaphy
        - Pelvic muscles are **shortened and tightened to increased bladder support**
    - Intravaginal estrogen

        - Prevents atrophy of vagina
    - Bladder training
        - **Kegel exercises**: help with urinary incontinence
    - **Vaginal pessary**
        - Silicone device **inserted to provide support** and block profusion of other organs into vagina
            - Insure client does not have **latex ALLERGY**
    - **Transvaginal repair**
        - Vaginal mesh/tape used to create a sling that supports pelvic floor

★ **Education**

- Notify provider = signs of infection
    - Elevated temp, HR, and RR
    - Foul smelling or purulent discharge and pain
- Avoid straining at defecation
- Avoid Sneezing, coughing, lifting, sitting, walking or standing for long periods of time
    - **Tighten and support pelvic muscles when coughing or sneezing**
- Adhere to post-op restrictions
    - Avoidance of strenuous activity
    - Take analgesics, antibiotics, and stool softeners
    - No sex for 6 weeks
    - Sutures absorb, don't need removal

Sexually Transmitted Infections (STI)

Syphilis

Bacterial infection usually spread by sex contact that starts as painless sore.

★ **Clinical Manifestations**

- Primary: Canker sore with little or no pain (6 weeks)

- Secondary: Skin rash, mucous patches, sore throat, flat broad papule on labia, flu like S&S (2-6 weeks)
- Latent: No S&S but still spreads (1 year)
- Tertiary: infiltrating tumors and inflammatory response

★ **Diagnostics**

- **Venereal Disease Research Laboratory (VDRL)**
  - Oldest blood series used for screening
- **Rapid Plasma Reagin (RPR)**
  - Blood test: (+) 4-6 weeks after infection
- ****If either of these are (false) positive** = FTA ABS test (antibody test)**

★ **Treatment**

- Penicillin G

Genital Herpes

Caused by herpes simplex virus, can be transmitted when ptnt does not have S&S.

★ **Clinical Manifestations**

- Pain, itching, small red bumps
- White blisters, ulcers and scabs

★ **Diagnostics**

- Viral culture
  - Swab fluid from lesion
- PCR Test
  - Identifies genetic material from the virus through:
    - Lesion, blood or body fluids
    - Recognize HSV 1 & 2
- Antibody test
  - Blood test
- Immunoblot and enzyme-linked immunosorbent assay (ELISA) test
  - Differentiate between HSV 1 & 2

- ★ **Complications**
    - Other STI's
    - Meningitis
    - Bronchitis
- ★ **Treatment**
    - Antivirals: "-vir"
        - Decrease risk of transmission

HPV - Human Papillomavirus

Virus that can cause genital warts and asymptomatic infection. Vaccines are available.

- ★ **Clinical Manifestations**
    - Genital warts/plantar warts
- ★ **Complications**
    - Cervical cancer
    - Oral and upper respiratory lesions or cancer
- ★ **Diagnostics**
    - Pap test
        - Abstain from sex until discharge has stopped
        - Notify if heavy vaginal bleeding, fever or foul discharge
    - DNA test
- ★ **Treatment**
    - Salicylic Acid
    - Freezing warts with liquid nitrogen
    - Surgical removal of warts

Chlamydia

Bacterial infection that affects the reproductive organs of both males and females.

- ★ **Clinical Manifestations**
    - Females = often asymptomatic

        - Can have pain urinating, lower abdomen pain, vaginal discharge
        - Painful sex
- ★ **Complications**
    - Other STI's
    - Pelvic inflammatory disease
    - Testicle and prostate gland infections
    - Infertility
- ★ **Diagnostics**
    - Urine test
    - Culture Swab
- ★ **Treatment**
    - Azithromycin - Single dose
    - Doxycycline - 2x daily for 7 days
        - Education: No sex for 7 days, retest in 3 months

Gonorrhea

Bacterial STD that usually affects mucous membranes of male urethra or female cervix.

- ★ **Clinical Manifestations**
    - Dysuria
    - Pus-like discharge
    - Swelling in testicles
    - Dyspareunia (painful sex)
    - Abnormal menses
    - Vaginal bleeding b/w periods
- ★ **Diagnostics**
    - Urine test
    - Culture sab of infected area
- ★ **Complications**
    - Infertility
    - Infection spreading to other parts of body

        - Increased risk for: HIV/AIDS
    - Atopic pregnancy
    - Blindness in infants

★ **Treatment**

- Antibiotics

Perfusion

Coronary Artery Disease and Angina

Angina: chest pain from decreased coronary blood flow.

Stable Angina: (most common & predictable) increased by physical exertion, relieved by rest and nitrates. Variant Angina; usually at night, from coronary spasm, with or without plaque (unpredictable and mechanism unknown).

