NCLEX-RN Study Guide

Domain 4 Study Guide

Physiological Integrity

Exam Weight: 38–62% of Exam

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Domain Overview

Physiological Integrity is the largest domain on the NCLEX-RN (38-62%) and covers four subcategories: Basic Care and Comfort (6-12%), Pharmacological and Parenteral Therapies (13-19%), Reduction of Risk Potential (9-15%), and Physiological Adaptation (11-17%). Mastery of this domain is essential for passing the NCLEX-RN.

Pharmacological and Parenteral Therapies (13–19%)

High-Alert Medications

Medication Class	Key Examples	Critical Nursing Considerations
Anticoagulants	Heparin, warfarin, enoxaparin, rivaroxaban	Monitor aPTT (heparin), INR (warfarin); antidotes: protamine sulfate (heparin), vitamin K (warfarin)
Insulin	Regular, NPH, glargine, aspart, lispro	Never mix glargine; check blood glucose before; hypoglycemia signs; storage
Opioids	Morphine, oxycodone, fentanyl, hydromorphone	Assess respiratory rate; naloxone reversal; constipation prevention; fall risk
Digoxin	Digoxin (Lanoxin)	Check apical pulse 1 min; hold if <60; therapeutic level 0.5-2 ng/mL; toxicity: N/V, visual changes
Chemotherapy	Methotrexate, cyclophosphamide, doxorubicin	Vesicant precautions; PPE; nadir monitoring; infection/bleeding precautions
Lithium	Lithium carbonate	Narrow therapeutic range (0.6-1.2 mEq/L); toxicity >1.5; monitor sodium/fluid intake

NCLEX Tip: NCLEX frequently tests antidotes: Heparin → Protamine sulfate | Warfarin → Vitamin K | Opioids → Naloxone (Narcan) | Benzodiazepines → Flumazenil (Romazicon) | Acetaminophen → N-acetylcysteine (Mucomyst) | Magnesium toxicity → Calcium gluconate

IV Therapy and Fluid Balance

Solution Type	Examples	Use	Nursing Considerations
Isotonic	0.9% NS, LR, D5W (isotonic in bag)	Fluid replacement, hypovolemia	Risk of fluid overload; monitor for edema
Hypotonic	0.45% NS, 0.33% NS	Cellular dehydration, hypernatremia	Risk of cellular swelling; avoid in head injury
Hypertonic	3% NS, D10W, D5 0.9% NS	Severe hyponatremia, cerebral edema	Administer slowly; risk of fluid overload; central line preferred for 3% NS

Electrolyte Imbalances

Electrolyte	Normal	Hypo- Signs	Hyper- Signs	Priority Interventions
Sodium (Na)	135-145	Confusion, seizures, headache	Thirst, agitation, seizures	Hypo: restrict free water or give 3% NS slowly; Hyper: free water replacement
Potassium (K)	3.5-5.0	Muscle weakness, arrhythmias, U waves on ECG	Peaked T waves, bradycardia, cardiac arrest	Hypo: oral/IV KCl (never IV push); Hyper: Kayexalate, insulin+glucose, dialysis
Calcium (Ca)	8.5-10.5	Tetany, Chvostek's/Trousseau's, seizures	Bone pain, kidney stones, constipation, "stones, bones, groans"	Hypo: IV calcium gluconate; Hyper: IV fluids, furosemide
Magnesium (Mg)	1.5-2.5	Tremors, hyperreflexia, tachycardia	Decreased reflexes, respiratory depression, cardiac arrest	Hypo: IV/PO magnesium; Hyper: calcium gluconate (antidote), dialysis

Reduction of Risk Potential (9–15%)

Arterial Blood Gas (ABG) Interpretation — ROME

Use the ROME mnemonic: Respiratory Opposite, Metabolic Equal. Normal values: pH 7.35-7.45, PaCO2 35-45 mmHg, HCO3 22-26 mEq/L.

