Pharmacology and Pathophysiology: Hypertension, Allergies, Burns, and Hair Disorders Practice Test (Sample)

Study Guide

Everything you need from our exam experts!

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- **Practice answering questions under realistic conditions,**
- **Improve accuracy and speed,**
- **Review explanations to strengthen weak areas, and**
- **Approach the exam with greater confidence.**

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here’s how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don’t just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There’s no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

1. Which crystalloid fluid is commonly recommended for initial burn resuscitation and why?

A. Lactated Ringer's solution is preferred because its electrolyte composition approximates plasma and it avoids hyperchloremic acidosis associated with large volumes of normal saline.

B. Normal saline is preferred due to higher chloride content.

C. Dextrose saline is preferred for energy.

D. Albumin is the first-line resuscitation fluid.

2. How does finasteride work and why avoid in pregnancy?

A. Inhibits 5-alpha-reductase type II; teratogenic to male fetuses; avoid in pregnant women

B. Inhibits aromatase; safe in pregnancy

C. Increases testosterone conversion to estrogen

D. Enhances DHT production

3. Which of the following is NOT listed as a major pathway contributing to essential hypertension?

A. Increased sympathetic activity leading to vasoconstriction, tachycardia, and renin release.

B. Activation of the renin–angiotensin–aldosterone system causing Ang II–mediated vasoconstriction and aldosterone-driven volume expansion.

C. Decreased endothelin production leading to lower vascular tone.

D. Renal sodium handling abnormalities promoting extracellular fluid volume expansion.

4. Which dressing option maintains a moist wound environment?

A. Alginate

B. Hydrocolloid

C. Foam

D. Silver-containing dressings

5. How do the mechanisms of minoxidil and finasteride differ in promoting hair growth?

A. Minoxidil inhibits 5-alpha-reductase; finasteride opens potassium channels.

B. Minoxidil opens potassium channels to promote growth; finasteride inhibits 5-alpha-reductase.

C. Both act by increasing estrogen levels.

D. Both directly stimulate hair follicle immune response.

6. What sound is associated with fluid in the alveoli?

A. Crackles (rales)

B. Wheezes

C. Stridor

D. Rhonchi

7. What are the four main classes of antihypertensives?

A. Antibodies, antivirals, antifungals, steroids

B. Diuretics, beta blockers, ACE inhibitors, and calcium channel blockers

C. Calcium, potassium, sodium, chloride

D. Nitrates, beta agonists, diuretics, ACE inhibitors

8. Which statement accurately describes the role of intralesional corticosteroids in localized alopecia areata?

A. They cause systemic immunosuppression.

B. They cure the autoimmune disease.

C. They have no role in alopecia areata.

D. They reduce local autoimmune attack and promote hair regrowth.

9. Compare first-generation and second-generation antihistamines in terms of CNS penetration and typical clinical use.

A. First-generation cross the blood–brain barrier causing sedation; second-generation minimal CNS penetration, longer duration.

B. First-generation antihistamines do not cross the blood–brain barrier.

C. Second-generation antihistamines cause more sedation.

D. Both generations have the same CNS effects.

10. In evaluating resistant hypertension, which steps are typically recommended?

A. Assess adherence, evaluate secondary causes (sleep apnea, renal disease, endocrine disorders), optimize diuretic therapy (often with mineralocorticoid receptor antagonist), and consider specialist input.

B. Increase salt intake.

C. Stop all antihypertensive therapy.

D. Only focus on lifestyle changes.

Answers

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

Explanations

1. Which crystalloid fluid is commonly recommended for initial burn resuscitation and why?

A. Lactated Ringer's solution is preferred because its electrolyte composition approximates plasma and it avoids hyperchloremic acidosis associated with large volumes of normal saline.

