NCLEX-PN Study Guide

Domain 3 Study Guide

Pharmacological Therapies & Physiological Adaptation

Exam Weight: 10–16% + 9–15% of Exam

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Domain Overview

This guide covers two closely related domains: Pharmacological Therapies (10-16%) and Physiological Adaptation (9-15%). Together they account for approximately 19-31% of the NCLEX-PN. Pharmacological Therapies covers medication administration, adverse effects, and client education. Physiological Adaptation covers the LPN's role in managing clients with acute and chronic conditions.

Pharmacological Therapies

Cardiovascular Medications

Drug Class	Examples	Key Nursing Considerations
ACE Inhibitors	Lisinopril, enalapril, captopril (-pril)	Monitor BP; dry cough (switch to ARB); angioedema (emergency); avoid in pregnancy; monitor K+
ARBs	Losartan, valsartan (-sartan)	Similar to ACE inhibitors; no cough; angioedema less common; avoid in pregnancy
Beta-Blockers	Metoprolol, atenolol, carvedilol (-olol)	Monitor HR (hold if <60); do not stop abruptly (rebound hypertension/angina); mask hypoglycemia signs
Calcium Channel Blockers	Amlodipine, diltiazem, verapamil	Monitor HR and BP; constipation (verapamil); grapefruit juice interaction; peripheral edema
Diuretics (Loop)	Furosemide (Lasix), bumetanide	Monitor K+ (hypokalemia); daily weight; I&O; ototoxicity with high doses; avoid with aminoglycosides
Digoxin	Digoxin (Lanoxin)	Apical pulse 1 min (hold <60); therapeutic level 0.5-2 ng/mL; toxicity: N/V, visual changes, bradycardia
Anticoagulants	Heparin, warfarin, enoxaparin	Heparin: aPTT; warfarin: INR (2-3 therapeutic); bleeding precautions; antidotes
Statins	Atorvastatin, simvastatin (-statin)	Monitor liver enzymes; myopathy/rhabdomyolysis; avoid grapefruit; take at bedtime (most)

NCLEX Tip: Antidote quick reference: Heparin → Protamine sulfate | Warfarin → Vitamin K | Opioids → Naloxone | Benzodiazepines → Flumazenil | Acetaminophen → N-acetylcysteine | Magnesium toxicity → Calcium gluconate | Digoxin toxicity → Digibind

Diabetes Medications

Medication	Type	Key Points
Regular insulin	Short-acting (onset 30-60 min, peak 2-4 hr)	Only insulin that can be given IV; clear appearance
NPH insulin	Intermediate-acting (onset 1-2 hr, peak 6-12 hr)	Cloudy appearance; can be mixed with regular

Glargine (Lantus)	Long-acting (no peak, 24 hr duration)	NEVER mix with other insulins; clear; give at same time daily
Aspart/Lispro	Rapid-acting (onset 5-15 min)	Give within 15 min of meal; monitor for hypoglycemia
Metformin	Biguanide (oral)	Take with meals; hold before contrast dye; lactic acidosis risk; no hypoglycemia alone
Sulfonylureas	Glipizide, glyburide, glimepiride	Stimulate insulin release; hypoglycemia risk; take with meals

Psychotropic Medications

Drug Class	Examples	Key Nursing Considerations
SSRIs (antidepressants)	Fluoxetine, sertraline, paroxetine	Takes 2-4 weeks for effect; serotonin syndrome risk; sexual dysfunction; monitor for suicidal ideation initially
Tricyclic antidepressants	Amitriptyline, nortriptyline	Anticholinergic effects (dry mouth, urinary retention, constipation); fatal in overdose; cardiac arrhythmias
MAOIs	Phenelzine, tranylcypromine	Tyramine-free diet (no aged cheese, wine, cured meats); hypertensive crisis; many drug interactions
Antipsychotics (typical)	Haloperidol, chlorpromazine	EPS: akathisia, dystonia, tardive dyskinesia; NMS (rare but fatal); anticholinergic effects
Antipsychotics (atypical)	Risperidone, olanzapine, quetiapine, clozapine	Metabolic syndrome; clozapine: agranulocytosis (weekly WBC); weight gain; diabetes risk
Benzodiazepines	Lorazepam, diazepam, alprazolam	CNS depression; fall risk; dependence; do not stop abruptly; respiratory depression with opioids
Lithium	Lithium carbonate	Narrow therapeutic range (0.6-1.2 mEq/L); toxicity >1.5; maintain sodium/fluid intake; monitor levels

