

Tissue Perfusion

Hypertension

Pathophysiology

persistent SBP 140 mmHg +
 persistent DBP 90 mmHg +
 pre-htn: 120-139 / 80-89
 stage 1: 140-159 / 90-99
 stage 2: >160 / >100

RISK FACTORS

Age	Obesity
Alcohol	Ethnicity
Tobacco use	Stress
Diabetes	Sedentary life
Elevated serum lipids	
↑ Na ⁺ intake <small>water follows Na⁺</small>	access to Tx
Gender	socioeconomic
	Family Hx

Nursing Intervention

Health promotion healthy lifestyle diets
 BP measurement reach pt to take it @ home ↓ Na⁺
 Nutritional therapy lose weight when? how often? side effects
 Med. education & compliance
 Monitor for complications

Treatment

Medications

↳ Beta-adrenergic blockers -olol
 Angiotensin Converting Enzyme Inhibitors -pril
 Angiotensin II Receptor Blockers -sartan
 Calcium Channel Blockers -pine
 Vasodilators
 Diuretics

"can't have your CAKE
 & eat it too"

Clinical Manifestations

Often little to no symptoms silent killer
 Fatigue
 Dizziness C - CHF
 Palpitations A - brain → stroke
 Angina K - kidneys → renal failure
 Dyspnea E - eye → retinal damage

Diagnostic Tests

Hx and physical baseline BP, family Hx
 Lab values CBC, BNP
 12 lead ECG
 UA kidneys involved or affected

Complications

Coronary Artery Disease → stiffen response to contr. pressure on walls
 L. Ventricular hypertrophy overcompensation
 Heart failure compensatory mechanisms overwhelmed
 Cerebrovascular disease atherosclerosis
 Peripheral vascular disease atherosclerosis
 Nephrosclerosis HTN that causes kidney vessels to narrow → ischemia small vessels in retina can hemorrhage
 Retinal damage

Teaching

Dash diet Dietary Approaches to Stop HTN
 Home BP measurements ↓
 Exercise no high sugar
 Med education no high fats
no high sodium

HTN MEDS

Beta Blockers end in -olol that HTN & angina

selective: target β_1 in \heartsuit "cardioselective" metoprolol, atenolol, esmolol

Nonselective: target β_1 & β_2 timolol, propranolol

side effects: B bradycardia, blood glucose \uparrow & \downarrow rate

E exacerbation of CHF, weight edema, lowers BP hypotens.

T taper off cannot abruptly stop C circulation impaired

A asthma & COPD & non selective K know OD s/s Brady \heartsuit tension

Calcium Channel blockers

Dihydropyridines \rightarrow smooth muscle; for HTN end w/ -pine amlodipine, felodipine

Non dihydropyridines \rightarrow myocardium; diltiazem

side effects \rightarrow monitor for brady \heartsuit , \downarrow BP, s/s of \heartsuit failure (dyspnea, weight gain, edema), orthostatic \emptyset w/ grapefruit juice, fiber diet, good oral hygiene

ACE inhibitors

 Angiotensin Converting Enzyme

Captopril, lisinopril, Benazepril, Ramipril

Used for \heartsuit failure & HTN

Assess for: BP (watch for hypotension) \heartsuit rate

Monitor: K^+ level (3.5-5.0) for hyperkalemia

Urine output $>$ 30 ml/hr - BUN/creatinine

Angioedema: swelling of dermis & sub Q

\rightarrow swelling in face, mouth, extremities
dyspnea

Side Effects: persistent dry cough

dizziness
hypotension
 \uparrow K^+ level
Angio edema

- avoid salt sub w/ K^+
- record BP often
- dry cough w/ difficulty speaking \rightarrow talk to MD
- s/s of angioedema
- for missed dose \rightarrow take same day if next day, don't double up

Peripheral Artery Disease (PAD)

Pathophysiology

thickening of artery wall
- progressive narrowing of arteries in upper/lower extremities

leading cause is atherosclerosis

RISK FACTORS

Women ^{low lifetime recreational activity compared to men}
African American
Tobacco use
Diabetes
Hyperlipidemia ^{↑ lipids in blood}
Uncontrolled HTN
↑ age
Obesity
Sedentary lifestyle
Stress ^{bigger role → cortisol release}

