Patient Care – Pharmacology for Radiology Practice Test (Sample)

Study Guide

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Questions

1. What is a primary effect of barbiturates on the central nervous system?

A. Increase heart rate

B. Depress central nervous system

C. Stimulate respiration

D. Enhance alertness

2. Which type of drugs are typically NOT delivered in an aqueous medium?

A. Water-soluble drugs

B. Hydrophobic drugs

C. Electrolytes

D. Antibiotics

3. What lab test is typically used to evaluate renal function?

A. Urea nitrogen level

B. Serum creatinine level

C. Electrolyte panel

D. Complete blood count

4. Which of the following is an example of an antipyretic?

A. Aspirin

B. Diazepam

C. Furosemide

D. Phenobarbital

5. What effect does Digitalis have on the body?

A. Causes vomiting

B. Increases cardiac output

C. Acts as a laxative

D. Increases urination

6. How often is medication prescribed TID?

A. Once a day

B. Twice a day

C. Three times a day

D. Four times a day

7. How are medications categorized in the context of patient safety?

- **A. By their active ingredients**
- **B. By their therapeutic classification and potential side effects**
- **C. By the route of administration**
- **D. By their cost and availability**

8. What is typically included in the information provided with a medication?

- **A. Indications and side effects**
- **B. Commercial information**
- **C. Patient's medical history**
- **D. Detailed manufacturing processes**

9. Which of the following describes a vial?

- **A. A container designed to hold solid substances**
- **B. A container with a rubber stopper sealed by a metal band**
- **C. A syringe designed for delivering medications**
- **D. A medical device for measuring liquid volumes**

10. What does HS stand for in a patient care context?

- **A. At lunch**
- **B. At breakfast**
- **C. At bedtime**
- **D. After meals**

Answers

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

Explanations

1. What is a primary effect of barbiturates on the central nervous system?

A. Increase heart rate

B. Depress central nervous system

C. Stimulate respiration

D. Enhance alertness

Barbiturates are primarily known for their depressant effects on the central nervous system (CNS). They act by enhancing the activity of gamma-aminobutyric acid (GABA), a neurotransmitter that has inhibitory effects. This results in sedation, hypnosis, and general CNS depression, which can lead to decreased anxiety, muscle relaxation, and even anesthesia at higher doses. This depressant effect can be beneficial in medical settings for procedures requiring sedation or in managing certain types of seizures. It is critical for healthcare professionals to understand this aspect when considering the use of barbiturates, as it can significantly influence patient care, especially in radiology where sedation may be necessary for imaging procedures. The other options reflect effects that are not characteristic of barbiturates. Increasing heart rate and stimulating respiration are generally associated with stimulants or certain physiological stress responses, while enhancing alertness contradicts the primary depressant action of barbiturates.

2. Which type of drugs are typically NOT delivered in an aqueous medium?

A. Water-soluble drugs

B. Hydrophobic drugs

C. Electrolytes

D. Antibiotics

Hydrophobic drugs are typically not delivered in an aqueous medium due to their low solubility in water. These drugs possess nonpolar properties, making them more soluble in lipids or organic solvents rather than in water. In contrast, water-soluble drugs dissolve readily in an aqueous environment, allowing for easy administration and absorption in the body. Electrolytes, which are ions dissolved in water, are also delivered in an aqueous solution. Antibiotics can be water-soluble or formulated in non-aqueous mediums depending on the specific drug and its intended route of administration, but many are designed to be effective in aqueous form for easy delivery and effectiveness. Therefore, the characteristic of hydrophobic drugs specifically sets them apart from the others in terms of delivery in aqueous media.

3. What lab test is typically used to evaluate renal function?

A. Urea nitrogen level

B. Serum creatinine level

C. Electrolyte panel

D. Complete blood count

The serum creatinine level is a critical lab test used to evaluate renal function because creatinine is a waste product produced from muscle metabolism that is primarily eliminated from the body by the kidneys. An elevated serum creatinine level can indicate impaired kidney function, as the kidneys' ability to filter and excrete creatinine decreases when they are not functioning properly. This makes the test particularly valuable in assessing renal health and monitoring renal diseases. While urea nitrogen levels can also provide insight into kidney function, they can be influenced by factors such as hydration status and protein intake, making them less specific than serum creatinine. An electrolyte panel assesses the levels of various electrolytes in the blood, which can indicate issues related to kidney function but does not directly measure how well the kidneys are filtering waste. A complete blood count is useful for evaluating overall health and detecting a variety of conditions but does not specifically assess renal function. Thus, the serum creatinine level is the most direct and widely used test for evaluating renal function in clinical practice.

4. Which of the following is an example of an antipyretic?

A. Aspirin

B. Diazepam

C. Furosemide

D. Phenobarbital

Aspirin is an example of an antipyretic because it has the ability to reduce fever. It works by inhibiting the production of prostaglandins, which are substances in the body that promote inflammation, pain, and fever. By lowering the levels of these substances, aspirin effectively helps to bring down a high body temperature, making it useful in treating febrile conditions. In contrast, the other medications listed do not function as antipyretics. Diazepam is primarily a benzodiazepine used for its anxiolytic and muscle relaxant effects, and it does not target fever. Furosemide is a diuretic used to treat fluid retention and hypertension and does not have fever-reducing properties. Phenobarbital is a barbiturate mainly used to control seizures or as a sedative and does not serve the purpose of reducing fever. Thus, aspirin stands out as the correct choice due to its specific action in lowering fever.

