Rasmussen College, NURSING 2 -Final-Exam-Study-Guide.

written by

Congratulations

Nursing 2 Final Exam

1. Upper GI Tract

Dysphagia – *Difficulty swallowing*. Major concern for older adult & victims of stroke. Has trouble swallowing liquids or solids, coughs after eating or drinking, speech difficulty (dysphonia)

- Barium Swallow – Swallows radioactive dye that shows areas of dysfunction.
- Endoscopic Evaluation

TX = Thickened liquids/foods. Elevate HOB 30-45 degrees.

2. Lower GI Tract

Obstruction – *Poop can't go forward ☺.*
ABG: HCO3 up, pH up = metabolic alkalosis

- Small Bowel S/S = Abdominal pain, distention, N/V, constipation, electrolyte imbalances, metabolic alkalosis
- LARGE Bowel S/S = Lower abdominal cramping, constipation, *ribbon like stools.*

What is contraindicated?! BARIUM ENEMA
TX= Possible Surgery, *NG Tube Suction, NPO, IV Therapy (fluids),* Pain Control

IBS (Irritable Bowel Syndrome) – *Chronic diarrhea and/or constipation*
ABG: HCO3 low, pH low – metabolic acidosis

- S/S = excess farting (flatulence), distention, cramps, pain, diarrhea/constipation, *LLQ pain.*
- Treatment = AVOID triggers or fruit, berries, lettuce, lactose, caffeine, & alcohol. Increase fiber, relax, less stress, and exercise
- Meds = Constipation (Metamucil, Fibercon), Diarrhea (Imodium, Lomotil)

TX = Educate on avoiding triggers & fibrous foods

Appendicitis – *Infection of appendix organ*

- S/S = *RLQ pain (McBurney's Point),* rebound tenderness, relief of pain after ruptured.

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- RUPTURED = think infection… chills, increased WBC, guarding, distention, shallow breathing, irritability, & restlessness.

TX = Surgical removal, semi-fowler RIGHT side lying, no heat, no laxatives, cold compress

Ulcerative Colitis – *Inflammation of mucosa in colon & rectum.*
ABG: HCO3 low, pH low = metabolic acidosis

- S/S = *> 10 liquid stools per day,* abdominal pain, dehydration, tachycardia, anemia, distention.
  - Complications = hemorrhage, abscess, TOXIC MEGACOLON, obstruction, perforation

Meds - *sulfasalazine* (Azulfidine), *mesalamine* (Asocol), azathioprine (Imuran) to alter immune response; antidiarrheal for symptom management
TX = Avoid trigger foods, may require NPO & TPN treatment

Chohn's Disease – *inflammation of mucosa in terminal ilium*
ABG: HCO3 low, pH low = metabolic acidosis

- S/S = diarrhea 5-6x daily, abdominal pain, low-grade fever, weight loss, electrolyte imbalance.

TX = High calorie, high protein, antidiarrheal, corticosteroids, immunomodulators, TPN during exacerbation (promotes rest)

Diverticulitis – *Inflammation of the sac-like pouches known as diverticula in the colon.*

- S/S = changing from constipation to diarrhea constantly, LLQ pain
  - Perforation = fever, chills, tachycardia, gen. abdominal pain

TX = Dietary modifications, colon resection, antibiotics, pain relief, stool softeners. Educate on low Fiber diet & avoid nuts!

3. Urinary Dysfunction

- ***Stress incontinence:*** loss of urine with increased abdominal pressure
- ***Reflex incontinence*****:** involuntary loss of urine at somewhat predictable intervals when a specific bladder volume is reached
- ***Urge incontinence*****:** involuntary passage of urine soon after strong urge to void
- ***Functional incontinence*****:** involuntary, unpredictable passage of urine

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- ***Total incontinence***: continuous and unpredictable loss of urine

UTI – *Inflammation of bladder, ureters, or urethra.*

Cystitis = infection of bladder (lower)
Pyelonephritis = Infection of kidneys (upper)

Most commonly caused by…. E. Coli

- S/S = frequency, urgency, dysuria, low back pain, nocturia, incont. Hematuria, retention
- Older adults = confusion, no appetite, frequent falling.

TX – Antibiotics, increase fluid to 3L/day, antispasmodics

Urinary Tract Calculi (Urolithiasis) – *Calculi stone formed in the urinary tract*
Nephrolithiasis – *Kidney Stone*
Calcium Phosphate is the most common type of kidney stone

- S/S – severe pain, flank pain radiating to groin, distention, fever, & chills

Box 59–4

Dietary Considerations with Urinary Calculi

Acid-ash foods: Cranberries, plums, grapes, and prunes; tomatoes; eggs and cheese; whole grains; meat and poultry

Alkaline-ash foods: Legumes, milk and milk products, green vegetables, rhubarb, fruits except those acid-ash fruits noted above

Foods high in calcium: Milk and other dairy products, beans and lentils, dried fruits, canned or smoked fish (except tuna), flour, chocolate, and cocoa

Foods high in oxalates: Asparagus, beets, celery, cabbage, dark green leafy vegetables, fruits, tomatoes, green beans, chocolate and cocoa, beer, cola beverages, nuts, and tea

Foods high in purines: Organ meats, sardines, salmon, and herring, venison, and goose; other meats (beef, chicken, pork, veal) also contain purines and should be limited in quantity

Table 59–4 Surgical Procedures to Treat Urinary Stones

Surgical Procedure	Description
Extracorporeal shock-wave lithotripsy (ESWL)	A procedure that uses externally generated waves to pulverize or shatter urinary stones and calculi, which are then excreted in urine
Ureterolithotomy, pyelolithotomy, or nephrolithotomy	Surgical removal of calculi from affected areas; requires a large flank incision and an extended recovery time
Percutaneous nephrostomy	Small incision in flank allows insertion of an endoscope to visualize renal pelvis; stones are removed with forceps or a basket device, or lithotripsy is used to crush stones
Transurethral uroscopy	Passage of a ureteral catheter via a cystoscope to drain urine proximal to a stone and dilate ureter, allowing stone to pass; or use of a basket catheter passed through cystoscope to remove calculus

Main Cause: DEHYDRATION = Prevent by drinking fluids
TX – Stones 5mm or smaller usually pass on their own. Stones greater than 5mm diameter require surgery. Monitor renal function, strain urine, diuretics may be orders, FLUIDS.

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Educate – Diet, increase fluid intake, report signs of UTI, report increased pain.

Pyelonephritis – *Infection of kidneys*
Most commonly caused by E.Coli

- S/S – hematuria, urinary frequency, dysuria, flank pain, *costovertebral tenderness,* tachypnea, GI symptoms, muscle tenderness

TX – Antibiotics for specific organism, increase fluid intake to 3L/day, antispasmodics for bladder spasms

D. Client teaching

1. Avoid beverages that irritate bladder: carbonated or caffeinated drinks and alcohol
2. Teach women hygiene measures to prevent reoccurrence: wipe from front to back, keep perineum clean and dry, do not douche, avoid tight-fitting pants; void after sexual intercourse
3. Finish complete course of antibiotics, even if symptoms subside
4. Teach correct use, purpose, and effects of medication
5. Phenazopyridine (Pyridium), a urinary analgesic, turns urine reddish orange; protect clothing and do not mistake color for bleeding (hematuria)
6. Instruct in signs of infection: frequency, burning, cloudy urine, fever, and malodorous urine
7. Maintain acidic urine with acid-ash diet, which may include cranberry juice or ascorbic acid daily (helps prevent bacteria from clinging to bladder wall)
8. Maintain fluid intake of at least 8–10 glasses per day
9. Practice frequent voiding (every 2–4 hours) to flush bacteria from urethra
10. Avoid harsh soaps, bubble bath, powder, or sprays in perineal area
11. Take showers rather than baths if recurrent infection is a problem

Glomerulonephritis – *Inflammation of capillary loops in glomeruli of kidney that typically follows an infection of A-beta-hemolytic streptococcus.*

- S/S – Pharyngitis, fever, malaise, weakness, fatigue (early signs), anorexia, nausea, vomiting, peripheral edema, hypertension, hypoalbuminemia.
- Recent URI, UTI, pericarditis, or skin infection
- Labs may reveal increased *BUN & Creatinine,* hyponatremia, hyperkalemia, hypophosphatemia.

