

ATI Med Surg test questions Fluid and Electrolytes Balance and Disturbance-With 100% verified solutions-2023-2024

Answer Key

Question 1:

[\(see full question\)](#)

An elderly client takes 40 mg of Lasix twice a day. Which electrolyte imbalance is the most serious adverse effect of diuretic use?

You selected:

Hypokalemia

Correct

Explanation:

Hypokalemia (potassium level below 3.5 mEq/L) usually indicates a deficit in total potassium stores. Potassium-losing diuretics, such as loop diuretics, can induce hypokalemia.

Reference:

Hinkle, J.L., and Cheever, K.H. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 13th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, p. 255.

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Question 2:

[\(see full question\)](#)

The nurse is reviewing client lab work for a critical lab value. Which value is called to the physician for additional orders?

Correct response:

Potassium: 5.8 mEq/L

Explanation:

Normal potassium level is 3.5 to 5.5 mEq/L. Elevated potassium levels

can lead to muscle weakness, paresthesias, and cardiac dysrhythmias.

Reference:

Hinkle, J.L., and Cheever, K.H. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 13th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, p. 254.

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Question 3:

[\(see full question\)](#)

A client with pancreatic cancer has the following blood chemistry profile: Glucose, fasting: 204 mg/dl; blood urea nitrogen (BUN): 12 mg/dl; Creatinine: 0.9 mg/dl; Sodium: 136 mEq/L; Potassium: 2.2 mEq/L; Chloride: 99 mEq/L; CO₂: 33 mEq/L. Which result should the nurse identify as critical and report immediately?

You selected:

Potassium

Correct

Explanation:

The nurse should identify potassium: 2.2 mEq/L as critical because a normal potassium level is 3.8 to 5.5 mEq/L. Severe hypokalemia can cause cardiac and respiratory arrest, possibly leading to death. Hypokalemia also depresses the release of insulin and results in glucose intolerance. The glucose level is above normal (normal is 75 to 110 mg/dl) and the chloride level is a bit low (normal is 100 to 110 mEq/L). Although these levels should be reported, neither is life-threatening. The BUN (normal is 8 to 26 mg/dl) and creatinine (normal is 0.8 to 1.4 mg/dl) are within normal range. ([less](#))

Reference: Hinkle, J.L., and Cheever, K.H. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 13th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, p. 255.
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Question 4: Which nerve is implicated in the Chvostek's sign?
([see full question](#))

You selected: Facial

Correct

Explanation: Chvostek's sign consists of twitching of muscles supplied by the facial nerve when the nerve is tapped about 2 cm anterior to the earlobe, just below the zygomatic arch.

Reference: Hinkle, J.L., and Cheever, K.H. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 13th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, p. 259.
_ Chapter 13: Fluid and Electrolytes: Balance and Disturbance - Page 259

Question 5: A client has the following arterial blood gas (ABG) values: pH, 7.12; partial pressure of arterial carbon dioxide (PaCO₂), 40 mm Hg; and bicarbonate (HCO₃⁻), 15 mEq/L. These ABG values suggest which disorder?
([see full question](#))

You selected: Metabolic acidosis

Correct

Explanation: This client's pH value is below normal, indicating acidosis. The HCO₃⁻ value also is below normal, reflecting an overwhelming accumulation of acids or excessive loss of base, which suggests metabolic acidosis. The PaCO₂ value is normal, indicating absence of respiratory compensation. These ABG values eliminate respiratory alkalosis, respiratory acidosis, and metabolic alkalosis. ([less](#))

Reference: Hinkle, J.L., and Cheever, K.H. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 13th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, p. 268.
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Question 6: The nurse is caring for a client with laboratory values indicating dehydration. Which clinical symptom is consistent with the dehydration?
([see full question](#))

You selected: Dark, concentrated urine

Correct

Explanation: Dehydration indicates a fluid volume deficit. Dark, concentrated urine indicates a lack of fluid volume. Adding more fluid would dilute the urine. The other options indicate fluid excess. ([less](#))

Reference: Hinkle, J.L., and Cheever, K.H. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 13th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, p. 246.
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Question 7: [\(see full question\)](#)
To compensate for decreased fluid volume (hypovolemia), the nurse can anticipate which response by the body?