5. What effect does Digitalis have on the body?

A. Causes vomiting

B. Increases cardiac output

C. Acts as a laxative

D. Increases urination

Digitalis is primarily known for its positive inotropic effect, which means that it increases the force of cardiac muscle contractions. This leads to an increase in cardiac output, making it particularly beneficial for patients suffering from heart failure or various heart rhythm disorders. By enhancing the efficiency of the heart's pumping action, Digitalis improves blood flow to vital organs, which can alleviate symptoms associated with congestive heart failure. The other options relate to effects that are not characteristic of Digitalis. While Digitalis could potentially cause gastrointestinal symptoms like vomiting in some individuals, its primary and clinically significant action is related to cardiac output enhancement. It does not function as a laxative, nor does it have a primary role in increasing urination, as its main effect is on the cardiovascular system rather than the gastrointestinal or urinary systems. Therefore, the increase in cardiac output is a direct and essential reason for the use of Digitalis in medical treatment and patient care.

6. How often is medication prescribed TID?

A. Once a day

B. Twice a day

C. Three times a day

D. Four times a day

The term "TID" stands for "ter in die," which is Latin for "three times a day." This designation indicates the frequency with which a medication should be taken. When a medication is prescribed TID, it means that the patient should take the medication three separate times throughout the day, typically spaced evenly to maintain consistent levels of the medication in their system. This dosing schedule is often used for medications that require frequent administration to be effective or to minimize side effects. Understanding these abbreviations is critical for proper patient education and adherence to medication regimens.

7. How are medications categorized in the context of patient safety?

A. By their active ingredients

B. By their therapeutic classification and potential side effects

C. By the route of administration

D. By their cost and availability

Medications are categorized by their therapeutic classification and potential side effects primarily to enhance patient safety. This categorization allows healthcare professionals to make informed decisions regarding medication use, ensuring that the right drug is prescribed for the right condition while considering the potential adverse effects that might arise from its use. By understanding the therapeutic class, practitioners can anticipate how a drug works in the body and its interactions with other medications. Additionally, recognizing the potential side effects helps in monitoring patients more effectively, as practitioners can watch for specific adverse reactions based on the drug's known profile. This systematic approach to categorization is essential not only for effective treatment but also for minimizing risks associated with medication errors or adverse drug reactions. While categorizing medications by active ingredients, routes of administration, or cost may provide useful information, these methods do not directly address the critical concern of patient safety in the way that understanding therapeutic classifications and side effects does. Thus, focusing on the therapeutic classification and potential side effects is paramount for safe and effective pharmacological management in patient care contexts, including radiology practices.

8. What is typically included in the information provided with a medication?

A. Indications and side effects

B. Commercial information

C. Patient's medical history

D. Detailed manufacturing processes

The typical information included with a medication encompasses indications and side effects. This is crucial because it informs healthcare providers and patients about the therapeutic uses of the medication, as well as the potential adverse effects they may encounter. Understanding the indications helps ensure that the medication is used for the appropriate conditions, while awareness of side effects enables monitoring and management of any adverse reactions that might occur during treatment. This foundational knowledge is essential for promoting safe and effective medication use, as it guides clinicians in decision-making and supports patients in understanding how to take their medications properly, what to expect, and when to seek further medical advice. The other options do not align with the standard information typically provided with a medication. Commercial information is primarily focused on marketing and sales, a patient's medical history, while important for treatment decisions, is specific to individual care and not general medication information, and detailed manufacturing processes are not relevant to the patient or healthcare provider in the context of medication administration and usage.

9. Which of the following describes a vial?

A. A container designed to hold solid substances

B. A container with a rubber stopper sealed by a metal band

C. A syringe designed for delivering medications

D. A medical device for measuring liquid volumes

A vial is specifically designed as a container that typically holds liquid medications or solutions, often used in the context of pharmaceuticals. The defining feature of a vial is its closure mechanism, which usually consists of a rubber stopper that is secured with a metal band. This design allows for a hermetic seal that protects the contents from contamination and enables the safe withdrawal of medications using a sterile syringe. This feature is crucial in ensuring the integrity of the medication and maintaining sterility until the vial is opened for administration. Vials can store a variety of substances, including injectables, and they are often used in healthcare settings for fulfilling both sterile and non-sterile medication needs. In contrast, other choices pertain to different types of containers or instruments. For instance, a container designed for solid substances differs fundamentally in its purpose and construction from a vial. A syringe is a tool used for administering medications, not a container for storage. Similarly, a device for measuring liquid volumes (like a graduated cylinder or measuring cup) does not share the sealed storage feature that characterizes vials. Therefore, the description provided in the correct choice accurately encapsulates the essential characteristics of a vial within pharmacology and radiology practice.

10. What does HS stand for in a patient care context?

A. At lunch

B. At breakfast

C. At bedtime

D. After meals

In a patient care context, HS stands for "at bedtime." This abbreviation is commonly used in medical documentation and prescriptions to indicate that a medication should be taken before the patient goes to sleep. Administering certain medications at bedtime can be a strategic choice to enhance their effectiveness or minimize potential side effects during waking hours. Understanding such abbreviations is crucial for ensuring correct medication administration and patient compliance, thus contributing to optimal patient outcomes.