TX – Antimicrobials (Penicillin's), pain relief, electrolyte replacement, strict I&O.

Urinary Retention – *Bladder is not emptying all of the way and urine is staying.*

- Causes – Benign prostatic hyperplasia, surgery, anticholinergic, antidepressants, antipsychotics, antiparkinsonian, and antihypertensive
- S/S – fluid intake larger than output, inability to void, frequently voiding small amounts, bladder distention, suprapubic discomfort, restlessness

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TX – Monitor I&O's, facilitate voiding, catheterization as needed, possible surgery, cholinergic medications
Educate – Report signs of UTI, high fluid intake that acidifies urine (cranberry juice, Vitamin C)

4. Fluid Imbalances

LAB VALUES –

Sodium = 135-145
Potassium = 3.5-5
Calcium = 9-10.5
Magnesium = 1.3-2.1
Phosphorous = 3.5-4.5
BUN = 10-20
Creatinine = 0.6-1.2
HCT = 37-47% (F), 42-52% (M)
HGB = 12-16 (F), 14-18 (M)
HDL = >45
LDL = <130

Hyponatremia – *Low sodium*

- Caused by – diuretics, hypotonic IV solutions, excessive water intake.
- S/S: *Cardio*: bounding pulse, tachycardia, hypotension (low ECV), HTN (high ECV), *Integument*: pale, dry skin and mucous membranes (low ECV), edema and weight gain, *Renal*: increased urine output with low specific gravity, *Neuromuscular*: lethargy, agitation, dizziness, weakness, headache, confusion, seizures, *Gastrointestinal:* anorexia, vomiting, diarrhea, hyperactive bowel sounds, abdominal cramping.

Cells can swell & BURST!

Hypernatremia – *High sodium*

- Caused by – excessive sweating diuretics, diabetes insipidus, rarely caused by too much sodium
- S/S: Cardio: Tachycardia, HTN, decreased cardiac contractility, Integument: dry and sticky mucous membranes; rough, dry tongue; flushed skin, Renal: thirst, increased urine output as kidneys try to eliminate Na+, Neuromuscular: twitching, tremor and hyperreflexia, agitation and CNS irritability, hallucinations, seizures, coma, Gastrointestinal: watery diarrhea, nausea, thirst

Fluid moves from ICF to ECF

Hypokalemia – *Low potassium*

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- Caused by – diuretics, excessive aldosterone release (HF), vomiting, diarrhea, wounds (burns).
- Loss of K+ results in *metabolic alkalosis.*
- S/S – Poor muscles contraction, respiratory weakness, confusion, lethargy, dysrhythmias

Digoxin Toxicity – Nausea, vomiting, abdominal pain, and diarrhea
(Digoxin causes increased K+, there for it is contraindicated)

TX – Continuous cardiac monitoring, EKG

Table 54–7 Potassium Imbalances: Quick Summary of Assessment Findings

	Hypokalemia (K^+ < 3.5 mEq/L)	Hyperkalemia (K^+ > 5.1 mEq/L)
Cardiovascular	Weak, thready pulse with variable rate; pedal pulses difficult to palpate; ECG changes (ST segment depression, flattened T wave, onset of U wave, ventricular dysrhythmias, heart block); digitalis toxicity is potentiated	Irregular, slow heart rate, ↓ BP, ECG changes (narrow, peaked T waves, widened QRS complexes, prolonged PR intervals, flattened P waves, frequent ectopy, ventricular fibrillation and standstill)
Respiratory	↓ breath sounds; weak, shallow respirations; dyspnea	Unaffected until level is very high, leading to muscle weakness and paralysis and causing respiratory failure
Neuromuscular	Anxiety, lethargy, depression, confusion, paresthesias, weakness, leg cramps	Muscle twitching (early) and cramps, irritability, anxiety; a late sign is ascending flaccid paralysis involving arms and legs
Gastrointestinal (GI)	Nausea, diarrhea or constipation (from ↓ peristalsis), polydipsia	Hyperactive bowel sounds, diarrhea, nausea
Other	Renal: polyuria and nocturia, ↓ urine specific gravity	Not applicable

Box 54–4 Potassium Food Sources

The following foods are considered adequate sources of potassium:

- Vegetables such as spinach, broccoli, carrots, green beans, tomato juice, acorn squash, and potatoes
- Fruits such as bananas, cantaloupe, apricots, oranges, and raisins
- Milk, milk products, yogurt, and meat
- Legumes, nuts, and seeds
- Whole grains

Hyperkalemia – *High potassium*

- Caused by – kidney impairment, salt substitutes, potassium supplements, metabolic acidosis, & some diuretics.
- S/S – muscle twitching, cramping, dysrhythmias, GI cramping/hyperactivity.

TX – EKG, cardiac monitoring

Hypocalcemia – *Low calcium*

- S/S – muscles and electrical conductions, *Trousseau's sign, Chvostek's sign.*

TX – EKG, cardiac monitoring, CA++ replacements

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Table 54–8 Calcium Imbalances: Quick Summary of Assessment Findings

	Hypocalcemia (Ca^{++} < 8.5 mEq/L)	Hypercalcemia (Ca^{++} > 10.5 mEq/L)
Cardiovascular	↓ BP; ECG changes include prolonged QT interval and lengthened ST segment; cardiac arrest	Hypertension, shortened ST segments and QT interval on ECG, cardiac dysrhythmias such as heart block; cardiac arrest
Neuromuscular	Paresthesias in hands and feet; muscle cramps, positive Chvostek sign (twitching of cheek) and Trousseau sign (spasm of arm when BP cuff inflated); ↑ deep tendon reflexes (DTRs), ↑ irritability and apprehension; mental status changes ranging from depression, memory impairment, delusions and hallucinations to seizures	Headache and confusion, subtle changes in personality to acute psychosis, fatigue, ↓ DTRs; impaired memory and bizarre behavior, lethargy, or coma (seizures are rare)
Renal	↓ serum Ca^{++} levels are associated with renal failure, along with other electrolyte disturbances	Polyuria and polydipsia due to altered renal function; ↓ ability of kidneys to concentrate urine; renal colic from development of kidney stones due to high Ca^{++} levels; renal failure may occur
Gastrointestinal (GI)	Possible hyperactive bowel sounds and diarrhea, intestinal cramps	Anorexia, nausea and vomiting; abdominal pain; constipation, hypoactive bowel sounds
Musculoskeletal	Possible bone fractures from bone demineralization; bone pain; chronic hypocalcemia may retard growth and cause rickets in children; can lead to osteomalacia and osteoporosis in adults	Pathologic bone fractures; bone thinning, deep bone pain

Hypercalcemia – *High calcium*

- Caused by – hyperparathyroism, malignancy, calcium supplements, prolonged immobility
- S/S – think electrical

TX – EKG, continuous cardiac monitoring

Hypophosphatemia – *Low Phosphorous*

- Caused by – diet, chronic alcoholism, mag or calcium supplements

Low call energy – Cellular hypoxia
Cell breakdown – Rhabdomyolysis

- S/S – decreased muscle contraction (cardiac and respiratory), slurred speech, confusion, apprehension, seizures, coma, chest pain, dysrhythmias, HF, shock, hypoactive GI system, anorexia, dysphagia, & vomiting.

TX – Cardiac Monitoring & EKG

Hyperphosphatemia – *High Phosphorous*

- Caused by – chemotherapy, enemas/laxatives, hypoparathyroidism, renal failure
- Phos. can only be excreted renally.
- S/S – Same as hypocalcemia. *Trousseau's sign, Chvostek's Sign,* can result in resp. and cardiac arrest.

