Pharmacy PEBC Practice Exam (Sample)

Study Guide

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Questions

1. **For a drug undergoing research and development processes in Canada, which of the following statements is correct?**

   A. **Application for patent protection is granted for a maximum period of three years.**

   B. **A New Drug Submission must be filed in order to start clinical trials.**

   C. **Clinical trials involve three phases that assess animal safety and efficacy.**

   D. **Health Canada, under the Food & Drugs Act & Regulations, provides Notice of Compliance**

2. **A patient is receiving warfarin (using 2 mg tablets in compliance packaging) according to the following regimen: Sunday (Su), Tuesday (Tu), Thursday (Th) and Friday (F) - 6 mg, Monday (M), Wednesday (W) and Saturday (Sa) - 2 mg. The patient's recent INR results have been consistently high and it is decided that the weekly dose should be reduced by 20%. Which of the following regimens would be most appropriate if the patient is to continue using 2 mg tablets in compliance packaging?**

   A. **Su, Tu, F - 5 mg; M, Th - 3 mg; W, Sa - 1 mg**

   B. **Su, M, Tu, W, Th, F - 4 mg; Sa - no warfarin**

   C. **4 mg daily**

   D. **3.5 mg daily**

3. **What is the main mechanism of action of beta-blockers?**

   A. **They inhibit the reuptake of norepinephrine**

   B. **They block the effects of adrenaline on beta receptors**

   C. **They stimulate the release of insulin**

   D. **They enhance potassium retention**

4. **What is a specific side effect of ACE inhibitors?**

   A. **Dizziness**

   B. **Persistent cough**

   C. **Dry mouth**

   D. **Nausea**

5. Following the measurement of high amounts of free cortisol in the urine of a patient, a confirmatory test for the diagnosis of Cushing's syndrome is a test for normal cortisol suppression, through the administration of:

A. Budesonide.

B. Triamcinolone acetonide.

C. Prednisolone.

D. Dexamethasone.

6. Which information source would be most appropriate to consult first, to determine if buprenorphine/naloxone (Suboxone®) is available in a country outside of North America?

A. Compendium of Pharmaceuticals and Specialties

B. Medline

C. Martindale: The Complete Drug Reference

D. Cochrane Library database

7. How does metformin help in managing diabetes?

A. By blocking the absorption of glucose

B. By improving insulin sensitivity and decreasing hepatic glucose production

C. By stimulating insulin release from the pancreas

D. By increasing glucose excretion via the kidneys

8. Which of the following is a common side effect of antipsychotic medications?

A. Weight gain

B. Headaches

C. Hypoglycemia

D. Insomnia

9. What factors can influence drug efficacy?

A. Doctor's prescriptions

B. Patient adherence to dosage

C. Patient age, weight, and genetic factors

D. Time since medication release

10. Which of the following is an appropriate recommendation for a pharmacist to provide to a patient regarding chronic allergic rhinitis from multiple environmental triggers?

A. Use oxymetazoline 2 sprays in each nostril bid

B. Use zippered, allergen-proof casings for mattresses and pillows

C. Open windows to get fresh air into the home

D. Take ibuprofen 200 mg/pseudoephedrine 30 mg po q8h

Answers

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

Explanations

1. **For a drug undergoing research and development processes in Canada, which of the following statements is correct?**

   A. **Application for patent protection is granted for a maximum period of three years.**

   B. **A New Drug Submission must be filed in order to start clinical trials.**

   C. **Clinical trials involve three phases that assess animal safety and efficacy.**

   D. Health Canada, under the Food & Drugs Act & Regulations, provides Notice of Compliance

Health Canada provides Notice of Compliance under the Food and Drugs Act and Regulations, which means that the drug has met safety, efficacy, and quality standards and can be marketed in Canada. This option is correct, while the other options are incorrect due to the following reasons - Option A is incorrect, as a patent for a drug can be granted for a period of up to 20 years, not three years. - Option B is incorrect, as a New Drug Submission must be filed before marketing a new drug in Canada, not before starting clinical trials. - Option C is incorrect, as clinical trials generally have four phases (not three), and they involve testing the drug on humans, not animals. Animal testing is usually done in pre-clinical stages of drug development.