Condition	pH	PaCO2	HCO3	Cause Examples
Respiratory Acidosis	↓ (<7.35)	↑ (>45)	Normal/↑ (compensating)	COPD, hypoventilation, opioid overdose, pneumonia
Respiratory Alkalosis	↑ (>7.45)	↓ (<35)	Normal/↓ (compensating)	Hyperventilation, anxiety, mechanical over-ventilation, PE
Metabolic Acidosis	↓ (<7.35)	Normal/↓ (compensating)	↓ (<22)	DKA, lactic acidosis, renal failure, diarrhea, aspirin OD
Metabolic Alkalosis	↑ (>7.45)	Normal/↑ (compensating)	↑ (>26)	Vomiting, NG suction, diuretics, antacid overuse

NCLEX Tip: Step-by-step ABG interpretation: 1) Is pH normal? 2) Is PaCO2 abnormal? 3) Is HCO3 abnormal? 4) Which matches the pH direction? 5) Is there compensation? Fully compensated = pH normal but PaCO2 and HCO3 both abnormal.

Postoperative Complications

Complication	Time Frame	Signs/Symptoms	Nursing Interventions
Hemorrhage	Immediate (0-24 hr)	Tachycardia, hypotension, pallor, decreased urine output	Apply pressure; notify surgeon; IV fluids; type and crossmatch

Atelectasis	24-48 hr	Decreased breath sounds, fever (low-grade), dyspnea	Incentive spirometry; deep breathing; early ambulation; positioning
Pneumonia	3-5 days	Fever, productive cough, crackles, consolidation on CXR	Antibiotics; respiratory therapy; ambulation; hydration
DVT/PE	3-7 days	DVT: calf pain, warmth, swelling; PE: sudden dyspnea, chest pain, tachycardia	SCDs; early ambulation; anticoagulation; PE: O2, notify MD stat
Wound Infection	5-7 days	Redness, warmth, purulent drainage, fever, elevated WBC	Wound culture; antibiotics; wound care; monitor healing
Ileus	2-5 days	Absent bowel sounds, abdominal distension, no flatus	NPO; NG tube; ambulation; IV fluids; monitor for return of bowel function

Physiological Adaptation (11–17%)

Cardiac Emergencies

Emergency	Key Signs	Priority Nursing Actions
Acute MI	Chest pain/pressure, diaphoresis, nausea, dyspnea, arm/jaw pain	O2; aspirin; nitroglycerin; 12-lead ECG; cardiac enzymes; notify MD; prepare for PCI
Heart Failure	Dyspnea, orthopnea, crackles, S3 gallop, JVD, edema	High Fowler's; O2; diuretics; fluid restriction; daily weights; I&O;
Hypertensive Crisis	BP >180/120; headache; visual changes; chest pain	IV antihypertensives (labetalol, nicardipine); continuous BP monitoring; reduce BP gradually
Cardiac Arrest	Unresponsive, no pulse, no breathing	Call code; CPR (30:2); defibrillation (VF/pVT); ACLS medications

Neurological Emergencies

Emergency	Key Signs	Priority Nursing Actions
Ischemic Stroke	FAST: Face drooping, Arm weakness, Speech difficulty, Time to call 911	CT scan (rule out hemorrhage); tPA within 3-4.5 hr if eligible; BP management; neuro checks
Hemorrhagic Stroke	Sudden severe headache ("worst of life"), vomiting, rapid deterioration	CT scan; BP control; neurosurgery consult; ICP monitoring; HOB 30°
Increased ICP	Cushing's triad: bradycardia + hypertension + irregular respirations	HOB 30°; avoid Valsalva; mannitol; hyperventilation (temporary); neuro checks
Seizure	Tonic-clonic movements; loss of consciousness; postictal state	Protect from injury; turn to side; O2; time the seizure; do NOT restrain; IV access

NCLEX Tip: Cushing's Triad = LATE sign of severely increased ICP: bradycardia + hypertension (widened pulse pressure) + irregular/slow respirations. This is a medical emergency — notify the physician immediately.

Respiratory Emergencies

Emergency	Key Signs	Priority Nursing Actions
Tension Pneumothorax	Absent breath sounds (affected side); tracheal deviation (away from affected side); hypotension; JVD	Notify MD stat; prepare for needle decompression; O2; position of comfort
Pulmonary Embolism	Sudden dyspnea; pleuritic chest pain; tachycardia; hemoptysis; decreased SpO2	O2; IV access; anticoagulation (heparin); CT pulmonary angiography; thrombolytics if massive
ARDS	Refractory hypoxemia; bilateral infiltrates on CXR; PaO2/FiO2 <300	Mechanical ventilation (low tidal volume); prone positioning; fluid management
Status Asthmaticus	Severe bronchospasm unresponsive to bronchodilators; silent chest	O2; IV corticosteroids; continuous albuterol; heliox; prepare for intubation

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