TX – Cardiac Monitoring and EKG

Hypomagnesaemia – *Low Magnesium*

- Caused by – commonly alcoholism, diarrhea, diuretics, diabetes
- S/S (usually occur when serum Mg. <1) – Stridor, cardiac changes, muscle twitching, tremors, hyperreflexia, tetany, chvostek's, & trousseau's sign

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TX – Cardiac monitoring & EKG

Hypermagnesemia – *High Magnesium*

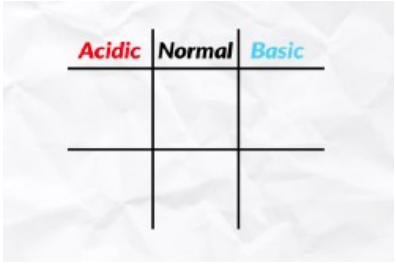
- Caused by – Excessive ingestion and renal failure
- S/S – nausea, constipation, hypoactive bowels, hypotension, bradycardia, flushing sensation of warmth, respiratory depression, somnolence, weakness & lethargy, coma.

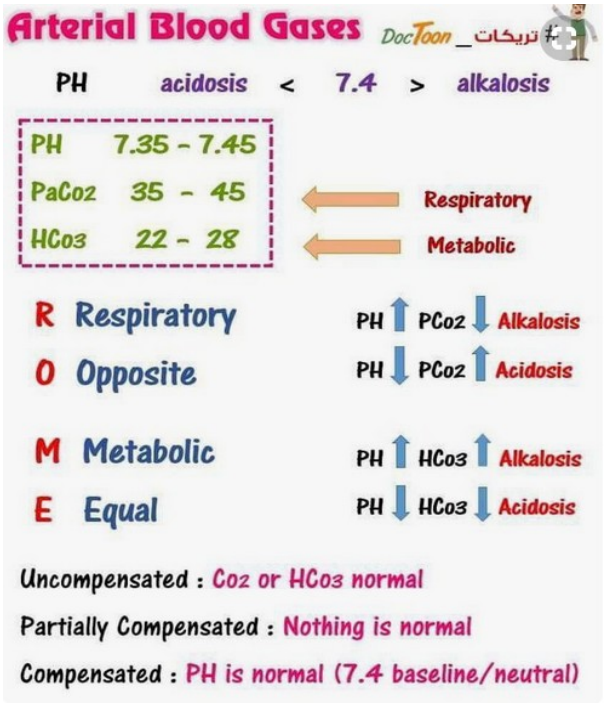
TX – Cardiac Monitoring & EKG

Arterial Blood Gases

PH – 7.35-7.45
CO2 – 45-35
HCO3 – 22-26

O2 Sat – 97-100





Respiratory Acidosis

- *Usually caused by respiratory dysfunction*
- *COPD & Asthma*

Respiratory Alkalosis

- *Loss of too much CO2*
- *Hyperventilation*

Metabolic Acidosis

- *Renal dysfunction*
- *Diabetic Ketoacidosis (DKA)*
  - *Insulin resistance has causes inability of body to use glucose for energy*

Metabolic Alkalosis

- *Renal dysfunction*
- *Loss of acid thru vomiting → metabolic alkalosis*

❖ Upper GI conditions can greatly alter electrolytes as well as upset the acid-base balance if it impairs intake or causes emesis.
❖ Hypokalemia can result from vomiting

❖ Lower GI conditions can greatly alter electrolytes and upset the acid-base balance if it causes frequent diarrhea. Fluid balance is altered too.

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- Diarrhea is relatively low in electrolytes but higher in HCO3 (bicarb). Loss of HCO3 = metabolic acidosis.
- Also causes hypovolemia by loss of fluid through diarrhea. This fluid (not rich in electrolytes) causes hypernatremia and hyperosmolarity of serum.

Renal Impairments - the kidney balances fluid and electrolytes through excretion and reabsorption. Kidneys also help acid-base balance by secreting H+, and generating or reabsorbing HCO3.

Fluid Balance - loss of renal function can cause fluid retention and may result in hypervolemia.

Metabolic Acidosis - reduction in ability to excrete H+ & phosphoric acid, and inability to produce HCO3

Electrolytes - as kidney function decreases, so does their ability to excrete electrolytes such as K+ (hyperkalemia) and Phos (hyperphosphatemia).

5. Noninfectious Lower Airway Dysfunction

Asthma – *Airway inflammation*
ABG: Respiratory acidosis = CO2 high, pH low

- Triggers – allergenic, pharm, environ, air pollution occupational, infectious, exercise

Status Asthmaticus – Severe asthma attack that doesn't respond to standard treatment. Can lead to death in hours or minutes.

- Assessment – wheezing, cough, dyspnea, chest tightness
- As episode worsens, less ventilation occurs, lung sounds will diminish → respiratory status declines
- PFT – measures how much you inhale, how much you exhale, and how quickly you can exhale it

Medications – Short-acting bronchodilators like *albuterol, levabuterol* for an acute episode. Long-Acting Beta2-adrenergic agonists like *slameterol* and *formoterol* should be used for maintenance.

COPD – *Inflammatory lung disease caused by irritants such as smoke, pollution, and chemicals, dust.*
ABG: Respiratory acidosis = CO2 high, pH low

- S/S – barrel chest, dyspnea on exertion, clubbing, cough, sputum production, diminished lung sounds.
- Lowest possible O2 flow to keep their sats in the 90s

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- Should rarely need 4L O2 Nasal Cannula
- Wean patient down to lowest acceptable O2 level
- COPD patient should have their annual influenza and pneumonia vaccine.

TX – Antibiotics, Respiratory Therapy, & IV Steroids

6. Infectious Upper Airway Dysfunction

Pneumonia – *Infection caused by virus, bacteria, fungi, parasites, or chemical agent, aspiration or inhalation of foreign material.*

- S/S – chest pain/discomfort, tachypnea, hemoptysis, sputum productions, crackles, fever, chills, cough
- Prevention – incentive spirometer for less active patients, hand washing, oral hygiene, aspiration precautions, pneumonia vaccine, stop smoking.
- CAP: community acquired pneumonia (within the community not facility)
- HAP: hospital acquired pneumonia (anyone in the facility or 30 days of D/C)
- VAP: give oral care – ventilator acquired pneumonia

TX – O2 as needed, antibiotics

Tuberculosis – *Infection of lung caused by mycobacterium*

- S/S – progressive fatigue, lethargy, nausea, anorexia, weight loss, low-grade fever, blood tinged sputum, chest pain/tightness
- Assess Hx. – Foreign born, recent travel, cough
- PPD – Positive result confirms latent infection. Done 6-8 weeks after exposure

TX – Isoniazid, rifampin, ethambutol, pyrazinamide

7. Critical Pulmonary Conditions

Pulmonary Embolism – *Collection of solids, liquid or air that lodges in to the pulmonary vessels. Blood clots are most common.*

- S/S – dyspnea, pleuritic chest pain, restlessness, cough, hemoptysis, feeling of impending doom, tachycardia, tachypnea, respiratory alkalosis initially.
- Diagnosis – D-Dimer, VQ Scan, CT Angiography of chest

TX – IV Heparin initially, then bridged PO med, O2, high fowlers, cardiac monitoring, continuous pulse oximetry, anticoagulants (heparin, lovenox, Coumadin)

Pneumothorax (Collapsed Lung) – *Collection of air in pleural cavity caused by trauma, tuberculosis, chronic resp. diseases.*

Spontaneous – physical trauma

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Traumatic – puncture with object or rib
Iatrogenic – pleural wall comprised during a procedure
Tension – trauma, lung infection, CPR, positive pressure vent

- S/S – decreased or absent breath sounds, prominence of involved side, hyperresonance, deviated trachea, respiratory distress, cyanosis, distended neck veins.
- Respiratory alkalosis initially, respiratory acidosis later.
- Increased risk when smoking, high altitudes, flying, or diving within 6 months

TX – Relief of pressure, insertion of chest tube and drainage system.
Education – 50% chance of reoccurrence

8. Care of Patients With Cardiac Problems

Systolic heart failure – *A reduced ability of the heart to contract, results in low EF.*

Diastolic heart failure – *Ineffective filling of left ventricle due to inability of ventricle to relax, often has normal EF*

Left-sided Heart Failure – *Damage to the left ventricle, causes pulmonary congestion*

- S/S – Fatigue, weakness, oliguria, angina, confusion, restlessness, dizziness, tachycardia, palpitations, pallor, weak peripheral pulses, cool extremities, pulmonary edema, tachypnea, dyspnea.