★ **Risk Factors**

- CAD: Modifiable
    - Lifestyle and high cholesterol
    - Smoking
    - Obesity
    - Inactivity
    - Birth control and hormone replacement therapy
    - Stress
- Non-modifiable
    - Age, gender, genetics and race (diagnosis HTN/DM)

★ **Clinical Manifestations CAD**

- Men: **typically chest pain w activity, rest = relief**
    - Dyspnea
    - Pallor
    - Increased HR
    - Anxiety
- Women:

        - Ingestions
        - nausea/vomiting
        - Upper back pain
        - **NOT chest pain**

★ **Diagnostics**

- History/Physical
    - Screen for risk factors and related diseases
- Serum Cholesterol Levels:
    - Check for **hyperlipidemia**
- C-reactive Protein (**CRP**):
    - **Increased** indicates inflammation
- Ankle-Brachial Index **(ABI):**
    - BP in arms and legs
        - **<0.9 = PAD/CAD**
- Stress Test (Exercise EKG Testing):
    - Must have consent, invasive injection of IV iodine contrast with treadmill to stress the heart
- **Cardiac Catheterization**
    - Injection of iodine dye to highlight coronary arteries
    - Check allergy to iodine/shellfish prior and have consent
    - NPO after midnight, check pedal pulses, kidneys must be functioning
- Echocardiography
    - Probe over heart to visualize structures

★ **Medications CAD**

- Cholesterol Lowering Drugs; -statins
    - **Muscle and Liver!!**

★ **Medications Angina**

- Nitrates
- **Beta Blockers (#1)**

- Calcium Channel Blockers (**prophylaxis**)

★ **CAD Nutrition**

- **No smoking**
- **Increase** fiber and carbs
  - **Fiber:** Fruits, veggies, oats, whole grains, beans, flax seed
- Consume **unsaturated fats**
  - Nuts, canola oil, sunflower seed, fish, corn, avocado
- Increase Omega 3 Fatty Acids
  - Fish, flax seeds, soy beans, canola and walnuts
- **Decrease** red meats and foods high in saturated fats/cholesterol
  - No butter (high in fats)
  - Trim visible fat from meats, use turkey and chicken
    - Remove the skin, no frying; baking, grilling, steaming

★ **CAD Teaching**

- Smoking cessation
- exercise/stress management
- Proper nutrition

<u>Peripheral Arterial Disease (PAD)</u>

Results from atherosclerosis (black plaque build up in the arteries), characterized by trouble getting blood to lower extremities.

★ **Clinical Manifestations**

- Burning, cramping and pain in legs during exercise
- Numbness/burning in feet when in bed
- Pain relieved when dangling
- Capillary refill >3 seconds in toes
- Decreased pulses
- Loss of hair, dry scaly mottled skin
- **Pallor with elevation, redness when dangling**

- Dry, necrotic ulcers and gangrene to toes

★ **Diagnostics**

- **Begin with client history and physical examination**
  - Check for CAD
- **Arteriography:**
  - Invasive procedure using contrast dye that is injected to visualize areas of decreased blood flow on x-ray
  - Education: **must have consent**, NPO past midnight, check for shellfish/iodine allergy
    - Hold Metformin 24-48 hours b4 and after procedure
    - Assess pedal pulses, possible occlusion, and bleeding
    - Monitor BUN and creatinine
- **Stress test:**
  - Requires consent
  - With or without treadmill (adenosine chemical version of stress test)
  - Pulse volume and BP taken before and after 5 minutes of exercise
    - **Delays in return to normal BP and HR = arterial disease**
- **Doppler ultrasound:**
  - Used if cant feel pulse
  - Pressures in thigh, calf and ankle are lower than in upper extremities = **arterial disease**
- **Ankle, Brachial BP Index (ABI):**
  - Ankle BP compared to brachial BP
    - <0.9 = PAD
    - BP in legs lower than arms = PAD

★ **Education**

- Exercise (gradually)
  - **Walk until point of pain, stop, rest, walk a little further**
  - **30 minutes, 3-5x/week**

- Warm environments promote vasodilation, no cold exposure
- Never apply direct heat bc sensation is decreased
    - No heating pads
- Avoid restrictive clothing, loose clothing ONLY
- No lotion b/w toes (diabetics)
    - Keep feet clean and dry
- Elevate legs to reduce swelling (**not above heart and no more than 20 min**)
    - Lower legs if experiencing pain

Peripheral Venous Disorders

Problems with the veins that interfere with adequate return of blood flow from the extremities back to the heart. Three Disorders: **Venous Thromboembolism (VTE), Venous Insufficiency (VI), Varicose Veins (VV).**

★ **Risk Factors**

- **VTE:** immobility, coagulation issues, surgery, pregnancy, birth control, heart failure and active cancer,
- **VI:** obesity, pregnancy, thrombophlebitis, sitting or standing for a long time
- **VV:** Female sex, pregnancy, >30 yrs old, obesity

★ **Clinical Manifestations:**

- **VTE: blood clot due to venous stasis, endothelial injury or hypercoagulability that can lead to PE**
    - Asymptomatic
    - Dull or aching calf/groin pain
    - Unilateral leg swelling
    - Warm edema and redness
- **VI: Incompetent valves in deeper veins of legs leading to pooling and dilation of veins**
    - Stasis dermatitis (brown discoloration on ankles, spread to calf, relative to the level of insufficiency)

        - Edema
        - Venous Stasis Ulcers
            - Heavily draining wounds
    - **VV: enlarged, twisted and superficial veins in any part of body**
        - Distended superficial veins visible just below the skin
        - Muscle cramp, aches, pain after sitting and pruritus

★ **Diagnostics**

- **D-Dimer Test** (first step diagnosis)
    - Measures fibrin degradation products present in blood from fibrinolysis
    - Positive test = clot somewhere (not where it is)
- Venous Duplex Ultrasonography (Second step diagnosis)
    - Shows real time picture of blood flow
- Venogram (last step for diagnosis)
    - Contrast (allergy) injected using contrast/imaging to visualize blood flow
    - Shows locations of DVT
- **Varicose Veins**: Trendelenburg Test
    - Supine position with legs elevated
        - Veins will fill will blood revealing varicose veins (flow upwards)

