Intravenous and Vascular Access Therapy Practice Test (Sample)

Study Guide

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Questions

1. What are the signs of fluid volume excess (FVE) during IV fluid therapy?

A. Cool, dry skin

B. Increased heart rate with hypotension

C. Labored breathing with crackles in lungs

D. Decreased body temperature

2. What is the current recommendation for changing IV tubing on a continuously running IV?

A. Every 24 hours

B. No more often than every 72 hours

C. No more often than every 96 hours

D. Weekly

3. What is a common reason for using Central Venous Access Devices (CVADs)?

A. Supplemental nutrition

B. Temporary fluid replacement

C. Routine blood pressure monitoring

D. Pain management

4. What is the appropriate nursing intervention upon recognizing phlebitis at an IV site?

A. Notify the healthcare provider

B. Apply a moist warm compress over the site

C. Change the IV catheter immediately

D. Remove the IV catheter

5. What vital sign change might a nurse observe in a patient with fluid volume deficit?

A. Bradycardia

B. Hypertension

C. Tachycardia

D. Hypothermia

6. What device is used to deliver a measured amount of intravenous fluid over a specified period?

A. Smart pump

B. Electronic infusion device (EID)

C. Volumetric pump

D. Gravity-fed system

7. What is the major advantage of using a tunneled catheter?

A. Lower cost

B. Easy removal

C. Long-term use

D. Immediate administration

8. What condition should a nurse be cautious of to prevent fluid volume excess during IV infusion?

A. Bradycardia

B. Crackles in the lungs

C. Hypotension

D. Pallor

9. Intravenous catheters inserted directly through the skin for up to several weeks into major veins are known as what?

A. Peripheral IVs

B. Nontunneled percutaneous venous access devices

C. PICC lines

D. Tunneled catheters

10. What event is indicated by a red, edematous, and painful intravenous site in a patient receiving antineoplastic medications?

A. Infiltration

B. Extravasation

C. Phlebitis

D. Infection

Answers

1. C
2. C
3. A
4. B
5. C
6. B
7. C
8. B
9. B
10. B

Explanations

1. What are the signs of fluid volume excess (FVE) during IV fluid therapy?

A. Cool, dry skin

B. Increased heart rate with hypotension

C. Labored breathing with crackles in lungs

D. Decreased body temperature

Fluid volume excess (FVE), also referred to as hypervolemia, occurs when there is an excess of fluid in the body, which can be particularly relevant during intravenous fluid therapy. One of the key signs of FVE is the presence of labored breathing accompanied by crackles in the lungs. This occurs because excess fluid can lead to pulmonary congestion, where fluid builds up in the alveoli, making it difficult for oxygen to be exchanged and causing the characteristic crackling sounds when breathing. In the context of IV fluid therapy, monitoring for signs of fluid overload is crucial, as patients may be at risk of developing pulmonary edema due to excessive fluid administration. Recognizing this symptom allows for timely intervention to prevent serious complications. Differences in temperature, heart rate, or skin condition may occur in other scenarios but are not direct indicators of FVE during IV therapy.

2. What is the current recommendation for changing IV tubing on a continuously running IV?

A. Every 24 hours

B. No more often than every 72 hours

C. No more often than every 96 hours

D. Weekly

The current recommendation for changing IV tubing on a continuously running IV is no more often than every 96 hours. This guideline is based on research and practices aimed at reducing the risk of infection while maintaining efficient IV therapy. The goal is to balance the need for safe, clean IV administration with the practical aspects of patient care, including comfort and convenience. Changing the tubing every 96 hours allows healthcare professionals to minimize disruptions to the patient's treatment while still ensuring the integrity of the IV line and reducing the risk of complications such as catheter-associated bloodstream infections. This recommendation is particularly relevant in settings with continuous IV therapy, where frequent changes can lead to unnecessary manipulation of the IV site, potentially increasing infection risks. Understanding this protocol is essential for maintaining high standards in patient care and ensuring that IV therapies remain effective and safe over time.