You selected: Tachycardia

Correct

Explanation: Fluid volume deficit, or hypovolemia, occurs when the loss of extracellular fluid exceeds the intake of fluid. Clinical signs include oliguria, rapid heart rate, vasoconstriction, cool and clammy skin, and muscle weakness. The nurse monitors for rapid, weak pulse and orthostatic hypotension. ([less](#))

Reference: Hinkle, J.L., and Cheever, K.H. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 13th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, p. 245-246.
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Question 8: [\(see full question\)](#)
Air embolism is a potential complication of IV therapy. The nurse should be alert to which clinical manifestation associated with air embolism?

You selected: Chest pain

Correct

Explanation: Manifestations of air embolism include dyspnea and cyanosis; hypotension; weak, rapid pulse; loss of consciousness; and chest, shoulder, and low back pain. Jaundice is not associated with air embolism. ([less](#))

Reference: Hinkle, J.L., and Cheever, K.H. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 13th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, p. 280.
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Question 9: [\(see full question\)](#)
The nurse is analyzing the arterial blood gas (ABG) results of a patient diagnosed with severe pneumonia. Which of the following ABG results indicates respiratory acidosis?

Correct response: pH: 7.20, PaCO₂: 65 mm Hg, HCO₃⁻: 26 mEq/L

Explanation: Respiratory acidosis is a clinical disorder in which the pH is less than 7.35 and the PaCO₂ is greater than 42 mm Hg and a compensatory increase in the plasma HCO₃⁻ occurs. It may be either acute or chronic.

The ABG of pH: 7.32, PaCO₂: 40 mm Hg, HCO₃⁻: 18 mEq/L indicates metabolic acidosis. The ABGs of pH: 7.50, PaCO₂: 30 mm Hg, and HCO₃⁻: 24 mEq/L indicate respiratory alkalosis. The ABGs of pH 7.42, PaCO₂: 45 mm Hg, and HCO₃⁻: 22 mEq/L indicate a normal result/no imbalance. ([less](#))

Reference:

Hinkle, J.L., and Cheever, K.H. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 13th ed., Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, p. 269.

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Question 10:

([see full question](#))

You selected:

Below which serum sodium level may convulsions or coma can occur?

135 mEq/L

Correct

Explanation:

Normal serum concentration level ranges from 135 to 145 mEq/L. When the level dips below 135 mEq/L, there is hyponatremia. Manifestations of hyponatremia include mental confusion, muscular weakness, anorexia, restlessness, elevated body temperature, tachycardia, nausea, vomiting, and personality changes. Convulsions or coma can occur if the deficit is severe. Values of 140, 142, and 145 mEq/L are within the normal range. ([less](#))

Reference:

Hinkle, J.L., and Cheever, K.H. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 13th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, p. 253.

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Question 11:

([see full question](#))

You selected:

Which intervention is most appropriate for a client with an arterial blood gas (ABG) of pH 7.5, a partial pressure of arterial carbon dioxide (PaCO₂) of 26 mm Hg, oxygen (O₂) saturation of 96%, bicarbonate (HCO₃⁻) of 24 mEq/L, and a PaO₂ of 94 mm Hg?

Instruct the client to breathe into a paper bag.

Correct

Explanation:

The ABG results reveal respiratory alkalosis. The best intervention to raise the PaCO₂ level would be to have the client breathe into a paper bag. Administering a decongestant, offering fluids frequently, and administering supplemental oxygen wouldn't raise the lowered PaCO₂ level. ([less](#))

Reference:

Hinkle, J.L., and Cheever, K.H. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 13th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, p. 271.

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Question 12:
[\(see full question\)](#)

A 64-year-old client is brought in to the clinic feeling thirsty with dry, sticky mucous membranes; decreased urine output; fever; a rough tongue; and is lethargic. Serum sodium level is above 145 mEq/l. Should the nurse start salt tablets when caring for this client?

You selected:
Correct

No, sodium intake should be restricted.

Explanation:

The symptoms and the high level of serum sodium suggest hypernatremia, (excess of sodium). It is necessary to restrict sodium intake. Salt tablets and sodium chloride IV can only worsen this condition but may be required in hyponatremia (sodium deficit). Hypotonic solution IV may be a part of the treatment but not along with the salt tablets. ([less](#))

Reference:

Hinkle, J.L., and Cheever, K.H. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 13th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, p. 253.