NURSING Intervention

Modify risk factors
Pain management
Monitor for wounds
Educate

Treatment

Medications

Antiplatelet

↳ clopidogrel (Plavix)
Aspirin

Lipid lowering agents

↳ Atorvastatin (Lipitor)

Clinical Manifestations

intermittent claudication ^{pain w/ exercise in calf thighs feet}
Paresthesia
Skin → shiny, thin & taut ^{elevate = pallor, dangle = rubor}
Hair loss on lower legs ^{use doppler}
Diminished lower extremity pulses ^{red, warm weak or absent}
Pallor w/ leg elevation
Redness of feet in dependent positions
Thickening of toenails
Ø edema

Diagnostic Tests

Doppler ultrasound ^{maps blood flow through entire artery}
Ankle brachial index ^{hand held doppler}

Complications

Delayed wound healing
Wound infection
Tissue necrosis
Gangrene
Amputation
Ulcers ^{end of toes, top of feet, lateral ankle}
^{"punched out look"} Ø drainage, Ø tissue gran. (necrotic or light pink)

Teaching

Dietary changes

Exercise

Dependent positions ^{dangle legs helps blood flow}

Peripheral Vascular Disease (PVD) (venous Disease)

Pathophysiology

blood circulation disorder
blood vessels outside \heartsuit :
brain to narrow, block or
spasm

Risk Factors

Family Hx
 \heartsuit disease
HTN
Obesity
Sedentary lifestyle
Diabetes
Smoking

Nursing Intervention

Drug Therapy
Smoking cessation
Promote vasodilation
 \rightarrow place legs in dependent
position

Treatment

Blood thinners
Surgery angioplasty

Clinical Manifestations

DVL ache
Heaviness
Skin \rightarrow hard, indurated (brown pigmentation)
Lower leg edema
Pulses present hard to find

Diagnostic Tests

Complications

Teaching

Encourage physical activity
Smoking cessation
Encourage healthy diets
Avoid restrictive or tight clothing

Venous Thromboembolism (VTE)

Pathophysiology

formation of thrombus w/
inflammation of vein

3 factors: venous stasis
damage of endothelium
hypercoagulability

RISK FACTORS

Age
Chronic disorders
Obesity
Pregnancy
Oral contraceptives
Surgery
Cancer
Tobacco use

Nursing Intervention

Prevention
Prophylaxis → Mechanical ^{SCDs} ambulate
Pharm. anticoagulants
Assess for complications
Monitor for bleeding
Monitor labs

Treatment

Surgery
Pharmacological
↳ unfractionated heparin
*monitor PTT - Heparin sodium
Low Molecular Weight Heparin
- Enoxaparin (lovenox)
Vitamin K antagonist
- Warfarin (Coumadin)
*monitor PT/INR

Clinical Manifestations

Pain
Tenderness w/ palpating
Dilated superficial veins
Sense of fullness in calf
Paresthesia
Warm skin
Erythema ^{redness of skin, patches}

Diagnostic Tests

Blood tests ^{coagulation:} PTT, PT/INR, D-Dimer ^{pt of diag. activity breaking down clot}
Duplex ultrasound
Venography imaging

Complications

Pulmonary embolism
Post thrombotic syndrome ^{stiff noncompliant vein wall}
↳ persistent venous obstruction

Teaching

Medication compliance
Encourage dietary changes

Atrial Fibrillation

most common
clinically significant dysrhythmia

Pathophysiology

total disorganization of atrial electricity
- multiple ectopic foci

results in loss of effective atrial contract

RISK FACTORS

Coronary artery disease
Valvular \heartsuit disease
cardiomyopathy
HTN
 \heartsuit failure
Pericarditis

Nursing Intervention

↓ ventricular response
Prevent embolism

if possible \rightarrow Convert to sinus rhythm

Pharmacotherapy
Electrical conversion
Ablation
Pacemaker

Treatment

Pharmacotherapy

Warfarin (Coumadin)

anticoagulant - interferes w/ hepatic synthesis of Vitamin K dependent clotting factors

- Monitor for bleeding
- Monitor PT/INR (2.0-3.0)

antidote \rightarrow Vitamin K

Clinical Manifestations

Palpitations
Fatigue
Dyspnea
Chest pain
Syncope
Irregular pulse
Hypotension

Diagnostic Tests

Complete Hx : physical

12 lead EKG

Chest x-ray rule out other causes
CBC, PTT
electrolytes: ex: K^+

Blood test rule out other causes: Ex \rightarrow Thyroid

Stress test complaints of palpitations

Holter monitor - home monitoring (days, wks, mo.)