3. What is a common reason for using Central Venous Access Devices (CVADs)?

A. Supplemental nutrition

B. Temporary fluid replacement

C. Routine blood pressure monitoring

D. Pain management

Central Venous Access Devices (CVADs) are primarily employed for supplemental nutrition, particularly in cases where patients cannot meet their nutritional needs through oral or enteral routes. Total Parenteral Nutrition (TPN), which provides all necessary nutrients intravenously, often necessitates the use of a CVAD since the required solutions can be hypertonic and irritative to peripheral veins. CVADs allow for long-term administration of such infusions while minimizing complications like vein irritation and infiltration that could occur with peripheral access. Other options, like temporary fluid replacement, are typically managed with peripheral intravenous lines, which are easier to place and remove for such short-term needs. Routine blood pressure monitoring generally utilizes non-invasive techniques or central lines without the necessity of a CVAD. While pain management can involve intravenous routes, it does not specifically necessitate central access unless the treatment is expected to be long-term or involves high-concentration solutions. Thus, supplemental nutrition is a defining and common use for CVADs due to its ability to support patients with complex nutritional needs safely and effectively.

4. What is the appropriate nursing intervention upon recognizing phlebitis at an IV site?

A. Notify the healthcare provider

B. Apply a moist warm compress over the site

C. Change the IV catheter immediately

D. Remove the IV catheter

Applying a moist warm compress over the site of phlebitis is an appropriate nursing intervention because it helps to soothe the inflammation and discomfort associated with the condition. Moist heat can promote vasodilation, which may improve blood flow to the area, thus facilitating the healing process. It also provides comfort to the patient, alleviating any pain or tenderness they might be experiencing. In cases of phlebitis, while notifying the healthcare provider is important for proper management, immediate application of a warm compress can provide quick relief and support healing at the site. Changing the IV catheter without assessing the severity of phlebitis may not directly address the inflammation and could lead to unnecessary procedural risks. Similarly, removing the IV catheter may be warranted in severe cases but is not the first line of intervention for mild phlebitis, as managing the symptoms with a warm compress can be effective initially.

5. What vital sign change might a nurse observe in a patient with fluid volume deficit?

A. Bradycardia

B. Hypertension

C. Tachycardia

D. Hypothermia

In the context of fluid volume deficit, the observation of tachycardia is associated with the body's compensatory mechanisms in response to decreased fluid volume. When a patient experiences a fluid deficit, whether due to dehydration, hemorrhage, or other causes, the overall blood volume decreases. In turn, this reduced volume can lead to a drop in blood pressure. To compensate for the lower blood volume and maintain adequate perfusion to vital organs, the heart rate increases, resulting in tachycardia. This increase in heart rate is the body's attempt to ensure that sufficient blood continues to circulate throughout the body, delivering oxygen and nutrients to tissues and organs despite the reduced volume. Monitoring for tachycardia is crucial for healthcare providers, as it can indicate that a patient is in a state of hypovolemia, requiring immediate assessment and potential intervention to restore fluid balance and prevent further complications.

6. What device is used to deliver a measured amount of intravenous fluid over a specified period?

A. Smart pump

B. Electronic infusion device (EID)

C. Volumetric pump

D. Gravity-fed system

The device that delivers a measured amount of intravenous fluid over a specified period is accurately represented by the descriptor of an electronic infusion device (EID). EIDs are designed to precisely control the rate and volume of fluid administration, ensuring that patients receive the correct dosage as prescribed. They utilize advanced technology, including programmable settings and alarms, to enhance patient safety and allow for accurate monitoring. These devices are particularly beneficial in clinical settings where fluid restrictions or specific medication dosing are critical. By programming the desired volume and infusion rate into the EID, healthcare providers can minimize the risk of human error and ensure consistent delivery. This capability distinguishes EIDs from other methods of fluid administration, such as gravity-fed systems, which lack precise control and can vary based on changes in patient position or IV setup. The other devices, while they can also be involved in intravenous therapy, do not specifically embody the same level of precision that EIDs provide. Smart pumps, while advanced, typically refer to infusion systems that have integrated safety features but still fall under the broader category of electronic infusion devices. Volumetric pumps, while capable of delivering set volumes, still operate under the overarching umbrella of electronic infusion systems. Meanwhile, gravity-fed systems rely solely on gravitational force for fluid delivery and do