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Question 13:
[\(see full question\)](#)

A client with a suspected overdose of an unknown drug is admitted to the emergency department. Arterial blood gas values indicate respiratory acidosis. What should the nurse do first?

You selected:
Correct

Prepare to assist with ventilation.

Explanation:

Respiratory acidosis is associated with hypoventilation; in this client, hypoventilation suggests intake of a drug that has suppressed the brain's respiratory center. Therefore, the nurse should assume the client has respiratory depression and should prepare to assist with ventilation. After the client's respiratory function has been stabilized, the nurse can safely monitor the heart rhythm, prepare for gastric lavage, and obtain a urine specimen for drug screening. ([less](#))

Reference:

Hinkle, J.L., and Cheever, K.H. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 13th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, p. 270.

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Question 14:
[\(see full question\)](#)

A nurse is conducting an initial assessment on a client with possible tuberculosis. Which assessment finding indicates a risk factor for tuberculosis?

You selected:
Correct

The client had a liver transplant 2 years ago.

Explanation:

A history of immunocompromised status, such as that which occurs with liver transplantation, places the client at a higher risk for contracting tuberculosis. Other risk factors include inadequate health care, traveling to countries with high rates of tuberculosis (such as southeastern Asia,

Africa, and Latin America), being a health care worker who performs procedures in which exposure to respiratory secretions is likely, and being institutionalized. ([less](#))

Reference:

Smeltzer, S.C., and Bare, B. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 12th ed. Philadelphia: Lippincott Williams & Wilkins, 2010, Chapter 14: Fluid and Electrolytes: Balance and Disturbance, p. 567.

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Question 15:

[\(see full question\)](#)

Your client has a diagnosis of hypervolemia. What would be an important intervention that you would initiate?

You selected:

Limit sodium and water intake.

Correct

Explanation:

Implement prescribed interventions such as limiting sodium and water intake and administering ordered medications that promote fluid elimination. Assessing for dehydration and teaching to decrease urination would not be appropriate interventions. ([less](#))

Reference:

Hinkle, J.L., and Cheever, K.H. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 13th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, p. 249.

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Question 16:

[\(see full question\)](#)

Oral intake is controlled by the thirst center, located in which of the following cerebral areas?

You selected:

Hypothalamus

Correct

Explanation:

Oral intake is controlled by the thirst center located in the hypothalamus. The thirst center is not located in the cerebellum, brainstem, or thalamus.

Reference:

Hinkle, J.L., and Cheever, K.H. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 13th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, p. 242.

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Question 17:

[\(see full question\)](#)

A nurse can estimate serum osmolality at the bedside by using a formula. A patient who has a serum sodium level of 140 mEq/L would have a serum osmolality of:

You selected:

280 mOsm/kg.

Correct

Explanation:

Serum osmolality can be estimated by doubling the serum sodium or using the formula: $Na \times 2 = \text{glucose}/18 + \text{BUN}/3$. Therefore, the nurse

could estimate a serum osmolality of 280 mOsm/kg by doubling the serum sodium value of 140 mEq/L. ([less](#))

Reference:

Hinkle, J.L., and Cheever, K.H. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 13th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, p. 241.

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Question 18:

([see full question](#))

A priority nursing intervention for a client with hypervolemia involves which of the following?

You selected:

Monitoring respiratory status for signs and symptoms of pulmonary complications.

Correct

Explanation:

Hypervolemia, or fluid volume excess (FVE), refers to an isotonic expansion of the extracellular fluid. Nursing interventions for FVE include measuring intake and output, monitoring weight, assessing breath sounds, monitoring edema, and promoting rest. The most important intervention in the list involves monitoring the respiratory status for any signs of pulmonary congestion. Breath sounds are assessed at regular intervals. ([less](#))

Reference:

Hinkle, J.L., and Cheever, K.H. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 13th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, p. 249.

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Question 19:

([see full question](#))

The nurse is assessing residents at a summer picnic at the nursing facility. The nurse expresses concern due to the high heat and humidity of the day. Although the facility is offering the residents plenty of fluids for fluid maintenance, the nurse is most concerned about which?