B. Normal saline is preferred due to higher chloride content.

C. Dextrose saline is preferred for energy.

D. Albumin is the first-line resuscitation fluid.

In the early phase of burn resuscitation, the goal is to rapidly restore intravascular volume with a fluid that won't disrupt acid-base balance or electrolytes. Lactated Ringer's is preferred because its electrolyte composition mirrors plasma (sodium, potassium, calcium, chloride) and it contains lactate that is metabolized to bicarbonate. This provides a buffering effect that helps prevent metabolic acidosis during heavy fluid resuscitation, which can otherwise worsen tissue edema and organ perfusion. Normal saline, given in large volumes, delivers a higher chloride load and can cause hyperchloremic metabolic acidosis, contributing to impaired perfusion. Dextrose-containing fluids don't address intravascular volume and can cause unnecessary fluctuations in blood glucose. Albumin, a colloid, is not used first-line for initial burn resuscitation; it's typically considered later or in specific situations after adequate crystalloid resuscitation has begun. So, Lactated Ringer's is favored because its composition closely resembles plasma and it helps avoid the acid-base disturbances associated with large-volume normal saline boluses.

2. How does finasteride work and why avoid in pregnancy?

A. Inhibits 5-alpha-reductase type II; teratogenic to male fetuses; avoid in pregnant women

B. Inhibits aromatase; safe in pregnancy

C. Increases testosterone conversion to estrogen

D. Enhances DHT production

Finasteride works by blocking the enzyme 5-alpha-reductase, primarily the Type II isoenzyme. This enzyme normally converts testosterone into dihydrotestosterone (DHT), a potent androgen that drives growth in hair follicles and the prostate. By inhibiting this conversion, finasteride lowers DHT levels, which helps slow hair follicle miniaturization in androgenetic alopecia and reduce prostate enlargement. Pregnancy precaution makes this drug unique: DHT signaling is essential for male fetal genital development. If a pregnant woman is exposed to finasteride, especially during early pregnancy, it can interfere with the masculinization process of a male fetus, potentially leading to undervirilization or ambiguous genitalia. Therefore, finasteride is contraindicated in pregnancy, and handling broken or crushed tablets by women who may become pregnant is also avoided. The other options don't fit because they describe different enzymes or effects (aromatase inhibition, increasing estrogen formation, or increasing DHT production), none of which reflect finasteride's actual mechanism or its pregnancy risk.

3. Which of the following is NOT listed as a major pathway contributing to essential hypertension?

A. Increased sympathetic activity leading to vasoconstriction, tachycardia, and renin release.

B. Activation of the renin–angiotensin–aldosterone system causing Ang II–mediated vasoconstriction and aldosterone-driven volume expansion.

C. Decreased endothelin production leading to lower vascular tone.

D. Renal sodium handling abnormalities promoting extracellular fluid volume expansion.

Essential hypertension arises from multiple mechanisms that increase vascular resistance and expand extracellular fluid volume. Increased sympathetic activity raises vasoconstriction, speeds heart rate, and boosts renin release, all of which push blood pressure higher. Activation of the renin–angiotensin–aldosterone system (Ang II–mediated vasoconstriction and aldosterone-driven sodium and water reabsorption) also drives hypertension by both constricting vessels and expanding circulating volume. Renal handling of sodium is another major factor: abnormal sodium reabsorption promotes extracellular fluid volume expansion, raising blood pressure. Endothelin-1, produced by endothelial cells, is a potent vasoconstrictor; in essential hypertension, endothelin signaling is typically upregulated, contributing to higher vascular tone. A statement describing decreased endothelin production leading to lower vascular tone would actually tend to lower blood pressure, not raise it, so it does not represent a major pathway driving essential hypertension.

4. Which dressing option maintains a moist wound environment?

A. Alginate

B. Hydrocolloid

C. Foam

D. Silver-containing dressings

Maintaining a moist wound environment is achieved when the dressing stays semi-occlusive and interacts with wound fluid to keep moisture in the bed. Hydrocolloid dressings do this by forming a gel as they contact wound exudate, creating a hydrated, protective layer that reduces evaporation and supports healing processes like epithelial migration and autolytic debridement. They're well suited for dry or lightly exudating wounds and can stay in place for several days, preserving moisture without drying the wound. In contrast, alginate dressings are highly absorbent and gel with drainage, which is great for moderately to heavily exudating wounds but may not maintain moisture as consistently in low-drainage wounds; foam dressings focus more on cushioning and absorption and can allow moisture to escape, while silver-containing dressings are chosen mostly for antimicrobial effects rather than moisture control.