★ **Education**

- **VTE:**
    - **Bed rest with legs elevated above the heart**
    - Do not use pillow under knees
    - **Do not massage** or use SCD (leg compressions)
    - Only ambulate if already on anticoagulants
    - Thigh high compression or anti embolism stockings
        - **Contraindicated** for **KNOWN DVT**
    - Use warm, moist compress
- **VI:**
    - **Elevate for 20 min 4-5x daily ABOVE HEART at night, in bed**

        - Avoid crossing legs and wearing constrictive clothes/ stockings
        - Wear elastic compression stockings
            - After they've been elevated and minimal swelling
    - **VV:**
        - Wear elastic stockings
        - Elevate legs when sitting AVOID dangling over side of bed
        - Engage in ROM exercises of the legs

★ **Health Promotion**

- **VTE:**
    - Prophylaxis treatment:
        - **Enoxaparin 30 - 40 mg** with ambulation

Hypertension

No known cause. **Elevated BP:** Systolic 12-129, Diastolic <80. **Stage 1 HTN:** Systolic 130-139, Diastolic 80-89. **Stage 2 HTN:** Systolic >/= 130, Diastolic >/= 90.

★ **Risk Factors**

- **R**ace (African American Males)
- **I**ncreased sodium or alcohol intake
- **S**moking and stress
- **K**+ and Vitamin D decreased
- **F**amily history
- **A**dvanced age
- **C**holesterol increased
- **T**oo much caffeine
- **O**besity
- **R**estricting activity
- **S**leep apnea

★ **Clinical Manifestations**

- Frequently asymptomatic until it becomes severe (nicknamed silent killer)
- Headaches (mainly morning)
- Facial flushing and fainting
- Dizziness and retinal changes (blurry)
- Nocturia

★ **Medications**

- **Diuretics (FIRST LINE)**; thiazide (hydrochlorothiazide), Loop (**furosemide**), Potassium sparing (spironolactone)
  - WATCH hypokalemia
    - Muscle weakness, irregular pulse, dehydration
    - Increase K+ rich foods
    - Monitor BP, HR, and ECG
- Calcium Channel Blockers; **amlodipine**, verapamil, and **diltiazem**
  - AVOID grapefruit juice
  - Hypotension
- ACE Inhibitors; **lisinopril**, enalapril
  - Monitor BP, HR
  - Report dry cough, angioedema, increased K+
    - STOP if cough and angioedema present, then report
- ARBs; "-SARTANS"
  - Give if patient has cough on ACEs or hyperkalemia
  - Can cause angioedema
  - AVOID high K+ foods
- Beta Blockers; "-LOL"
  - Monitor BP and HR (withhold <50 bpm)
  - **Contraindicated if asthmatic/COPD**
  - Educate diabetics how they mask high HR with this medication which is first sign of hyperglycemia

★ **Management of Care**

- Obtain history and physical to identify other underlying diseases
- Determine baseline BP
- Use echocardiogram or TTE to monitor cardiac function
- Educate clients about nutrition
  - Weight reduction
  - Smoking cessation
  - Stress reduction

★ **Complications**

- **Hypertensive Crisis**
- **CAKE:**
  - **C**ongestive heart failure/Heart Attack
  - Br**A**in (STROKE)
    - Impaired cognitive function
    - Decreased alertness
    - Delirium, seizures, and cortical blindness
  - **K**idneys
  - **E**yes

★ **Health Promotion**

- Maintain body mass index **BMI less than 30**
- Diabetics should keep **blood glucose within 65-110**
- Limit caffeine and alcohol
  - Don't cut dry (stress)
- Smoking cessation
- Aerobic exercises 3x weekly +

★ **Nutrition**

- Avoid foods high in SALT/substitutes, and FAT
- Consume **LESS than 2,300 mg of SODIUM daily**
- DASH Diet (Page 1)
  - Low Na, fat, saturated fat, cholesterol, high fruits, vegetables, Ca, Mg, K+

- Consume foods rich in Calcium and Potassium
- **Limit alcohol intake to 2 servings daily (men), 1 serving daily (women)**

Valvular Heart Disease

Classified as stenosis, narrowed opening, that impedes blood moving forward. Also known as insufficiency/improper enclosure, which is backflow/regurgitation.

Stenosis = valves not opening fully and properly, leading to stiffness and tightness

- ★ **Toilet**
  - Tricuspid valve
    - Right sided heart failure
    - Occurs secondary to endocarditis/IV illicit drug use
- ★ **Paper**
  - Pulmonic valve
    - Right sided heart failure
- ★ **My**
  - Mitral valve
    - Left sided heart failure
    - Thickening occurs with age and increases systolic BP
- ★ **Ass**
  - Aortic valve
    - Left sided heart failure
    - Thickening occurs with age and increases systolic BP
- ★ **Clinical Manifestations**
  - No signs until later
  - A murmur is heard with **turbulent blood flow**
    - Systolic murmur = aortic and pulmonic valves
    - Diastolic murmur = mitral and tricuspid valves
  - Left side valve damage
    - Increased pulmonary artery pressure **(Left = lung)**

        - **Left ventricular hypertrophy (leads to HF)**
        - Decreased cardiac output
        - **Dyspnea, orthopnea, fatigue**

Right and Left Sided Heart Failure

Occurs when the heart muscle is unable to pump effectively, leading to inadequate cardiac output, myocardial hypertrophy, and pulmonary systemic congestion. Result of MI, dysrhythmia, pulmonary HTN, valvular heart disease, cardiomyopathy, etc..