2. **A patient is receiving warfarin (using 2 mg tablets in compliance packaging) according to the following regimen: Sunday (Su), Tuesday (Tu), Thursday (Th) and Friday (F) - 6 mg, Monday (M), Wednesday (W) and Saturday (Sa) - 2 mg. The patient's recent INR results have been consistently high and it is decided that the weekly dose should be reduced by 20%. Which of the following regimens would be most appropriate if the patient is to continue using 2 mg tablets in compliance packaging?**

   A. **Su, Tu, F - 5 mg; M, Th - 3 mg; W, Sa - 1 mg**

   B. Su, M, Tu, W, Th, F - 4 mg; Sa - no warfarin

   C. **4 mg daily**

   D. **3.5 mg daily**

Explanation The original regimen prescribed 6 mg on Su, Tu, Th, and F (total of 4 doses) and 2 mg on M, W, and Sa (total of 3 doses). However, switching to a daily dose (option C or D) would result in a higher total weekly dose than what the patient was originally taking. On the other hand, Option A would still result in a higher total weekly dose, as the reduced amounts on Su, Tu, Th and F would be partially offset by the increased amounts on M and W. Therefore, Option B would be most appropriate as it maintains the same total weekly dose as the original regimen while reducing the individual dose amounts on each day. It also ensures that the patient continues to take warfarin on all 7 days of the week.

3. What is the main mechanism of action of beta-blockers?

A. They inhibit the reuptake of norepinephrine

B. They block the effects of adrenaline on beta receptors

C. They stimulate the release of insulin

D. They enhance potassium retention

The main mechanism of action of beta-blockers is to block the effects of adrenaline and noradrenaline on beta-adrenergic receptors. Beta-adrenergic receptors are found throughout the body, including in the heart, lungs, and blood vessels. By blocking these receptors, beta-blockers effectively reduce heart rate, decrease myocardial contractility, and lower blood pressure. This action helps manage various cardiovascular conditions, such as hypertension, angina, and heart failure. In addition to their effects on the cardiovascular system, blocking beta receptors also has implications for other systems; for instance, it can reduce anxiety and migraines and manage certain forms of tremors. The selectivity of the beta-blocker for the different types of beta-receptors (beta-1, beta-2) is also crucial, influencing the specific clinical applications. While reuptake inhibition of norepinephrine, insulin release stimulation, and potassium retention are all significant biochemical processes, they do not accurately describe the primary function of beta-blockers. Instead, the focus on blocking the action of adrenaline on the beta receptors directly aligns with the therapeutic effects of these medications.

4. What is a specific side effect of ACE inhibitors?

A. Dizziness

B. Persistent cough

C. Dry mouth

D. Nausea

ACE inhibitors, or angiotensin-converting enzyme inhibitors, are commonly used medications for conditions such as hypertension and heart failure. A well-documented side effect of this class of drugs is a persistent cough. This occurs due to the accumulation of bradykinin, a peptide that is normally broken down by ACE. When this enzyme is inhibited by ACE inhibitors, bradykinin levels increase, which can lead to irritation of the respiratory tract and the development of a dry, persistent cough. This side effect is significant enough that if a patient experiences a troublesome cough while on an ACE inhibitor, healthcare providers may consider switching them to a different class of antihypertensive medications, such as angiotensin II receptor blockers (ARBs), which do not cause this cough. While dizziness, dry mouth, and nausea can occur with various medications or medical conditions, they are not as classic or notable for ACE inhibitors as the persistent cough. Thus, the presence of a persistent cough serves as a specific and clinically relevant side effect associated with ACE inhibitor therapy.

5. Following the measurement of high amounts of free cortisol in the urine of a patient, a confirmatory test for the diagnosis of Cushing's syndrome is a test for normal cortisol suppression, through the administration of:

A. Budesonide.

B. Triamcinolone acetonide.

C. Prednisolone.

D. Dexamethasone.

Dexamethasone is the correct choice because it is a synthetic corticosteroid hormone that suppresses the production and release of cortisol. This will help differentiate between primary and secondary causes of Cushing's syndrome. Option A, B and C are incorrect because they are all synthetic corticosteroid hormones that can potentially increase the levels of cortisol in the body. This can interfere with the results of the confirmatory test, leading to a false diagnosis of Cushing's syndrome. Furthermore, while these options have anti-inflammatory and immunosuppressive properties, they do not have the same potency and specificity as dexamethasone in suppressing cortisol levels. It is important to note that the confirmatory test for Cushing's syndrome is performed after high levels of free cortisol have been measured in the urine. Therefore, administering a medication that increases cortisol levels would not be useful in confirming the diagnosis

6. Which information source would be most appropriate to consult first, to determine if buprenorphine/naloxone (Suboxone®) is available in a country outside of North America?

A. Compendium of Pharmaceuticals and Specialties

B. Medline

C. Martindale: The Complete Drug Reference

D. Cochrane Library database

Martindale The Complete Drug Reference would be the most appropriate information source to consult first in order to determine the availability of buprenorphine/naloxone (Suboxone®) in a country outside of North America. This reference specifically focuses on drug information, including availability in different countries, whereas options A, B, and D have a broader focus. Compendium of Pharmaceuticals and Specialties provides information on drug products available in Canada, Medline is a medical database and may not have specific information on drug availability, and Cochrane Library database primarily contains information on clinical trials and systematic reviews rather than availability.