Complications

↓ cardiac output

Thrombus formation

Embolized thrombus stroke

Angina

Dizziness

Syncope

Teaching

n/a

1. The client has chronic atrial fibrillation. Which discharge teaching should the nurse discuss with the client?

- A Instruct the client to use a soft-bristle toothbrush
- B Discuss the importance of getting a monthly partial thromboplastin time (PTT)
- C Teach the client about signs of pacemaker malfunction
- D Explain to the client the procedure for synchronized cardioversion

2. The 66-year-old male client has his blood pressure (BP) checked at a health fair. The BP is 168/98. Which action should the nurse implement first?

- A Recommend that the client have his blood pressure checked in one (1) month.
- B Instruct the client to see his health-care provider as soon as possible.
- C Discuss the importance of eating a low-salt, low-fat, low-cholesterol diet.
- D Explain that this BP is within the normal range for an elderly person.

3. The nurse is teaching a class on arterial essential hypertension. Which modifiable risk factors would the nurse include when preparing this presentation?

- A Include information on retinopathy and nephropathy.
- B Discuss sedentary lifestyle and smoking cessation.
- C Include discussions on family history and gender.
- D Provide information on a low-fiber and high-salt diet.

4. The nurse is caring for clients on a surgical floor. Which client should be assessed first?

- A The client who is four (4) days postoperative abdominal surgery and is complaining of left calf pain when ambulating.
- B The client who is one (1) day postoperative hernia repair who has just been able to void 550 mL of clear amber urine.
- C The client who is five (5) days postoperative open cholecystectomy who has a T-tube and is being discharged.
- D The client who is 16 hours post-abdominal hysterectomy and is complaining of abdominal pain and is expelling flatus.

5. The client is being admitted with Coumadin (warfarin) toxicity. Which laboratory data should the nurse monitor?

- A Blood urea nitrogen (BUN) levels
- B Bilirubin levels
- C International normalized ratio (INR)
- D Partial thromboplastin time (PTT)

6. The unlicensed assistive personnel (UAP) is caring for the client diagnosed with chronic venous insufficiency. Which action would warrant immediate intervention from the nurse?

- A Removing compression stockings before assisting the client to bed.
- B Taking the client's blood pressure manually after using the machine.
- C Assisting the client by opening the milk carton on the lunch tray.
- D Calculating the client's shift intake and output with a pen and paper.

7. What are nonmodifiable risk factors for primary hypertension? (Select all that apply)

- A Age
- B Obesity
- C Gender
- D Ethnicity
- E Genetic link

8. What early manifestations is the patient with primary hypertension likely to report?

- A No symptoms
- B Cardiac palpitations
- C Dyspnea on exertion
- D Dizziness and vertigo

9. A patient with peripheral artery disease (PAD) has a nursing diagnosis of ineffective peripheral tissue perfusion. What should be included in the teaching plan for this patient? (Select all that apply)

- A Apply cold compresses when the legs become swollen.
- B Wear protective footwear and avoid hot or cold extremities.
- C Walk at least 30 minutes per day, at least 3 times per week.
- D Use nicotine replacement therapy as a substitute for smoking.
- E Inspect lower extremities for pulses, temperature, and any injury.

10. When teaching the patient with PAD about modifying risk factors associated with the condition, what should the nurse emphasize?

- A Amputation is the ultimate outcome if the patient does not alter lifestyle behaviors.
- B Modifications will reduce the risk of other atherosclerotic conditions, such as stroke.
- C Risk-reducing behaviors initiated after angioplasty can stop the progression of the disease.
- D Maintenance of normal body weight is the most important factor in controlling arterial disease.

✓ 11. During care of the patient following femoral bypass graft surgery, the nurse immediately notifies the health care provider if the patient experiences...

- A fever and redness at the incision site.
- B 2+ edema of the extremity and pain at the incision site.
- C a loss of palpable pulses and numbness and tingling of the feet.
- D increasing ankle-brachial indices and serous drainage from the incision.

✓ 12. A patient has atrial fibrillation and develops an acute arterial occlusion in an artery. What are the six Ps of acute arterial occlusion the nurse may assess in this patient that would require immediate notification of the health care provider?

pallor pain pulseless paresthesia
paralysis poik-

13. What are the characteristics of peripheral artery disease? (Select all that apply)

- A Pruritus
- B Thickened, brittle nails
- C Dull ache in calf or thigh
- D Decreased peripheral pulses
- E Pallor on elevation of the legs
- F Ulcers over bony prominences on toes and feet

✓ 14. Which care could the RN delegate to the UAP for a patient with VTE?