- ★ **Risk Factors**
    - **RT:**
        - Older adults
        - Left sided ventricular heart failure
        - Right ventricular MI
        - Pulmonary problems (COPD, pulmonary fibrosis)
    - **LT:**
        - Older adults
        - HTN
        - CAD
        - Angina
        - MI
        - Valvular Disease (mitral or aortic)
- ★ **Clinical Manifestations**
    - **RT: Blood backed up to the body**
        - JVD
        - Ascending dependent edema
            - Legs, ankles and sacrum
        - Abdominal distension
        - Fatigue, nausea and anorexia
        - Polyuria at rest

        - Nocturnal
    - Hepatomegaly and tenderness
    - WT gain
- **LT: Blood backed up to the lungs**
    - Dyspnea
    - Orthopnea
        - Shortness of breath lying down
    - Fatigue
    - Displaced apical pulse
        - hypertrophy/big heart
    - S3 heart sounds (**Gallop**)
    - Crackles in lungs and coughing
    - Blood tinged, frothy sputum
        - Pulmonary edema

★ **Diagnostics**

- Human B-Type Natriuretic Peptides (**hBNP**)
    - Stretch of ventricle, **more stretch = BNP secreted = heart failure**
    - **Mild:** >300
    - **Moderate:** >600
    - **Severe:** >900
- Electrocardiogram (ECG)
    - Records electric signal from the heart
- Echocardiogram
    - Ultrasound to measure diastolic/systolic of the heart
- **Transesophageal Echocardiography (TEE)**
    - Transcriber placed in esophagus behind the heart to look at detailed structures of the heart to define ejection fraction
- **Chest X ray**
    - Reveals cardiomegaly and pleural effusion

- Urinalysis
  - BUN/Creatinine: **elevated**
- Liver Function Tests

★ **Management of Care**

- **Assess and Educate**
  - Monitor daily weight, I&O
    - **Report weight gain 2-3 lbs day, 5-10 lbs in a week**
  - Assess SOB
    - Admin oxygen as prescribed
- Maintain dietary **restrictions** as prescribed
  - Fluids: 1.5-2L common restrictions
  - Sodium intake
- Encourage energy conservation
  - While promoting normal exercise as tolerated
- Typically stay away from foley catheters (last resort)

★ **Medications**

- **Diuretics #1**
  - Decrease preload
  - Thiazide (**hydrochlorothiazide**), Loop (**furosemide**), Potassium sparing (**spironolactone**)
    - **WATCH hypokalemia**
      - Muscle weakness, irregular pulse, dehydration
      - Increase K+ rich foods
    - **Administer Furosemide IV no faster than 20mg/min**
- Calcium Channel Blockers; **diltiazem, nifedipine, amlodipine, verapamil**
  - AVOID grapefruit juice
- ACE Inhibitors; **lisinopril, enalapril, captopril**
  - Monitor BP, HR
  - Report **dry cough, angioedema, increased K+**

- **Angioedema: swelling of tongue and throat, big lips**
- STOP if cough and angioedema present, then report

- Decreased sense of taste and skin rash
- **report any of these manifestations**

- ARBs; -SARTANS (losartan)
  - Give if patient has cough on ACEs or hyperkalemia
  - Can cause angioedema
  - AVOID high K+ foods
- Beta Blockers; “-lol”
  - Decrease HR, to give enough time to strengthen heart, and rid fluid
  - Monitor BP and HR (**withhold <50 bpm**)
  - Contraindicated if asthmatic
  - **Orthostatics hypotension, daily weight**
  - Educate diabetics how they mask high HR with this medication which is first sign of hyperglycemia
- Inotropic Agents; **digoxin, dopamine**
  - Improve cardiac output, contractility, and decrease HR
  - Take at same time each day
    - Don't take with antacids, 2 hours apart
  - Take apical pulse for 1 minute for digoxin
    - Hold if less than 60
  - 0.5 - 2.0 normal digoxin levels
  - **>2 high digoxin levels, low K+ levels = concern**
    - **Report fatigue, muscle weakness, confusion and loss of appetite, yellow/green halos, N/V (digoxin toxicity)**

★ **Nutrition**

- **Low sodium; < 2,300 mg** daily
- **Fluid restrictions; 1.5-2 L daily**
- Consume **normal** amounts of food with **K+**

- Small frequent meals to conserve energy
    - Soft and easy to chew foods
- No smoking, limit alcohol
- Increase **protein to 1.12g/kg**

Life-Threatening Dysrhythmias

Sinus Bradycardia

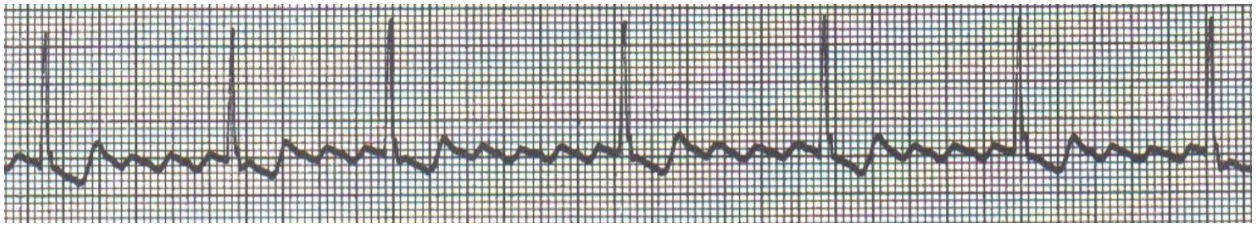
★ **Interpretation**

- **#1: R-wave regularity**
    - Regular
- **#2: HR**
    - Less than 60 bpm, more than 5 BIG squares
- **#3: P-Wave WITH QRS**
    - Normal, P-wave is present before QRS
- **#4: PR Interval**
    - Normal, 3-5 small squares
- **#5: QRS Interval**
    - Narrow, no more than 3 small squares