Right-sided Heart Failure – *Commonly caused by left-sided heart failure*

- S/S – Jugular vein distention, enlarged liver and spleen, anorexia, dependent edema, distended abdomen, weight gain, increase in blood pressure (fluid overload), decrease in blood pressure (failure)

EF (Ejection Fraction) – 50-70%, < could indicate heart failure

- Elevated BNP, and microalbumuria are expected
- Arterial blood gas (ABG) values often reveal hypoxemia (low blood oxygen level) because oxygen does not diffuse easily through fluid-filled alveoli. Respiratory alkalosis may occur because of hyperventilation; respiratory acidosis may occur because of carbon dioxide retention. Metabolic acidosis may indicate an accumulation of lactic acid.

Nursing Interventions – administer prescribed medications (Furosemide) and O2 PRN, auscultate lung sounds (fluid overload), strict monitoring of intake

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and output, daily weights, assess skin turgor and signs of edema, vital signs, HOB elevated.

Education – Report unexplained weight increase of 3-5lbs, sodium restriction, potassium-rich food with potassium wasting meds, decrease potassium foods with sparing diuretic, fluids.

- **Take Diuretics early to reduce nocturia**
- **Pace physical activity to avoid overexertion**

Medication

- Ace Inhibitors, ARBs, Nitrates – reduce pressure the heart has to overcome to pump
- Beta Blockers – Allow heart to relax more on diastole which reduces the strain on the heart
- Diuretics – Reduce fluid overload… reduces pressure on the heart
- Digitalis – Increases contractility
- Aspirin Therapy – Prevent clots due to pooling of blood

AVOID Amlodipine, nifedipine, verapamil, diltiazem, and other CCBs in ***systolic*** HF!

Pulmonary Edema – *Fluid backs up into the lungs and is forced into the alveoli, usually caused by worsening HF.*

- S/S – crackle, dyspnea at rest, acute confusion, tachycardia, reduced urinary output, PINK FROTHY SPUTUM, anxiety, restlessness, lethargy.
- EMERGENCY!!

Infective Endocarditis – *Infection of the hearts inner lining or heart valves, usually caused by infection in mouth the spread, valve replacement, or IV drug use.*
→ *HF, embolization, TIA/Stroke*

- S/S – fever with chills, night sweats, malaise, fatigue, weight loss, murmur, positive blood culture,

Pericarditis – *Inflammation of the membranous sac that encloses the hear (pericardium), usually associate with infective organisms, history of MI.*

- S/S – pericardial chest pain, new ST elevation in all ECG leads or PR-segment depression, worsening pericardial effusion

9. Vascular Dysfunction

Arteriosclerosis – *hardening of thickening of the lining of the arteries*
Atherosclerosis – *development of plaques in the arteries that eventually lead to blockage.*

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- Risk Factors – Age, gender, ethnicity, HTN, HPLD, sedentary life, obesity, stress, DM, tobacco use.
- S/S – asymptomatic until 60-75% blockage occurs, intermittent claudication, HTN, sluggish cap. refill, cool/pale extremities, carotid bruits

TX – Reach HDL & LDL goal with statins…. LDL <100, HDL >30.

You want you LDLs Lower and you HDLs Higher!

HMG-CoA REDUCTASE INHIBITORS (STATINS)	COMBINATION DRUGS
• Lovastatin (Mevacor) • Atorvastatin (Lipitor) • Simvastatin (Zocor) • Fluvastatin (Lescol) • Rosuvastatin (Crestor) • Pravastatin (Pravachol) • Pitavastatin (Livalo)	• Ezetimibe and simvastatin (Vytorin) • Amlodipine and atorvastatin (Caduet) • Niacin and lovastatin (Advicor)

Peripheral Vascular Disease or Arterial Disease (PVD/PAD) – *Atherosclerotic artery that has obstructed blood flow; end stage result of atherosclerosis.*

- S/S – 6 P's…. pain, pallor, pulselessness, paralysis, parasthesia, and poikilocythemia.

TX – percutaneous transluminal angioplasty/stenting, laser-assisted angioplasty (burns the plaque away), Rotoblation (rotating device scrape plaque away).

Aneurysm – *permanent bulging and stretching of an artery… the dilated portion is 2x larger than the rest of the artery.*

- Caused by – arteriosclerosis, HTN, trauma, tobacco use
- Most common in abdominal aortic artery
- S/S – bruit, nausea and vomiting, pulsation to abdominal midline, s/s of diminished blood flow, bluish color
- DON'T EVER PALPATE IS AAA IS SUSPECTED!

TX – Monitor q6months with ultrasound, bypass surgery for aneurysms that are fast growing or to big, replacement graphing.

Thrombophlebitis – *Inflammation of the vein caused by a DVT. Mostly occurs in the lower extremities.*

- Caused by – surgeries, pregnancy, trauma, fractures, heart failure, immobility, paralysis, post-op patients, bed rest patients
- S/S – swelling at site, redness, tenderness, edema, asymmetrical swelling.

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Homan's sign is now determined unreliable. A positive result could mean DVT but a negative result does not rule out a DVT.

TX – Anticoagulation therapy like heparin, Lovenox, Warfarin. SCD therapy

Buerger's Disease – *affects smell to med sized arteries and veins, most common in individuals who smoke.*

- S/S – pain in digits, cyanosis of digits, thickened nail beds, intermittent claudication.

Raynaud's Phenomenon – *Unilateral vasospasm of upper and lower extremities. Bilateral vasospasm is known as Raynaud's disease More commonly seen with lupus erythematosus, atherosclerosis, RA, scleroderma, Sjogren's syndrome.*

- S/S – pain, cyanosis, pallor, redness, numb/cold extremities, ulcerations in the later stages and progresses to gangrene.
- Testing – Doppler ultrasound

Sickle-Cell Anemia - *Hereditary disorder that results in decreased ability to carry oxygen in the cells. Most common in African, East Asian, Mediterranean, Central and South America decent.*

- S/S – severe pain, fatigue, pallor, jaundice, irritability, large joints can become swollen during crisis, low-grade fever, priapism.

TX – O2, blood transfusions, fluid/rehydration, pain management
Education – stay hydrated, avoid high altitudes and exposure to cold.

Anemia – *Condition in which the hemoglobin concentration is lower then normal. Meaning, fewer RBC's circulating and results in lack of oxygen.*

- Nutritional anemia's – Vitamin B-12, A, C, D, and Folic Acid
- S/S – pallor, cool to touch, intolerance to cold, brittle nails, tachycardia, orthostatic hypotension, dyspnea's on exertion, decreased O2 sats, fatigue.

Iron Deficiency Anemia – *Deficiency of iron that results in levels too low for RBC production. Caused by chronic bleeding or lack of iron in diet.*

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- S/S – brittle spoon-shaped nails, cheilosis (mouth fissures), pica (craving for non-food substances like dirt, or clay), smooth painful tongue.
- General – fatigue, weakness, dizziness, SOD, pallor, tachycardia.

TX – Iron replacement.

Thrombocytopenia – *Platelet count of <100,000/ml which puts individual at high risk for bleeding.*

- S/S – petechiae, purpura, epistaxis, bleeding gums, hematuria, bloody or tarry stools, menorrhagia.

TX – corticosteroids – suppresses the autoimmune process
plasmapheresis – removing plasma from pt. and replacing with FFP
splenectomy – removal of spleen that corrects disease

Hemophilia – *hereditary bleeding disorders that result from deficiency of clotting factors.*

- Hemophilia A – factor VIII
- Hemophilia B – factor IX
- Hemophilia C – factor X (rare and primarily affects Jewish culture)

S/S – debilitating joint pain, prolonged bleeding, excessive bleeding, ecchymosis, hematomas, bleeding gums, GI bleeding, hematuria, hemarthrosis.
TX – FFP, factor VIII or IX concentrations. Wear medical alert band at all times.