Physiological Adaptation

Fluid and Electrolyte Imbalances

Electrolyte	Normal Range	Hypo Signs & Causes	Hyper Signs & Causes	LPN Actions
Sodium (Na+)	135-145 mEq/L	Hyponatremia: confusion, seizures, headache | Causes: SIADH, excessive water intake, diuretics	Hypernatremia: thirst, agitation, dry mucous membranes | Causes: dehydration, diabetes insipidus	Report to RN; monitor neuro status; fluid restrictions or replacement per order

Potassium (K+)	3.5-5.0 mEq/L	Hypokalemia: muscle weakness, cramps, arrhythmias, U wave on ECG | Causes: diuretics, vomiting, diarrhea	Hyperkalemia: peaked T waves, bradycardia, cardiac arrest | Causes: renal failure, ACE inhibitors, K-sparing diuretics	NEVER give IV K+ push; report immediately; cardiac monitoring
Calcium (Ca2+)	8.5-10.5 mg/dL	Hypocalcemia: tetany, Chvostek's/Trousseau's signs, seizures | Causes: hypoparathyroidism, vitamin D deficiency	Hypercalcemia: "stones, bones, groans, psychic moans" | Causes: hyperparathyroidism, malignancy	IV calcium gluconate for severe hypocalcemia; report to RN
Magnesium (Mg2+)	1.5-2.5 mEq/L	Hypomagnesemia: tremors, hyperreflexia, tachycardia | Causes: alcoholism, malnutrition, diuretics	Hypermagnesemia: decreased reflexes, respiratory depression | Causes: renal failure, excessive Mg administration	Calcium gluconate antidote for Mg toxicity; monitor deep tendon reflexes

Common Medical Emergencies

Emergency	Key Signs	LPN Priority Actions
Hypoglycemia (<70 mg/dL)	Shakiness, diaphoresis, confusion, tachycardia, pallor	If conscious: 15g fast-acting carbs (juice, glucose tabs); recheck in 15 min. If unconscious: glucagon IM; notify RN
Hyperglycemia/DKA	Polyuria, polydipsia, fruity breath, Kussmaul breathing, dehydration	Notify RN; IV fluids; insulin per order; monitor electrolytes; I&O;
Anaphylaxis	Urticaria, angioedema, bronchospasm, hypotension, tachycardia	Call for help; epinephrine 0.3-0.5 mg IM (thigh); O2; IV access; diphenhydramine; corticosteroids
Pulmonary Embolism	Sudden dyspnea, pleuritic chest pain, tachycardia, hemoptysis	O2; notify RN/MD stat; IV access; anticoagulation; prepare for CT
Autonomic Dysreflexia (SCI ≥T6)	Severe hypertension, pounding headache, bradycardia, diaphoresis above injury	Sit upright; identify/remove trigger (full bladder, bowel); notify RN stat
Transfusion Reaction	Chills, fever, back pain, hemoglobinuria (hemolytic); urticaria (allergic)	STOP transfusion; keep IV open with NS; notify RN; vital signs; send blood bag to lab

NCLEX Tip: For blood transfusion reactions: STOP the transfusion FIRST, then assess and notify. The blood tubing should be disconnected and new NS tubing attached to keep the IV patent. Send the blood bag and tubing to the blood bank for analysis.

Wound Care Principles

Wound Stage/Type	Description	LPN Care
Stage 1 Pressure Injury	Intact skin; non-blanchable redness	Reposition every 2 hr; moisture barrier; pressure redistribution surface
Stage 2 Pressure Injury	Partial thickness; open blister or shallow crater	Moisture-retentive dressing (hydrocolloid, foam); protect from friction; reposition
Stage 3 Pressure Injury	Full thickness; subcutaneous tissue visible; no bone/tendon	Wound care per order; debridement if ordered; protect periwound skin; notify RN
Stage 4 Pressure Injury	Full thickness; bone/tendon/muscle exposed	Report to RN immediately; complex wound care; surgical consult likely needed
Surgical Wound	Clean, sutured incision	REEDA assessment; sterile technique for dressing changes; report signs of infection
Infected Wound	Redness, warmth, purulent drainage, odor, fever	Culture wound; notify RN; antibiotics per order; wound care; document