★ **Management of Care**

- Find out if ptnt is stable/unstable
    - Treat underlying cause
- Unstable: **atropine to increase HR**

        - **S&S: lethargic, low BP (<90 systolic), cold skin, decreased LOC, dizzy**
    - Athletes have low HR



Atrial Flutter

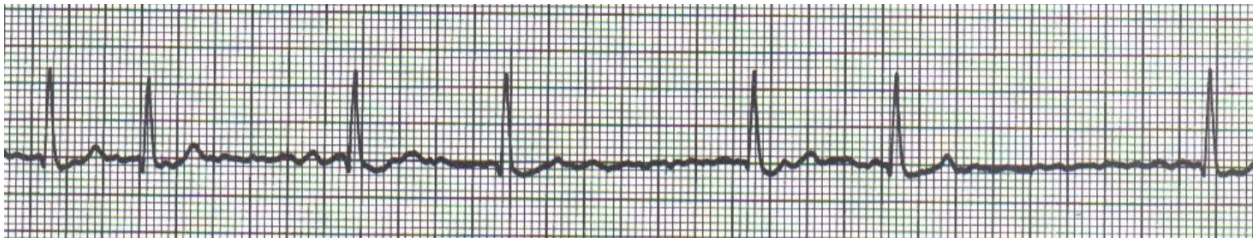
Irregular beating of the atria

★ **Interpretation**

- **#1: R-wave regularity**
    - Regular or Irregular
- **#2: HR**
    - 200-350 bpm
- **#3: P-Wave WITH QRS**
    - Saw-tooth (not there)
- **#4: PR Interval**
    - Not measurable
- **#5: QRS Interval**
    - Narrow, QRS is NOT after each P-wave
        - Multiple P-waves

★ **Management of Care**

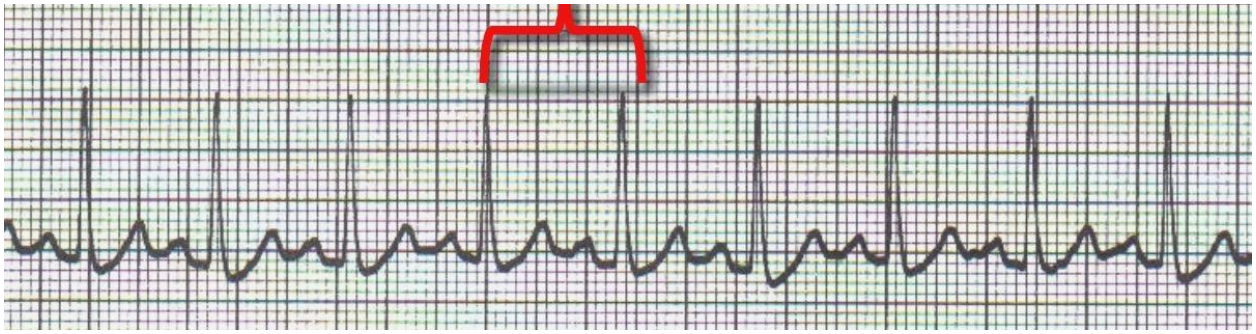
- Not as worried about blood clots
- HR is VERY fast
- Give **amiodarone or Calcium channel blockers**



Atrial Fibrillation

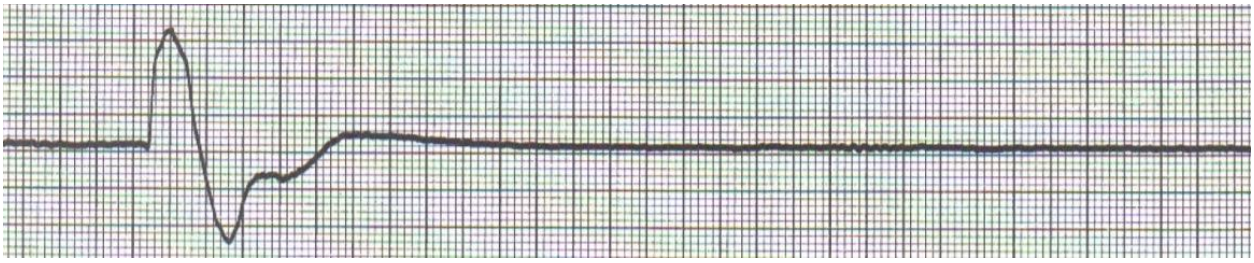
Rapid, random, ineffective contractions of the atrium. Heart is not squeezing, and blood pools in the atrium, leading to clots.