10. HIV/AIDS

HIV – *Attacks the immune system at CD4 antigen causing cell mutation.*

- Following infection, a period of latency occurs
- Transmitted via blood or bodily fluids… STANDARD PRECAUTIONS
- S/S – flu-like symptoms, low WBC, CD4 count <200, opportunistic infections, fatigue, poor wound healing, lesions, night sweats, cough, SOB, weight loss, nausea and vomiting, fever, seizures

CDC recommends use of HIV assays for diagnosis, reduces false negatives.

- Patients are immunocompromised and should be vaccinated
- PNUEMONIA is the most common infection

TX – Antiretroviral therapy (cART/HAART)

  - Increased CD4 count and VL while on these medications likely indicate non-adherence to med regimen

Nursing 2 Final Exam

- Frequent CD4 count and VL levels need to be monitored.

Normal CD4 count = 800-1000

AIDS – *progression of HIV indicated by CD4 count under 200 and presence of aids defining disease such as opportunistic infections, malignancies, neurologic disease, TB, recurrent pneumonia, cervical caner.*

- S/S – Low WBC, CD4 count <200, opportunistic infection, fatigue, poor wound healing, lesions, night sweats, cough, SOB, weight loss, n/v, fever, seizures
- Need appetite stimulants and nutritional support

If a nurse is stuck with a needle from and HIV patient what is the procedure?

- Within 3 days of exposure start 28-day regimen of Tenofovir, Emtricitabine, & Raltegravir

11. Hypersensitivity & Immunity

- **Type I Atopic –** *angioedema, anaphylaxis, allergic asthma, bees, peanuts, iodine, shellfish, drugs.*
- **Type II Cytotoxic –** *transfusion reactions, hemolytic disease of the newborn, hemolytic anemia's*
  - Symptoms of transfusion reaction = low blood pressure, pain, nausea, and vomiting
- **Type III Immune Complex-Mediated –** *autoimmune diseases, clots in small vessels*
- **Type IV Delayed Cell-Mediated –** *slowly developing reaction… contact dermatitis, tissue damage, rejection of tissue grafts, and transplant rejections.*
  - Poison ivy and poison oak, nickel in metal jewelry chromium salts in leather, latex products

Angioedema Interventions = ensuring airway, stopping reaction, useful drugs include: corticosteroids, diphenhydramine, and epinephrine

Anaphylaxis = ensure airway, remove cause, epinephrine IM/IV q 5-15 minutes, diphenhydramine

- Shock S/S – drop in BP, rapid weak pules, closing airways, urticarial, angioedema, seizures, chest pain
- How to quickly raise BP = place patient in Trendelenburg position, IV Fluids

Systemic Lupus Erythematosus (SLE) – *results in eventual major organ system failure. Systemic – evolves entire system. Discoid – Involves characteristic skin rash. Affects woman of child bearing age 30-50.*

Nursing 2 Final Exam

- S/S – arthritis (joint pain), butterfly rash across bridge of nose and cheeks, palmar erythema, weakness, fatigue, malaise, anorexia, weight loss.
- Involvement of a particular system would show signs of that system (renal, CNS)

TX – supportive pharmacotherapy, splenectomy and chemotherapy, rest/avoid triggers, UV exposure/sunlight is a common trigger.

Rheumatoid Arthritis – *Inflammation of synovial membranes and joints leads to deformities and loss of joint function*

- S/S – joint pain longer than 3 months, morning stiffness lasting >1 hours, arthritis of hand, joint pain in 3 or more joints, nodules over body prominences
- Goal = maintain ability to function

TX – Decrease pain with ASA and NSAIDS, use hot or cold compress, range of motion exercises.

****DO NOT PERFORM JOINT MASSAGE.**

12. Dermatologic Dysfunction

Psoriasis – *appears with well defined plaques that are thick whitish/silvery appearance on a red/pink background*

- Treatment = topical steroids (triamcinolone, fluocinolone, betamethasone) UV-B light, tart and anthralin preparations.
- Biologics can also be used as treatment Adalimumab, Infliximab, Secukinumab, Ustekinumab

Cellulitis – *potentially serious bacterial infection. In most cases, streptococcus or staphylococcus organisms enter a wound such as a insect bite, animal bite, or skin injury.*

- Risks – PVD, DM, obesity, or use of corticosteroids or immunosuppressive medications.
- S/S – skin having stretched/glossy appearance, swelling, heat, redness, pain.
  - Looks red hot!!
  - Definitely swollen!!

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- Looks Painful!!
- Skin looks stretched!!

TX – intermittent ice packs, elevating extremity, limit weight bearing if in lower extremity.

Herpes Infections

HSV-1 – *oral cold sores & fever blisters*
HSV-2 – *genital infections*

- Primary: virus becomes imbedded in nerve ganglion
- Secondary: recurrent infections at same skin site
- Virus can be spread by respiratory droplets, direct contact with active lesions, contact with virus-containing fluid.

S/S = pain, tenderness, burning followed by group vesicles… crusts then form and healing takes place.

Herpes Whitlow – *usually on fingertips and can look like warts*
Herpes Gladiatorum – *Usually on face/neck. Frequently found in athletes involved in contact sports.*

Herpes Zoster (Shingles) – *infection caused by reactivation of the varicella chickenpox virus.*

- Caused by or triggered by immunosuppression, stress, radiation, lymphoma.
- Most commonly seen on the chest, buttocks, and face
- S/S – pain (preherpetic neuralgia), itching, burning
- Eruptions – red, swollen, plaques engorged with milky fluid.

Fungal Infections (tineas)

- **Risk –** immunosuppressed, taking antibiotics, chemotherapy
- **Most common –** candidiasis (yeast), tinea pedis (athlete's foot), tinea cruris (jock itch), oral candidiasis.

TX – antifungals (topical, powder, shampoo, PO, swish/swallow, vaginal cream)
Education – KEEP SKIN CLEAN & DRY

Pediculosis – *Infestation of Lice…. humanus (body lice), pubis (crabs)*

TX – combing will remove live lice, treatment with 1% Permethrin lotion is used, remains on hair for 10 minutes then rinsed.

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Education – Bedding, hats, brushes, combs, etc. must be dry cleaned or washed in hot, soapy water.

Scabies – *highly contagious skin infection caused by a mite (sarcoptes scabiei)*

- S/S – strait or serpentine burrows, pink/white in color, slightly elevated with clear vesicles

TX – permethrin cream, applied nightly for 3 nights, washing the cream off each morning.

13. Diabetes Mellitus

Risk Factors – family history, cardiovascular disease, obesity, sedentary lifestyle, hypertension, PCOS, gestational diabetes, ethnicity.

Type 1 Diabetes – *beta cells destroyed by autoimmune process*

- S/S – Polyuria (increased urine), Polydipsia (Increases thirst), Polyphagia (increased appetite), weight loss, malaise, fatigue.
- Glycosuria – elevated blood glucose causes glucose to be unabsorbed by kidneys and excreted in urine
- DKA – persistent high glucose and fat breakdown leading to metabolic acidosis…. MEDICAL EMERGENCY.
- Occurs mostly in adolescents

Type 2 Diabetes – *decreased insulin production and decreased sensitivity to insulin.*

- S/S – polyuria, polydipsia, blurred vision, fatigue, parasthesia, skin infections that occur and heal slowly.
- Decreased production of insulin by pancreas
- At risk – African Americans, Hispanic, Native Americans.

Encourage… weight loss & exercise

Diabetic Labs –

- ✓ Fasting plasma glucose = >125
- ✓ Random/2-hour glucose = >200
- ✓ Elevated HgbA1C = >6.5%

Glucose monitoring -

- Patients on insulin should check sugars 2-4 times per day
- Not on insulin, two or three times per week
- Should check before meals and 2 hours after meals

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HGB A1C – Measure blood levels over 3-4 month. Used to determine level of control over disorder.

