Answer Key to Chapter 15 Learning Activities

Scenario A Answer Key:

1. Interpret Mr. Smith’s ABG result on admission. The pH is low indicating acidosis. The elevated PaCO2 indicates respiratory acidosis, and the normal HCO3 level indicates it uncompensated respiratory acidosis.

2. Explain the likely cause of the ABG results. The exacerbation of heart failure is likely causing fluid in his alveoli, decreasing ventilation, and causing the retention of carbon dioxide and decreased oxygenation.

3. Create a nursing diagnosis for Mr. Smith’s fluid status in PES format based on his admission data: Excess Fluid Volume related to excessive fluid intake as evidenced by adventitious breath sounds, edema, and weight gain of 15 pounds over a short period of time.

4. What is Mr. Smith’s fluid balance this morning? Support your answer with data. He is demonstrating Deficient Fluid Volume as evidenced by the following signs and symptoms: feeling thirsty and dizzy, having low systolic blood pressure and elevated heart rate and respiratory rate, and lab work showing elevated serum sodium and BUN results.

5. What is the probably cause of his fluid balance? Excessive IV diuretics are likely causing dehydration.

6. Interpret Mr. Smith’s lab results. What are the potential causes of these results? In addition to the lab results indicating fluid volume deficit explained in Answer 4, he is also demonstrating hypokalemia that is likely caused by the diuretics. His creatinine is also elevated, which could indicate kidney disease.

7. Create a nursing diagnosis statement in PES format for Mr. Smith’s current fluid status: Deficient Fluid Volume related to insufficient fluid intake as evidenced by alteration in mental status, decreased blood pressure, increased heart rate, thirst, and sudden weight loss.

8. Create a new expected outcome in SMART format for Mr. Smith: Mr. Smith will demonstrate fluid balance within 24 hours as evidenced by moist mucus membranes and 24-hour intake and output balance.

9. In addition to providing intravenous fluids, what additional interventions will you implement for Mr. Smith? Additional interventions include weigh daily, monitor intake and output every four hours, provide fresh water and...
fluids preferred by the patient, administer oral potassium replacements as ordered, and monitor for signs of fluid volume excess while receiving IV fluids.

10. How will you evaluate if the nursing interventions are effective? As stated in the SMART outcome, the nurse will evaluate for moist mucus membranes and balanced intake and output in 24 hours.

Scenario B Answer Key:

1. What is Mr. M.’s fluid balance? Provide data supporting the imbalance. Mr. M. is exhibiting *Deficient Fluid Volume*. His blood pressure is decreased and his heart rate is tachycardic. His serum osmolarity, hematocrit, urine specific gravity, and BUN are elevated.

2. What is your interpretation of Mr. M.’s ABGs?

   Step 1: pH 7.30 is below 7.35, so it is acidic and abnormal. We know this will be an acidosis.

   Step 2: PaCO2 50. This is above 45, so it is acidic. The PaCO2 is moving in the opposite direction of the pH, so we know this will be respiratory in nature. This is called Respiratory Acidosis.

   Step 3: HCO3 24. This is a normal HCO3 level so we know the problem is not metabolic in nature. We also know the kidneys are not trying to compensate for the lung problems.

   Step 4: Compensation: The pH is abnormal, so there is not complete compensation. The HCO3 is normal, so the kidneys are not trying to compensate for the lungs. We call this uncompensated.

   Interpretation: Uncompensated Respiratory Acidosis

3. What is your interpretation of Mr. M.’s electrolyte studies?

   Potassium: 5.9 – elevated, most likely due to acidosis occurring

   Magnesium: 1.0 – low, most likely due to alcoholism or inadequate nutrition

   Calcium: 10.2 – elevated, most likely due to acidosis occurring

   Sodium: 137 – normal

4. Is Mr. M. stable or unstable? Why? Mr. M. is unstable. He is hypotensive and tachycardic. Also, his respiratory rate is low and labored, and O2 saturations are quite low. His acid-base balance is quite abnormal. He is developing hypovolemic shock and could experience cardiac and respiratory arrest if not treated emergently.

5. For what complications will you monitor? Mr. M. could have a respiratory arrest due to his severe acidosis, decreased level of consciousness, and respiratory distress. The elevated potassium and decreased magnesium put Mr. M. at risk for cardiac arrhythmias. His elevated calcium level could cause nausea and vomiting, which puts him at risk for aspiration with his associated lethargy.

6. Write an SBAR communication you would have with the health care provider to notify them about Mr. M.’s condition.
S: Hi, Dr. X. This is ________, a nursing student working with Mr. M. This morning Mr. M. is lethargic and having labored respirations.

B: Mr. M. was admitted during the night with pneumonia. He has a history of alcohol abuse and coronary artery disease.

A: Mr. M.'s vital signs are the following: BP 80/45, HR 110, RR 8, O2 saturation 80% on 3 L/NC. He has coarse crackles throughout his lung fields, and he is using accessory muscles to breathe. Mr. M. is lethargic and having difficulty following commands.

R: I am concerned that Mr. M.'s respiratory status is declining. I recommend increasing his oxygen and checking arterial blood gasses and electrolyte studies. I also would like you to come see Mr. M.

7. Create a NANDA-I diagnosis for Mr. M. in PES format. Fluid Volume Deficit related to insufficient fluid intake as evidenced by BP 80/45, HR 110, and elevated serum osmolarity, hematocrit, BUN, and urine specific gravity results.

8. Identify an expected outcome for Mr. M. in SMART format. Mr. M. will demonstrate improving fluid balance as demonstrated by blood pressure and heart rate returning within normal range within 8 hours.

9. What interventions will you plan for Mr. M.? Mr. M. will need either a BiPAP or intubation and mechanical ventilation for his respiratory status. He will need magnesium supplementation, and his calcium and potassium will need to be monitored closely. He may need insulin to help decrease his potassium. Any potassium contained in IV fluids should be stopped to prevent further potassium buildup. He will also need antibiotics for his pneumonia and IV fluids to treat his hypotension and tachycardia.

10. How will you evaluate if your interventions are effective? Based on the SMART goal established, the nurse will monitor Mr. M.'s blood pressure and heart rate and evaluate if they have returned to normal within 8 hours. Additionally, the ABGs for Mr. M. should return to closer to normal. He will show improvement with his level of consciousness. Magnesium levels will return to normal. As Mr. M.'s pH normalizes, the calcium and potassium levels should return to normal. Mr. M.'s fever should subside and his vital signs should return to normal as the infection is treated and IV fluids are given.

11. Write a nursing note about Mr. M.'s condition and your actions taken. This can be in the form of a DAR, SOAP, or summary nursing note.

01/31/20xx 0900

D: On morning assessment, pt noted to be lethargic, unable to follow commands consistently, and using accessory muscles with breathing. Coarse crackles noted throughout lung fields. VS are BP 80/45, HR 110, RR 8, O2 sat 80% on 3L per nasal cannula, and temp 38.1 C.

A: Dr. X. notified and orders rec'd to increase O2 to 10L per non-rebreather mask and to check electrolytes and ABGs.

R: O2 increased and labs drawn and resulted as follows: pH 7.30, PaCO2 50, PaO2 59, HCO3 24, SaO2 80. Potassium 5.9, Magnesium 1.0, Calcium 10.2, Sodium 137. Will continue to monitor patient closely and will update Dr. X. of changes.
Answers to interactive elements are given within the interactive element.