- ★ **Interpretation**
  - **#1: R-wave regularity**
    - Irregular, irregular
  - **#2: HR**
    - Over 350
  - **#3: P-Wave WITH QRS**
    - Irregular discernable P-waves (cannot see)
  - **#4: PR Interval**
    - Not measurable
  - **#5: QRS Interval**
    - Narrow
- ★ **Management of Care**
  - Assess ptnt stable/unstable
  - See if patent is on blood thinners
  - Is it new or chronic?
  - Stable: monitor, give blood thinner if clots are concern
  - **Unstable and acute: Amiodarone, -sartans, Enoxaparin and Warfarin**
    - Severe unstable; cardioversion, shock out of AFib
      - TEE before
      - DO NOT perform if clot is present



Sinus Tachycardia

- ★ **Interpretation**
  - **#1: R-wave regularity**
    - Regular
  - **#2: HR**
    - 100-200 BPM, Less than 3 Big Squares b/w QRS complexes
  - **#3: P-Wave WITH QRS**
    - Normal
  - **#4: PR Interval**
    - Normal
  - **#5: QRS Interval**
    - Narrow, no more than 3 small boxes
- ★ **Management of Care**
  - Assess stable/unstable
    - Find underlying cause
  - **Unstable: Adenosine**
    - Restart heart
    - Have crash cart on site
    - Hold if HR <50, BP <90 systolic
  - Unstable: **beta-blockers**
    - Vagal maneuvers (bear down)



Asystole

- ★ **Interpretation**
  - **#1: R-wave regularity**
  - **#2: HR**
    - None
  - **#3: P-Wave WITH QRS**
  - **#4: PR Interval**
  - **#5: QRS Interval**
    - Very wide, > 5 small boxes
  - Flatline
- ★ **Management of Care**
  - EMERGENCY
  - #1: Assess patient
  - #2: Make sure leads are attached
  - #3: Shout patients name
  - #4: Check carotid pulse no more than 5 seconds
  - #5: CPR or Intubate if pulseless or unresponsive
    - 30:2 Ratio
    - DO NOT SHOCK
  - #6: Give Atropine, then EPI
    - Give EPI if unresponsive to atropine

Metabolism

Diabetes

Type 1: Insulin dependent. Autoimmune dysfunction, involving destruction of beta cells. Cannot be prevented or cured. You can only minimize complications.

Type 2: Insulin resistant, progressive condition resulting from the body's inability to respond to insulin that is present or a production of insulin that is inadequate to meet the body's metabolic needs.

- ★ **Risk Factors**
  - **DM1:** None but genetic, autoimmune
  - **DM2:**
    - Metabolic syndrome
      - Obesity, hyperlipidemia, HTN
    - Older adults
    - Sedentary lifestyle
    - Pancreatitis and Cushing's
- ★ **Clinical Manifestations**
  - **Hypoglycemia:**
    - **S**hakiness
    - **T**achycardia
    - **D**iaphoresis
    - Confusion, seizure, fatigue
    - **Cold and clammy need some candy**
  - **Hyperglycemia:**
    - **Hot and dry the glucose is too high**
    - **P**olyuria
    - **P**olyphagia
    - **P**olydipsia
    - Kussmaul respirations
      - Increased RR and depth to expel CO_2

        - Recurrent infections
        - **Fruity smelling breath**
            - Ketoacidosis
        - #1 sign = blurred vision in newly diagnosed children

★ **Management of Care**

- **Monitor:**
    - Glucose levels
    - Weight
    - Pain when walking
    - Vitals (BP!!)
    - Sensory alterations (numb and tingle)
        - Diabetic neuropathy
    - Infections
    - Vision changes
        - Diabetic retinopathy
    - Sexual dysfuntion caused by glucose
- **Assess:**
    - Sores not healing
- Clients NPO still need insulin
- Consult podiatrist for foot care q 6 months
- For **hypoglycemia**: below 70
    - unconscious= lateral position
        - **SQ/IM glucagon**
        - **Notify provider**
        - Repeat in 10 min if still unconscious if still hypoglycemia
        - Can't swallow = glucagon IV 50% Dextrose
        - Provide 15-20 g readily absorbable carb
            - Fruit juice, soda, glucose tabs, candy, honey
            - Recheck glucose in 15 min

- **For hyperglycemia**: above 110
    - Encourage intake of sugar free fluids to prevent dehydration
    - **Administer insulin as prescribed**
    - Test urine for ketones

★ **Diagnostics**

- Urine ketones
    - **High ketones in urine associated with hyperglycemia** = MEDICAL emergency
- Check glucose levels before meals and at bedtime
    - Normal 70-110
- **HgA1C: 6.5-8% for diabetics**
    - Measures last 3 months of blood glucose
    - Most accurate
    - Recommended quarterly or twice yearly
- Serum cholesterol and triglyceride levels
    - Baseline at diagnosis
    - Repeat 1-2 years
- Serum electrolytes (K/Na)
- ECG
    - Measures K+

★ **Medications**

- **DM1: Insulin**
    - **Rapid: Lispro, Aspart (Novolog)**
        - Onset: **10-30** min
        - Peak: **30 - 3 hours**
        - Duration: **3-5 hours**
        - **MOST deadly**, have to have food tray in front of you before taking
    - **Short-Acting: Regular Insulin (Humulin R, Novolin R)**
        - Onset: **30-1 hour**