Insulin Therapy –

Insulin	STARTS TO WORK IN (hours)	Peak Action (hours)	Duration of Action (hours)	MAXIMUM Duration (hours)
Rapid-Acting				
Lispro (Humalog)	15 TO 30 MINUTES	1 to 2 HOURS	3 to 6 HOURS	4 to 6 HOURS
Aspart (Novolog)	15 TO 30 MINUTES	1 to 2 HOURS	3 to 6 HOURS	4 to 6 HOURS
Glulisine (Apidra)	15 TO 30 MINUTES	1 to 2 HOURS	3 to 6 HOURS	4 to 6 HOURS
Short-Acting				
Regular	30 MINUTES TO 1 HOUR	2 to 4 HOURS	3 to 6 HOURS	6 to 8 HOURS
Intermediate-Acting				
NPH	2 to 4 HOURS	8 to 10 HOURS	10 to 18 HOURS	14 to 20 HOURS
Long-Acting				
Glargine (Lantus)	1 to 2 HOURS	None	19 to 24 HOURS	24 HOURS
Detemir (Levemir)	1 to 2 HOURS	None	19 to 20 HOURS	20 HOURS

Complications of Ins

- Insulin Re
- Morning h
  growth ho
- Patient forgets to eat
- Somogyi effect – nocturnal hypoglycemia followed by rebound hyperglycemia… decrease evening dose of insulin
  - To determine cause, test at HS,3am and upon awakening.

Oral Diabetic Agents

- Insulin Stimulators
  - Sulfonylureas - glipizide, glyburide and glimepiride. Report hypoglycemia or blurred vision
- Biguanides - metformin. Lactic acidosis…no ETOH
- Alpha-glucosidase inhibitors – acarbose (precise). Delay absorption of carbohydrates
- Non-sulfonylurea secretagogues - repaglinide. Cause secretion of insulin.
- Thiazolidinediones - pioglitazone and rosiglitazone. Sensitize. Weight gain. Fertility. Liver.
- Pramlintide (Symlin) - Analogue of amylin. Used with insulin. Injection.
- Exanatide (Byetta). Incretion mimetic. Causes satiety. Wt. loss.
- Januvia.

Nursing 2 Final Exam

Hypoglycemia S/S – cool, clammy, anxious, nervous, confusion, weakness, double vision, hunger, tachycardia, palpitations

- Mild TX = ½ cup fruit juice, soft drink, 8 oz. skim milk, 3-4 glucose tablets, recheck BS 15 minutes.
- Moderate TX = 15-30g of carbs, retest in 15 min.
- Severe TX = D50W IV, glucagon IM/SC, second dose in 10 minutes is symptoms persist.
    - IF glucagon is given… roll the patient on there side.

Diabetic Ketoacidosis – *caused by persistent hyperglycemia and fat breakdown*

- Metabolic acidosis – will show low bicarb and pH… and if there body is compensating it would do so by getting rid of excess acid (respiratory)
- S/S – Hypotensive, Tachycardia, Dehydrated,
    - Thirst, abdominal discomfort/pain, lethargy, flushed skin, fruity odor or breath, Kussmaul respirations (deep, unlabored, rapid)

They WOULD NOT BE hypertensive, bradycaric, or fluid overloaded.

Management – rehydrate with normal saline, followed with 45% NaCl, restore electrolytes, ECG, hourly blood sugars, IV insulin, vital signs, strict I&O, prevent fluid overload.

Hyperglycemic Hyperosmolar Nonketotic Syndrome (HHNS) – *Blood sugar is usually over 600, elevated Na levels, elevated potassium.*

- Type 2 Diabetes
- No Ketosis

Management – Lytes monitoring, fluids with potassium replacement, monitor neurologically, monitor ECG, monitor vital signs, labs, hourly blood glucose monitoring, insulin IV

14. Visual Dysfunction

Cataracts – *occurs due to aging process. The lens of the eye becomes cloudy, which distorts light passing through the retina.*

- S/S – slightly blurred vision and decreased color perception, bluish/white colored lens as it progresses, and vision loss is gradual. NO PAIN.

TX – surgical removal of lens and placement of artificial lens. Post-Op = should be free of pain/swelling… report immediately if experienced.

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Glaucoma – *related to the amount of intraocular pressure in the eye that results in optic nerve damage that leads to decreased vision and blindess.*

Normal IOP = 10-21 mmHg

- *Open-angled glaucoma* – fluid from the eye is unable to drain, causing increased IOP
    - Gradual vision loss & asymptomatic
- *Close-angled glaucoma* – sudden increase in IOP caused by forward displacement of iris, which presses against the cornea and closes the chamber angle. Suddenly stops outflow of aqueous humor
    - MEDICAL EMERGENCY, sudden severe eye pain, headaches, blurred vision, n/v, seeing halos.

Tonometry – measures IOP (the annoying puff of air to the eyeball)

TX – lower IOP!! No cure, only continued & lifelong therapy.

Open-Angle Meds

- ***Decrease production of aqueous humor* – ophthalmic beta-adrenergic blockers, adrenergic agonists, carbonic anhydrase inhibitors**
- ***Increase outflow of AH* – cholinergic agonists, prostaglandin inhibitors.**

Closed-Angle Meds

- ***Increase outflow of AH* – cholinergic agonists, carbonic anhydrase inhibitors**

Macular Degeneration – *age-related disease that causes either partial or complete loss of vision*

- ***Dry AMD* –** 90%, gradual deterioration
- ***Wet AMD* –** 10%, abnormal blood vessels leak fluid/blood into the macula. More devastating, can cause total vision loss within 3 months.

S/S – loss of central vision, mild blurring, and distortion. Eventually leads to loss of all central vision.

- Wavy lines seen by individual when viewing Amsler Grid
- Taking vitamins, antioxidants, and zinc can slow progression.

Detached Retina – *when one of the layers of the retina detach from the other or the wall of the eye. When this happens, the retina can no longer translate info, and it results in partial loss of vision.*

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- S/S – flashes of light, floaters, usually sudden, usually painless. May experience sensation of curtain being pulled into visual field.

TX – rarely self-heal and will require a surgery called scleral buckling.

15. Auditory Dysfunction

Types of Hearing Tests:

- **Rinne Test –** *tuning fork placed on mastoid process, patient notes when sound is no longer heard.*
- **Weber Test –** *tuning fork placed on top of head. Noise should be hear bilaterally.*

Conductive hearing loss - *the noise will be louder in affected ear*

- Generally associated with obstruction, and is treatable
- Patient will likely speak softer because they perceive their voice to be louder than what it really is.
- Causes – cerumen, foreign body, otitis media, and otitis externa.
- S/S – loss of all frequencies (volume turned down), can hear well in loud situations

Sensorineural loss – *the noise is louder in the good ear.*

- Typically effects high-frequency pitches and has more difficulty hearing in noisy environments
- Sounds are distorted
- PERMANENT
- Causes – exposure to loud noises, trauma, virus/disease, aging, Meniere's Disease
- Rinne Test is used to help identify

Otitis Media – *inflammation of the middle ear, the most common cause of conductive hearing loss.*

- S/S – ear pain, conductive hearing loss, tinnitus, headache, fever, dizziness

Otitis Media with effusion – accumulation of fluid behind tympanic membrane.

TX – OTC analgesics for pain, antibiotics, avoid high altitude, water sports, and seek medical attention with excruciating pain.

Meniere's Disease – *condition related to fluid accumulation in the ear that decreases hearing, causes tinnitus and vertigo.*

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- S/S – tinnitus, one-sided sensorineural auditory loss, and vertigo
- Treatment: no cure, treat symptoms!