- A Assess the patient's use of herbs.
- B Measure the patient for elastic compression stockings.
- C Remind the patient to flex and extend the legs and feet every 2 hours.
- D Teach the patient to call emergency response system with signs of pulmonary embolus.

✓ 15. Which indirect thrombin inhibitor is only administered subcutaneously and does not need routine coagulation tests?

- A Warfarin (Coumadin)
- B Unfractionated heparin
- C Hirudin derivatives (Angiomax)
- D Low-molecular-weight heparin (Lovenox)

16. Which characteristics describe the anticoagulant warfarin (Coumadin)? (Select all that apply)

- A Vitamin K is the antidote
- B Protamine sulfate is the antidote
- C May be administered orally
- D Dosage monitored using INR
- E Dosage monitored using PTT

17. The patient with VTE is receiving therapy with heparin and asks the nurse whether the drug will dissolve the clot in her leg. What is the best response by the nurse?

- A "This drug will break up and dissolve the clot so that circulation in the vein can be restored."
- B "The purpose of the heparin is to prevent growth of the clot or formation of new clots where the circulation is slowed."
- C "Heparin won't dissolve the clot, but it will inhibit the inflammation around the clot and delay the development of new clots."
- D "The heparin will dilate the vein, preventing turbulence of blood flow around the clot that may cause it to break off and travel to the lungs."

18. A patient with VTE is to be discharged on long-term warfarin (Coumadin) therapy and is taught about prevention and continuing treatment of VTE. The nurse determines that discharge teaching for the patient has been effective when the patient makes which statement?

- A "I should expect that Coumadin will cause my stools to be somewhat black."
- B "I should avoid all dark greens and leafy vegetables while I'm taking Coumadin."
- C "Massaging my legs several times a day will help increase my venous circulation."
- D "Swimming is a good activity to include in my exercise program to increase my circulation."

19. The nurse teaches the patient with any venous disorder that the best way to prevent venous stasis and increase venous return is to...

- A take short walks.
- B sit with the legs elevate.
- C frequently rotate the ankles.
- D continuously wear elastic compression stockings.

20. A 62-yr-old Hispanic male patient with diabetes mellitus has been diagnosed with peripheral artery disease (PAD). The patient is a smoker with a history of gout. To prevent complications, which factor is priority in patient teaching?

- A Gender
- B Smoking
- C Ethnicity
- D Comorbidities

21. The nurse is reviewing the laboratory test results for a 68-yr-old patient whose warfarin (Coumadin) therapy was initiated during the preoperative period. On postoperative day 2, the international normalized ratio (INR) result is 2.7. Which action by the nurse is most appropriate?

- A Hold the daily dose of warfarin.
- B Administer the daily dose of warfarin.
- C Teach the patient signs and symptoms of bleeding.
- D Call the physician to request an increased dose of warfarin.

22. A 67-yr-old man with peripheral artery disease is seen in the primary care clinic. Which symptom reported by the patient would indicate to the nurse that the patient is experiencing intermittent claudication?

- A Patient complains of chest pain with strenuous activity.
- B Patient says muscle leg pain occurs with continued exercise.
- C Patient has numbness and tingling of all his toes and both feet.
- D Patient states the feet become red if he puts them in a dependent position.

23. When the patient is being examined for venous thromboembolism (VTE) in the calf, what diagnostic test should the nurse expect to teach the patient about first?

- A Duplex ultrasound
- B Contrast venography
- C Magnetic resonance venography
- D Computed tomography venography

24. When teaching a patient about dietary management of stage 1 hypertension, which instruction is most appropriate?

- A Increase water intake.
- B Restrict sodium intake.
- C Increase protein intake.
- D Use calcium supplements.

25. The nurse observes no P waves on the patients monitor strip. There are fine, wavy lines between the QRS complexes. The QRS complexes measure 0.08 sec (narrow), but they occur irregularly with a rate of 120 beats/min. What does the nurse determine the rhythm to be?

- A Sinus tachycardia
- B Atrial fibrillation with RVR
- C Atrial fibrillation with CVR
- D Ventricular tachycardia