        - Peak: **1-5 hours**
        - Duration: **6-10 hours**
        - U-100 is IV, U-500 is not (clear)
    - **Intermediate Acting: NPH (Humulin N, Novolin N)**
        - Onset: **1-2 hours**
        - Peak: **4-14 hours**
        - Duration: **14-24 hours**
        - NEVER IV, ONLY SQ
        - Given 2x daily, before meals and at night (cloudy)
    - **Long Acting: Glargine (Lantus)**
        - Onset: **1-4 hours**
        - **No peak**
        - **duration : 24 hours**
        - NEVER mixed
        - SQ only!
        - 1x daily, anytime, same time daily
    - **Ultra Long Acting:** U-300 Insulin Glargine & Insulin Degludec
        - Duration: **longer than 24 hours**
            - **Only available as prefilled pen**
- **DM2: Oral Antidiabetics**
    - **Biguanides: Metformin (#1 choice for DM2)**
        - Slow carb absorption in the intestines
        - Monitor:
            - GI effects: farting, NV
            - Lactic acidosis: myalgia, hyperventilation
        - Stop the medication 24-48 hours before test with iodine contrast
            - Resume after 48-72 hours
            - Can cause lactic acidosis
        - Take Folic acid and B12 substitutes

        - **Sulfonylureas: Glipizide**
            - Administer 30 min b4 meals
            - Alcohol = disulfiram effect (allergic rxn, chest pain, short breath etc0
        - **Meglitinides: "-glinides"**
            - Given for post meal hyperglycemia
            - Taken within 30 min b4 meals
            - Omit dose if skipped
        - **Acarbose**
            - Reduces post meal hyperglycemia
            - Monitor liver q 3 months
            - Take with first bite of food 3x daily
            - Treat hypoglycemia with glucose **NOT table sugar**

★ **Health Promotion/Education**

- Teach patients ow to self administer insulin
    - Rotate sites to prevent lipohypertrophy
    - Monitor glucose levels q 2-4 hours
- **Foot care:**
    - Pat dry
    - No lotion b/w toes
    - Avoid open toe shoes or barefoot
    - Wear clean socks made of wool or cotton
    - Cut toenails straight across
    - Use powder with cornstarch
- Only exercise when glucose levels are between 80-250
    - Maintain WT for body height and build
- Notify provider when ill
- Monitor for complications and skin care
- Newly diagnosed children need to learn how to carb count

- Attend all PCP appts for the HGA1C q 3 mos

★ **Nutrition**

- ADA recommendation
  - Rich in nutrients **low in fat and calories**
- **Carb count**
  - **45-65% of daily intake**
    - **1 serving - 15g of carbs**
  - **Carbs** are found in;
    - **Grains, fruits, legumes, milk**
- Include fiber to increase carb metabolism to control cholesterol levels
  - **Fiber; beans, veggies, oats, whole grains**
  - **Avoid fiber supplements**
- **Sodium:** limit 2300 mg daily
- Use artificial sweeteners like *Splenda, Stevia and Sweet n' Low*
- Reduce intake of saturated and trans fats
  - **Saturated: oils and butters**
- Space food intake throughout the day
  - Regular meals and snacks
  - Don't skip meals

Obesity

Excess adipose tissue, the most preventative health problem, BMI > 25.

★ **Health Promotion**

- Diet and exercise
  - Low fat
  - Fiber
- Behavior modification
- Pharmacotherapy
  - Orlistat, lorcase, lorcaserin

- Surgery (gastric)

★ **Complications**

- Reduced life expectancy
  - 2-4 yrs Class 1
  - 8-10 yrs BMI >40
- Non-alcoholic Fatty Liver Disease
- Polycystic Ovarian Syndrome
- GERD
- Stroke
- Cataracts
- Pulmonary disease
- Osteoporosis

Osteoporosis

Chronic metabolic bone disorder resulting in low bone density. Leading to fragile bone tissue and bone fractures.

★ **Risk Factors**

- Family hx
- Lean, thin, body build
- Females (primary)
  - Decreased estrogen after menopause
- Males (secondary)
  - Decreased testosterone
- Hx of low Ca and Vitamin D
- Tobacco smoke and high alcohol intake
- Excess caffeine consumption
- Lack of physical activity or immobility
- High Phosphorus intake >40oz of carbonated drinks
- Older adults

        - Risk of falls

★ **Clinical Manifestations**

- Reduced HT 2-3 inches
- Acute back pain after lifting or bending
- Restriction in movement
- Kyphosis
- Hx of fractures

★ **Health Promotion**

- **Consume adequate amounts of Ca and Vitamin D** from food or supplements
    - **Ca:** milk products, green leafy veggies, fortified orange juice and cereals, figs
    - **Vitamin D:** fish, egg yolks, fortified milk/cereal
- Spend time outdoors, increase vitamin d and wear sunscreen
- Engage in WT bearing exercise (walking and lifting weights)
    - To promote bone rebuilding and maintenance

★ **Medications**

- Thyroid hormone: **Salmon Calcitonin**
    - Decrease bone reabsorption
- **Teriparatide**
    - Contraindicated for hypercalcemia, bone cancer, radiation, and pagets disease
    - Adverse:
        - Nausea
        - Back pain
        - Leg cramp
    - Only can be used for 2 years
    - ortho hypotension can last up to 4 hours
- Estrogen Hormone Supplements: **estrogen, medroxyprogesterone**
    - Cause breast and endometrial cancers