7. What is the major advantage of using a tunneled catheter?

A. Lower cost

B. Easy removal

C. Long-term use

D. Immediate administration

The major advantage of using a tunneled catheter is its suitability for long-term use. Tunneled catheters are designed to remain in place for extended periods, often for weeks or even months, making them ideal for patients requiring ongoing intravenous therapy, such as those undergoing chemotherapy or patients with chronic conditions needing frequent access to the bloodstream. The catheter is inserted into a vein and tunneled subcutaneously to emerge at a different site on the skin, which not only allows for prolonged use but also minimizes the risk of infection at the insertion site compared to non-tunneled options. This design can improve patient comfort by providing a stable access point for repeated treatments while reducing the need for frequent needle sticks, which is particularly beneficial for patients with difficult venous access. In contrast, the other options are less relevant when considering the primary function of tunneled catheters. For instance, while their removal may not be overly complex, they are specifically designed for long-term access, so ease of removal does not translate to the primary advantage. Additionally, the cost may be higher initially due to the materials and insertion procedure involved, and immediate administration is typically more associated with short-term catheters used for quick, temporary access.

8. What condition should a nurse be cautious of to prevent fluid volume excess during IV infusion?

A. Bradycardia

B. Crackles in the lungs

C. Hypotension

D. Pallor

Fluid volume excess, or hypervolemia, can lead to serious complications, particularly affecting the cardiovascular and respiratory systems. The presence of crackles in the lungs is a key indicator that fluid is accumulating in the pulmonary tissues, a condition often associated with heart failure or fluid overload. When the heart cannot effectively pump out the excess fluid, it can back up into the lungs, causing crackling sounds upon auscultation. This situation necessitates vigilant monitoring of IV infusion rates and total fluid intake to prevent additional stress on the cardiovascular system and further pulmonary complications. Bradycardia, hypotension, and pallor are important signs to monitor in a patient as well, but they do not specifically indicate the immediate risk of fluid overload. Bradycardia can indicate issues with cardiac output but does not directly correlate with fluid volume excess. Hypotension suggests poor perfusion and may require fluid resuscitation rather than caution against it. Pallor typically indicates reduced perfusion or anemia, which doesn't directly relate to fluid overload conditions. Hence, crackles in the lungs serve as a critical warning for the nurse to adjust IV fluid administration accordingly to prevent worsening fluid volume excess.

9. Intravenous catheters inserted directly through the skin for up to several weeks into major veins are known as what?

A. Peripheral IVs

B. Nontunneled percutaneous venous access devices

C. PICC lines

D. Tunneled catheters

The correct response is nontunneled percutaneous venous access devices. These types of catheters are specifically designed for insertion through the skin directly into large veins, such as the subclavian or jugular veins, and are intended for short to medium-term use, typically up to several weeks. They allow for immediate access to the central venous system for the administration of fluids, medications, or for blood draws. Nontunneled catheters are distinct in that they do not have a tunnel or a subcutaneous portion; they are placed directly into the vein, which can lead to faster access but carries certain risks, such as a higher chance of infections, especially if left in place for extended periods. This distinguishes them from tunneled catheters, which are designed for longer-term use and have a section that is placed under the skin to minimize the risk of infection. While peripheral IVs are used for access to smaller veins and are not typically suited for long-term use or for major veins, PICC lines (Peripherally Inserted Central Catheters) are a type of nontunneled central line that can be drawn from a peripheral vessel and advanced to a central location but are often maintained for longer durations.

10. What event is indicated by a red, edematous, and painful intravenous site in a patient receiving antineoplastic medications?

A. Infiltration

B. Extravasation

C. Phlebitis

D. Infection

The indication of a red, edematous, and painful intravenous site in a patient receiving antineoplastic medications is consistent with extravasation. This event occurs when intravenous medications, particularly those that are vesicant or irritant in nature, leak from the vascular space into the surrounding tissue. This leakage can cause significant local tissue damage and inflammation, leading to the redness (erythema), swelling (edema), and discomfort (pain) observed. Extravasation is particularly concerning with antineoplastic drugs because these medications are designed to kill or impede the growth of cancer cells, but when they inadvertently affect healthy tissue, they can cause severe complications. The clinical presentation of pain and inflammation at the infusion site is a key indicator that something has gone wrong at the site of vascular access, warranting immediate attention. In contrast, while infiltration also involves the unintended movement of IV fluids into surrounding tissue, it typically does not present with the same level of severe symptoms as extravasation, especially when dealing with irritants or vesicants. Phlebitis typically involves inflammation of the vein, which can result in tenderness and redness but may not necessarily involve significant edema or pain associated with tissue damage. Infection can also cause similar symptoms but would generally present