TX – antihistamines, anticholinergic, sedatives, diuretics, low sodium diet, labyrinthectomy

16. CNS: The Brain

Alzheimer's Disease – *neural degeneration in hippocampus causes memory loss, and neural degeneration in cerebral cortex causes loss of speech, reasoning, and higher functioning.*

- Risk Factors – age, family history, head injuries
- **TX – goal is slow progression & maintain independent function for as long as possible.**
- Structured and consistent environment is helpful

Pharmacology Chart of ALZ

Alzheimer's Disease

Early (Mild), or Stage I (First Symptoms up to 4 Years)
- Independent in ADLs
- Denies presence of symptoms
- Forgets names; misplaces household items
- Has short-term memory loss and difficulty recalling new information
- Shows subtle changes in personality and behavior
- Loses initiative and is less engaged in social relationships
- Has mild impaired COGNITION and problems with judgment
- Demonstrates decreased performance, especially when stressed
- Unable to travel alone to new destinations
- Often has decreased sense of smell

Middle (Moderate), or Stage II (2 to 3 Years)
- Has impairment of all cognitive functions
- Demonstrates problems with handling or unable to handle money and finances
- Is disoriented to time, place, and event
- Is possibly depressed and/or agitated
- Is increasingly dependent in ADLs
- Has visuospatial deficits: has difficulty driving and gets lost
- Has speech and language deficits: less talkative, decreased use of vocabulary, increasingly nonfluent, and eventually aphasic

V. MEDICATIONS TO TREAT ALZHEIMER'S DISEASE

A. Action and use: reversible cholinesterase inhibitors raise acetylcholine level in cerebral cortex by slowing degradation of acetylcholine released in cholinergic neurons; memantine is an N–methyl–D–aspartate receptor antagonist

B. Common medications are listed in Box 39–3

C. Administration considerations

NCLEX®
1. Administer dose between meals; may give with meal to reduce GI symptoms
2. Adjust dosage to response no more frequently than every 6 weeks

D. Contraindications: hypersensitivity to drug or development of jaundice when taking drug

E. Side/adverse effects

NCLEX®
1. Insomnia, headache, dizziness, confusion, ataxia, anxiety, depression, hostility, and abnormal thinking
2. Constipation, diarrhea, N/V, and abdominal pain
3. Urinary frequency and incontinence
4. Rhinitis or cough; rash; seizures or hepatotoxicity

F. Nursing considerations

NCLEX®
1. Assess BP for hypotension or hypertension
2. Assess mental status for affect, mood, behavioral changes, depression, hallucinations, confusion; complete a suicide assessment
3. Assess GI status for side effects; monitor liver function test results
4. Assess client for urinary frequency and incontinence
5. Evaluate for therapeutic responses such as decreased confusion, improved mood

G. Client teaching

NCLEX®
1. Report side effects such as twitching, nausea, vomiting, sweating; they might indicate overdose

NCLEX®
2. Dose may be taken with food to decrease GI upset

NCLEX®
3. Medication is not a cure; it only relieves symptoms

Box 39–3 Medications Used to Treat Alzheimer's Disease

Donepezil hydrochloride (Aricept)	Rivastigmine (Exelon)
Galantamine (Razadyne)	Tacrine (Cognex)
Memantine (Namenda)	

Nursing 2 Final Exam

Parkinson's Disease – *progressive, degenerative neurological disease characterized by 4 cardinal symptoms: tremor, muscle rigidity, bradykinesia, and postural instability.*

- Dopamine is produced in substantia nigra → atrophy takes place in the substantia nigra so dopamine production decreases → because dopamine is the neurotransmitter essential for controlling posture and voluntary motions, these functions become impaired

- S/S begins with fatigue and slight resting tremor → bradykinesia, muscle rigidity, staring gaze, uncontrolled movements, and postural disturbances, short shuffled steps.
    - May also have heat intolerance, excessive head/neck sweating, and absence of sweating on trunk and extremities, constipation, anxiety, depression, & sleep disturbances.

TX – medications, possible surgery, range of motion BID, proper nutrition, and occupational therapy.

- *Dopamine agonists* mimic dopamine by stimulating dopamine receptors in the brain. They are typically the most effective during the first 3 to 5 years of use. The benefit of these agents is fewer incidents of dyskinesias (problems with movement) and "wearing off" phenomenon (loss of response to the drug) when compared with other drugs.
- Examples of dopamine agonists are apomorphine (Apokyn, a morphine derivative), pramipexole (Mirapex), and ropinirole (Requip). Another drug in this class, rotigotine, is available as a continuous transdermal patch (Neupro) to maintain a consistent level of dopamine

Migraine Headaches – *stimulation of nerve causes release of neuropeptides which worsen vasodilation and sensitize brainstem.*

- S/S – prodromal phase: food cravings/mood swings… aura phase: visual changes, flashing lights, diplopia (double vision)… headache phase: lasts for a few hours or days… termination phase: intensity decreases.

TX – medications that are either preventative or abortive.

Abortive: Tylenol or ibuprofen for mild HA, caffeine (narrows blood vessels)
Severe migraines – Triptans (sumatriptan, eletriptan, naratriptan)

Preventative: Beta blockers (propranolol, timolol) and calcium channel blockers (verapamil) aid in preventing vascular changes.

Nursing 2 Final Exam

Seizures – *excessive and abnormal electrical activity in the brain that is manifested by disturbances.*

- **Generalized –** Tonic-Clonic seizure, tonic seizure, clonic seizure, myoclonic seizure, atonic seizure
- **Partial –** complex partial seizures, simple partial seizure.

Tonic-Clonic seizures (grand mal) – most common, often preceded by aura without warning

- Start with loss of consciousness, then sharp muscle contractions, bowel/bladder incontinence, tonic phase – breathing cessation for 15-60 seconds and cyanosis, clonic phase – 60-90 seconds of alternating muscle contraction and relaxation, hyperventilation, eyes rolled back, postictal – relaxed, quiet, breathing, unconsciousness, unresponsive, followed by regained consciousness and confusion/disorientation, headache, fatigue.

Status Epilepticus – life threatening emergency manifested by repetitive tonic-clonic activity with only brief periods of calm

- Danger is hypoxia, hyperthermia, hypoglycemia
  SEIZURES LASTING LONGER THAN 10 MINUTES CAN CAUSE DEATH!

Nursing Interventions – time/length of seizure and each phase, LOC, orientation, speech ability, maintain patent airway, turn client to side to prevent aspiration, O2 and suction equipment on stand by

DO NOT RESTRAIN, simply protect from injury. (Padded arm rails)

Medications – antiepileptic's (phenytoin, divalproex sodium, carbamazepine, gabapentin, etc.) lorazepam (Ativan) is commonly used during seizure to stop episode.

17. CNS – The Spinal Cord

Multiple Sclerosis – *myelin and nerve axons in brain and spinal cord are destroyed which interrupts nerve transmission, causes by environment and genetics.*

Primary progressive MS (PPMS) involves a steady and gradual neurologic deterioration without remission of symptoms. The patient has progressive disability with no acute attacks. Patients with this type of MS tend to be between 40 and 60 years of age at onset of the disease.

Secondary progressive MS (SPMS) begins with a relapsing-remitting course that later becomes steadily progressive. About half of all people with RRMS developed SPMS within 10 years. The current addition of disease-modifying drugs as part of disease management may decrease the development of SPMS.

Progressive-relapsing MS (PRMS) is characterized by frequent relapses with partial recovery but not a return to baseline. This type of MS is seen in only a small percentage of patients. Progressive, cumulative symptoms and deterioration occur over several years.

- S/S – muscle weakness and spasticity, fatigue, dysphagia, diplopia, bowel & bladder dysfunction, depression

Nursing 2 Final Exam

- Diagnosis – MRI of brain and spinal cord to visualize lesions, lumbar puncture (looking for elevated IgG, OCBs, and increased myelin basic protein in the CSF.