        - DVT
        - Perform monthly breast exams
    - Selective estrogen receptor modulators: **Raloxifene**
        - Prevents and treats post menopausal osteoperosis
        - Avoid if Hx of DVT
        - Discontinue use 72hrs before prolonged bed rest
    - Calcium Supplements: **Calcium Carbonate & Calcium Saturate**
        - Take with food
        - 6-8 oz of water
    - Vitamin D Supplements
        - Increase amounts of calcium absorption
    - Bisphosphonates: **Alendronate**
        - **Al done Ate**
            - Esophagitis ulcers, remain upright for 30 min after taking, take with 8 oz water in morning b4 eating
    - Monoclonal Antibody: **Denosumab**
        - Contraindicated in hypocalcemia
        - Dental exams
        - SQ upper arm, thigh or abdomen

★ **Education**

- Avoid slippery surfaces
    - Wear river bottom shoes
- Exercise under guidance from provider to reduce risk of vertebral fractures
    - Isometric exercise to strengthen core
    - Avoid activities that increase body stres
        - Strenuous weight lifting
    - WT bearing 3-5x weekly
- Remove throw rugs
- Adequate lighting

- Clear walkways
- Mark thresholds and steps

★ **Nutrition**

- Limit excess caffeine, alcohol and carbonated drinks
- Consume adequate amounts of protein, Mg, Vitamin K, Ca, and Vitamin D
  - **Mg:** green leafy veggies, nuits, whole grains, tuna, chocolate
  - **Vitamin K:** carrots, eggs, spinach, broccoli, asparagus
  - **Calcium:** daily, broccoli, kale and fortified greens

Thyroid Disease (HYPO/HYPER)

★ **Clinical Manifestations**

- **Hypo:**
  - **Cold intolerance**
  - Hair loss
  - Dry skin
  - Constipation
  - **Extreme fatigue: sleep upto 16 hours a day**
  - **Pallor**
  - **WT gain**
  - Constipation
  - Thick skin, nails
  - Decreased LOC
  - Bradycardia, hypotension, and dysrhythmias
  - **Swelling in face, tongue, hands and feet (myxedema)**
- **Hyper:**
  - **Heat intolerance**
  - **WT loss**
  - **Bulging eyes: exophthalmos**
  - Finger clubbing

        - Warm sweaty, flushed skin
            - Hair thinning
        - Tremor
        - Goiter and bruit over thyroid gland
        - **Hyperkinesia and -flexia**
        - Diarrhea
        - HTN
        - Tachycardia, palpitations, dysrhythmias
        - **Pretibial myxedema**
            - **Dry waxy swelling on legs**

★ **Complications**

- **Hypo:**
    - Myxedema Coma
        - Life threatening: **bradycardia, hypo-BP, Na, BG, thermia, RR failure, coma**
        - **Monitor ECG, ABGs, LOC, body temp**
        - Ventilatory support and ECG monitoring on site
        - Administer corticosteroids and replace fluid with 0.9% NS
        - Administer **levothyroxine** via IV bolus
- **Hyper:**
    - Hemorrhage
        - Leading to RR distress
    - **Thyroid storm/crisis**
        - Surge of large amounts of thyroid hormones in blood
            - Leads to **hyperthermia, HTN, delirium, angina**
        - Administer Beta-Blocker
        - Administer acetaminophen for hyperthermia instead of aspirin due to release of thyroxine
    - Airway obstruction

        - Hypocalcemia and tetany if damaged to parathyroid

★ **Management of Care**

- **Hypo:**
    - Monitor cardiovascular changes and peripheral edema
    - Increase activity level gradually w frequent rest periods
    - Apply anti embolism stockings, ELEVATE
    - Provide low cal-high bulk diet
    - Encourage fluids
    - Provide meticulous skin care
    - Use alcohol free products before and after baths
    - Give extra clothing and blankets
        - NO electric blankets or heating devices (burns)
    - Reassure client that physical manifestations are reversible
- **Hyper:**
    - Provide calm environment
    - Minimize clients energy by helping
    - Provide eye protection
    - Reduce room temp
    - Provide cool shower and sponge bath
    - Monitor ECG for dysrhythmias
        - **Report temp increase of 1 degree or more to provider**
            - Thyroid crisis
    - Assure family that abrupt changes in behavior ARE disease related
    - Avoid excess palpation of thyroid

<u>Cushing's</u>

Over secretion of hormones by adrenal cortex.

★ **Clinical Manifestations**

- **Moon face**, truncal obesity and buffalo hump

- Hyperglycemia
- Increased susceptibility to infection, weakness and fatigue
- HTN, tachycardia
- Muscle wasting
- Hirsutism in women
- Osteoporosis
- Purple lines/striae on body, bruising and petechiae
- Thin, fragile skin and thinning balding hair
- Man boobs and irregular menses

★ **Management of Care**

- Maintain safe environment to reduce fractures and skin trauma
- Frequent hand hygiene
- Encourage exercise
- Change position q 2 hours
- Surgical asepsis for dressing changes
- Monitor WT daily, **report excess WT gain**
- **Monitor WBC and skin breakdown**

★ **Nutrition**

- **Decreased sodium intake and Increased K, protein, calcium and vitamin D**
  - **K:** oranges, dried fruits, tomatoes, avocados, broccoli, meats, whole grains and potatoes

Addison's

Decreased aldosterone and cortisol in the body due to no adrenal insufficiency.

★ **Clinical Manifestations**

- **Craving salt**
- **Hyperpigmentation**
- Weak, fatigue
- Nausea, anorexia, vomit

- Dizzy with ortho HTN
- Dehydration
- Diarrhea
- Abdominal pain
- **HYPO:**
    - **K, Na, Glucose and Ca**