7. How does metformin help in managing diabetes?

A. By blocking the absorption of glucose

B. By improving insulin sensitivity and decreasing hepatic glucose production

C. By stimulating insulin release from the pancreas

D. By increasing glucose excretion via the kidneys

Metformin is an antihyperglycemic agent primarily used in the management of type 2 diabetes, and its effectiveness is largely attributed to its mechanism of action, which includes improving insulin sensitivity and decreasing hepatic glucose production. Improving insulin sensitivity means that metformin helps the body's cells, particularly in muscle and fat tissues, to respond more effectively to insulin. This enhanced response facilitates better uptake and utilization of glucose from the bloodstream, ultimately lowering blood sugar levels. Additionally, metformin reduces the amount of glucose produced and released by the liver. It inhibits gluconeogenesis, which is the process by which the liver generates glucose, especially during fasting. By acting on both liver and peripheral tissues, metformin plays a key role in achieving better glycemic control without causing an increase in insulin secretion, which is important because excessive insulin can lead to hypoglycemia. While metformin does not block glucose absorption from the gastrointestinal tract, initiate insulin release from the pancreas, or predominantly increase glucose excretion via the kidneys, its primary actions are centered on enhancing insulin sensitivity and reducing hepatic glucose output, making it a cornerstone of diabetes management.

8. Which of the following is a common side effect of antipsychotic medications?

A. Weight gain

B. Headaches

C. Hypoglycemia

D. Insomnia

Weight gain is widely recognized as a common side effect of many antipsychotic medications, particularly those within the atypical category, such as clozapine, olanzapine, and quetiapine. These medications can lead to metabolic changes that promote increased appetite and alter metabolism, contributing to significant weight gain in some patients. This effect is particularly concerning because it can lead to additional health risks, including obesity-related conditions like diabetes and cardiovascular disease. In contrast, while other side effects like headaches, hypoglycemia, and insomnia can occur with various medications, they are not as strongly associated with antipsychotics as weight gain is. Headaches can occur due to numerous factors and are not specific to antipsychotics. Hypoglycemia is typically related to medications used for diabetes management rather than antipsychotics. Insomnia may also occur but is not a direct or common effect linked specifically to antipsychotic treatment, which often aims to help with sleep disturbances in some cases. Thus, the link between antipsychotic medications and weight gain makes it the most appropriate answer for this question.

9. What factors can influence drug efficacy?

A. Doctor's prescriptions

B. Patient adherence to dosage

C. Patient age, weight, and genetic factors

D. Time since medication release

The factors that influence drug efficacy are multifaceted, and one of the most significant is patient-specific characteristics such as age, weight, and genetic factors. Age can affect how drugs are metabolized and eliminated from the body. For instance, children and the elderly may respond differently to medications compared to young adults due to differences in metabolic rates and organ function. Weight is also crucial because it can determine the volume of distribution of the drug in the body. Medications may require dosage adjustments based on body weight, particularly in drugs that have a narrow therapeutic index. Genetic factors, often referred to as pharmacogenomics, can significantly impact drug response by influencing metabolic pathways. For example, certain individuals might have genetic variations that affect enzymes involved in drug metabolism, leading to either increased toxicity or reduced efficacy. While prescriptions by healthcare providers and patient adherence to dosage are important for therapeutic outcomes, they are not inherent characteristics of the drug or the patient's body and thus do not directly influence the biological efficacy of the drug itself. The time since medication release might affect factors such as the drug's market availability or knowledge of side effects but does not inherently change how effective a drug is within individual patients. In summary, patient age, weight, and genetic factors are critical

10. Which of the following is an appropriate recommendation for a pharmacist to provide to a patient regarding chronic allergic rhinitis from multiple environmental triggers?

A. Use oxymetazoline 2 sprays in each nostril bid

B. Use zippered, allergen-proof casings for mattresses and pillows

C. Open windows to get fresh air into the home

D. Take ibuprofen 200 mg/pseudoephedrine 30 mg po q8h

One appropriate recommendation for a pharmacist to provide to a patient regarding chronic allergic rhinitis from multiple environmental triggers is to use zippered, allergen-proof casings for mattresses and pillows. This is because these casings can help prevent dust mites and other allergens from accumulating in the bedding, which can help reduce symptoms of allergic rhinitis. Option A, using oxymetazoline nasal spray, may provide temporary relief of nasal congestion but does not address the cause of the allergic rhinitis. Option C, opening windows, may actually exacerbate symptoms for someone with allergies as it can increase exposure to allergens. Option D, taking ibuprofen with pseudoephedrine, may help with congestion and headaches but does not address the underlying issue of exposure to environmental triggers.