- Interferon beta-1a (Avonex or Rebif), an immunomodulator that *modifies* the course of the disease and also has antiviral effects
- Interferon beta-1b (Betaseron, Extavia), another immunomodulator with antiviral properties
- Glatiramer acetate (Copaxone), a synthetic protein that is similar to myelin-based protein
- Mitoxantrone (Novantrone), an antineoplastic anti-inflammatory agent used to resolve relapses but with risks for leukemia and cardiotoxicity
- Natalizumab (Tysabri), the first monoclonal antibody approved for MS that binds to white blood cells (WBCs) to prevent further damage to the myelin
- Fingolimod (Gilenya), teriflunomide (Aubagio), and dimethyl fumarate (Tecfidera), newer *oral* immunomodulating drugs
- Corticosteroids (methylprednisolone [Solu-Medrol], dexamethasone, or prednisone), anti-inflammatory and immune-suppressing drugs used short term for acute exacerbation or initial onset

Amyotrophic Lateral Sclerosis (ALS) – *progressive demyelination of motor neurons in the anterior horn of the spinal cord, brainstem, and cerebral cortex. Results in eventual loss of neurotransmission.*

- S/S – weakness and wasting of limbs/hands, then shoulder and upper arms, then lower limbs, fatigue
    - Progresses to muscle spasticity and hyperreflexia, twitching
    - Atrophy of tongue, speech, and swallowing difficulties
    - Dyspnea

TX – exercise, PT/OT/ST, nutritional supplements, G-tube, glutamate inhibitors (riluzole), benzodiazepines (diazepam), muscle relaxants (adantolene), antiarrhythmics (quinidine)

Spinal Cord Injuries – *typically caused by trauma. Causes motor and sensory dysfunction.*

Complete – total transection of the spinal cord resulting in total loss of motor and sensory function below the injury.
Incomplete – Partial transection of the spinal cord resulting in loss of varying degrees of motor and sensory function below level of injury

- The period immediately following the SCI, reflex is lost and fecal urinary retention occurs.

Why are cervical injuries so important??

- High cervical injuries (above C3) result in loss of respiratory function so ventilator support is needed immediately or death occurs
- Most common injuries = C1, 2, 4, 6, T11, & 12

X-ray – Shows presence of vertebral fractures

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MRI – provides information on level of soft tissue damage
CT – provides information about fracture and the damage it has caused.

Nursing interventions = ensure immobility, cervical halo traction, monitor bowel and bladder dysfunction, skin integrity, neurologic assessments, and standard post op care.

Methylprednisolone therapy – given IV every hour for a day during the acute phase to reduce inflammation (reduced inflammation and improves blood flow). If given within 8 hour of injury, it has been known to improve neurological function.

- Monitor BS as steroids increase glucose.

Surgery – laminectomy (removal of lamina) and vertebral fusion followed by possible traction.

Autonomic Dysreflexia S/S

- Sudden, significant rise in systolic and diastolic blood pressure
- Accompanied by bradycardia
- Profuse sweating above the level of lesion—especially in the face, neck, and shoulders; rarely occurs below the level of the lesion because of sympathetic cholinergic activity
- Goose bumps above or possibly below the level of the lesion
- Flushing of the skin above the level of the lesion—especially in the face, neck, and shoulders
- Blurred vision
- Spots in the patient's visual field
- Nasal congestion
- Onset of severe, throbbing headache
- Flushing about the level of the lesion with pale skin below the level of the lesion
- Feeling of apprehension

Emergency Care for Autonomic Dysreflexia (SCI above T6)

Chart 43-3

Best Practice for Patient Safety & Quality Care QSEN

Emergency Care of the Patient Experiencing Autonomic Dysreflexia: Immediate Interventions

- Place patient in a sitting position (first priority!), or return to a previous safe position.
- Notify the primary health care provider or Rapid Response Team.
- Assess for and treat the cause:
  - Check for urinary retention or catheter blockage:
    - Check the urinary catheter tubing (if present) for kinks or obstruction.
  - If a urinary catheter is not present, check for bladder distention and catheterize immediately if indicated:
    - Consider using anesthetic ointment on tip of catheter before catheter insertion to reduce urethral irritation.
- Determine if a urinary tract infection or bladder calculi (stones) are contributing to genitourinary irritation.
- Check the patient for fecal impaction or other colorectal irritation, using anesthetic ointment at rectum. Disimpact if needed.
- Examine skin for new or worsening pressure injury symptoms.
- Monitor blood pressures every 10 to 15 minutes.
- Give nifedipine or nitrate as prescribed to lower blood pressure as needed.
- (Patients with recurrent autonomic dysreflexia may receive an alpha blocker prophylactically.)

Nursing 2 Final Exam

18. Peripheral Nervous System Dysfunction

Myasthenia Gravis – *affects the transmission of nerve impulses to voluntary muscles. Associated with the thymus gland (the autoantibodies hinder acetylcholine which is a neurotransmitter)*

- Triggers – stress, hormonal disturbances (pregnancy, thyroid dysfunction), infections, trauma/surgery, excessive exercise, opioids/sedatives/barbiturate/alcohol/quinidine, thymus tumor.
- S/S – progressive muscle weakness that worsens with use & improves with rest, poor posture, ptosis (eyelid drooping), diplopia, respiratory compromise, loss of bowel/bladder control, fatigue, paresthesias
- Progresses to affect respiratory muscles, swallowing, and chewing
- Respirations become fast and shallow, abnormal ABGs, low O2 sats, decreased breath sounds

Testing: Tensilontest-this confirms a diagnosis of MG via an IV edrophoniumchloride (tensilon), which allows acetylcholine to bind with receptors temporarily so it relieves symptoms

- Overmedication can cause cholinergic crisis so **atropine** is always on standby during and after this test

Trigeminal Neuralgia – *Affects 1 or more of the 3 divisions of the trigeminal nerve (ophthalmic, maxillary, mandibular) but maxillary and mandibular are affected most often.*

- S/S – brief, intense, severe facial pain.
- Avoid triggers

TX – antiepileptic's help with pain, rhizotomy damages the nerve root

Bell's Palsy – *unilateral paralysis of facial muscles. 80% recover fully within months, 15% function with permanent partial paralysis.*

- S/S – one-sided paralysis of facial muscles, upper eyelid with loss of corneal reflex on affected side, loss of taste on affected side, tearing on affected side.

TX – faradic stimulation, artificial tears, eye patch, and corticosteroids can help reduce inflammation of the nerve

Nursing 2 Final Exam

Education – protect eye by wearing eye patch and protective glasses

19. Malnutrition, Undernutrition, & Obesity

Malnutrition – *can include deficiencies or excess of one or more nutrients*

- Causes – financial constrains, pain, poor intake, nausea, med side affects
- Elderly, cancer, and aids patients at high risk
- S/S – decrease in lean body mass, decrease in fat stores, dehydration, weight loss, weakness, decreased functioning

Important Labs

Albumin = 3.4-5.0
Hemoglobin = 14-16.5 (M), 12-15 (F)
Hematocrit = 40-50 (M), 37-47 (F)

Metabolism

- Carbohydrates are transported to the liver in the form of glucose where it stimulates insulin secretion from the pancreas
  - When more carbs are ingested then needed, it is converted to fat & stored.
- Proteins, now amino acids, replace protein stores and provide energy
  - Excess protein is excreted in urine, feces, or through the skin
- Fat helps transport digesting substances and fat-soluble vitamins (A, D, E, & K), to aid absorption and for energy.

Parenteral Nutrition (TPN) – *providing nutrition via IV solution. Used when patients are malnourished, and isn't a candidate for enteral feeding.*

- Central line is ideal
- Contain dextrose, amino acids, lipids, vitamins, minerals, and certain medications
- Complications – GI atrophy, fluid overload, allergic reaction, sepsis, hyperglycemia
  - Consistently check blood sugars to avoid DKA/HHNS

Double verification is normally required

Enteral feedings – feeding a patient via tube directly into GI tract (NG tube, Peg tube, G-tube, etc.)

- Improves wound healing, immune function
- Complications – nausea, vomiting, malabsorption, aspiration, abdominal distention, tube obstruction, tube displacement, and dislodgement, diarrhea, refeeding syndrome
- Flush tubes before and after feedings and med administration

Nursing 2 Final Exam

Obesity – BMI greater than 30

- Risks - HTN, HPLD, DM2, CAD

Education = lifestyle changes, proper diet
Surgery = bariatric surgeries

Gastric – silicone band places around the upper portion of the stomach, decreasing its size and capacity

Vertical – uses a band and staples to create a smaller stomach pouch

Gastric bypass – a stomach pouch is surgically created which bypasses the stomach and upper small intestine.