You selected:

Insensible fluid loss

Correct

Explanation:

Due to the high heat and humidity, geriatric clients are at a high risk for insensible fluid loss through perspiration and vapor in the exhaled air. These losses are noted as unnoticeable and unmeasurable. Those with respiratory deficits and allergies may be only able to be outside for a limited period. Those with cardiovascular compromise may need to alternate outdoor activities with indoor rest. ([less](#))

Reference:

Hinkle, J.L., and Cheever, K.H. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 13th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, pp. 239-240.

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Question 20: (see full question)	A patient has been involved in a traumatic accident and is hemorrhaging from multiple sites. The nurse expects that the compensatory mechanisms associated with hypovolemia would cause what clinical manifestations? (Select all that apply.)
Correct response:	<ul style="list-style-type: none"> • Oliguria • Tachycardia • Tachypnea
Explanation:	Hypovolemia, or fluid volume deficit, is indicated by decreased, not increased, blood pressure (hypotension), oliguria, tachycardia (not bradycardia), and tachypnea.
Reference:	Hinkle, J.L., and Cheever, K.H. <i>Brunner & Suddarth's Textbook of Medical-Surgical Nursing</i> , 13 th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, p. 246. _ Chapter 13: Fluid and Electrolytes: Balance and Disturbance - Page 246
Question 1: (see full question)	A nurse reviews blood gases from a patient diagnosed with metabolic acidosis. Select the reading that is most consistent with that diagnosis.
Correct response:	? pH, ? HCO ₃ , or normal PaCO ₂
Explanation:	Arterial blood gas measurements reveal a low pH and a low plasma bicarbonate concentration (
Reference:	Hinkle, J.L., and Cheever, K.H. <i>Brunner & Suddarth's Textbook of Medical-Surgical Nursing</i> , 13 th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, p. 268. _ Chapter 13: Fluid and Electrolytes: Balance and Disturbance - Page 268
Question 2: (see full question)	To evaluate a client for hypoxia, the physician is most likely to order which laboratory test?
You selected:	Arterial blood gas (ABG) analysis
Correct	
Explanation:	Red blood cell count, sputum culture, total hemoglobin, and ABG analysis all help evaluate a client with respiratory problems. However, ABG analysis is the only test that evaluates gas exchange in the lungs, providing information about the client's oxygenation status. (less)
Reference:	Hinkle, J.L., and Cheever, K.H. <i>Brunner & Suddarth's Textbook of Medical-Surgical Nursing</i> , 13 th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, p. 271. _ Chapter 13: Fluid and Electrolytes: Balance and Disturbance - Page 271
Question 3: (see full question)	Which of the following electrolytes is the primary determinant of extracellular fluid (ECF) osmolality?

You selected:

Sodium

Correct

Explanation:

Sodium is the primary determinant of ECF osmolality. Sodium plays a major role in controlling water distribution throughout the body because it does not easily cross the intracellular wall membrane and because of its abundance and high concentration in the body. Potassium, calcium, and magnesium are not primary determinants of ECF osmolality. ([less](#))

Reference:

Hinkle, J.L., and Cheever, K.H. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 13th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, p. 251.

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Question 4:

[\(see full question\)](#)

A client hospitalized for treatment of a pulmonary embolism develops respiratory alkalosis. Which clinical findings commonly accompany respiratory alkalosis?

You selected:

Light-headedness or paresthesia

Correct

Explanation:

The client with respiratory alkalosis may complain of light-headedness or paresthesia (numbness and tingling in the arms and legs). Nausea, vomiting, abdominal pain, and diarrhea may accompany respiratory acidosis. Hallucinations and tinnitus rarely are associated with respiratory alkalosis or any other acid-base imbalance. ([less](#))

Reference:

Hinkle, J.L., and Cheever, K.H. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 13th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, p. 270.

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Question 5:

[\(see full question\)](#)

A nurse correctly identifies a urine specimen with a pH of 4.3 as being which type of solution?

You selected:

Acidic

Correct

Explanation:

Normal urine pH is 4.5 to 8.0; a value of 4.3 reveals acidic urine pH. A pH above 7.0 is considered an alkaline or basic solution. A pH of 7.0 is considered neutral.

Reference:

Hinkle, J.L., and Cheever, K.H. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 13th ed. Philadelphia: Lippincott Williams & Wilkins, 2014, Chapter 13: Fluid and Electrolytes: Balance and Disturbance, pp. 241-242.

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