5. How do the mechanisms of minoxidil and finasteride differ in promoting hair growth?

A. Minoxidil inhibits 5-alpha-reductase; finasteride opens potassium channels.

B. Minoxidil opens potassium channels to promote growth; finasteride inhibits 5-alpha-reductase.

C. Both act by increasing estrogen levels.

D. Both directly stimulate hair follicle immune response.

Mechanisms differ: minoxidil promotes hair growth by opening potassium channels in the hair follicle and surrounding vessels, which causes vasodilation and increased blood flow to the follicles, helping prolong the growth phase of the hair cycle. Finasteride promotes growth by inhibiting 5-alpha-reductase, the enzyme that converts testosterone to dihydrotestosterone (DHT); with less DHT in the scalp, androgen-driven miniaturization of hair follicles decreases, allowing hairs to regrow thicker and longer. The idea that minoxidil inhibits 5-alpha-reductase or that finasteride opens potassium channels isn't accurate. Estrogen increases or direct stimulation of the hair follicle immune response aren't the mechanisms at play for these drugs.

6. What sound is associated with fluid in the alveoli?

A. Crackles (rales)

B. Wheezes

C. Stridor

D. Rhonchi

Fluid in the alveoli produces crackles. As air moves into fluid-filled tiny airways and alveoli during inspiration, the small airspaces snap open, creating brief, discontinuous popping sounds known as crackles or rales. This is a hallmark of alveolar or interstitial involvement, such as pulmonary edema from heart failure or pneumonia with fluid in the alveoli. Wheezes are musical sounds from narrowed airways due to bronchospasm or edema, not alveolar fluid. Stridor is a high-pitched sound from upper airway obstruction. Rhonchi are low-pitched, coarse sounds from secretions in larger airways. So crackles best fit a scenario with fluid in the alveolar spaces.

7. What are the four main classes of antihypertensives?

A. Antibodies, antivirals, antifungals, steroids

B. Diuretics, beta blockers, ACE inhibitors, and calcium channel blockers

C. Calcium, potassium, sodium, chloride

D. Nitrates, beta agonists, diuretics, ACE inhibitors

Lowering blood pressure relies on targeting different parts of the cardiovascular system, and the four main drug classes commonly taught for hypertension are diuretics, beta-blockers, ACE inhibitors, and calcium channel blockers. Diuretics help reduce blood pressure by increasing urine output, which lowers plasma volume and, over time, reduces arterial pressure. Beta-blockers decrease the heart's workload by lowering heart rate and contractility, and they also dampen renin release, which helps reduce blood pressure. ACE inhibitors block the enzyme that forms angiotensin II, a powerful vasoconstrictor, leading to vasodilation and less aldosterone-driven water retention. Calcium channel blockers prevent calcium from entering vascular smooth muscle and cardiac cells, causing vasodilation and a drop in peripheral resistance. Other options don't fit as the four main antihypertensives: antibodies, antivirals, antifungals, and steroids are not primary antihypertensive classes; electrolytes like calcium, potassium, sodium, and chloride are minerals, not drug classes; nitrates and beta agonists are used for other conditions (nitrates mainly for angina, beta agonists for bronchodilation or acute cardiac effects) and do not comprise the standard four foundational antihypertensive categories.

8. Which statement accurately describes the role of intralesional corticosteroids in localized alopecia areata?

A. They cause systemic immunosuppression.

B. They cure the autoimmune disease.

C. They have no role in alopecia areata.

D. They reduce local autoimmune attack and promote hair regrowth.

Localized alopecia areata is driven by an autoimmune attack, mainly T cells, on hair follicles in patches. Injecting corticosteroids directly into the affected areas delivers a strong anti-inflammatory effect at the site, dampening local cytokine activity and T-cell-mediated attack. With the local immune activity reduced, hair follicles can shift back toward the growth phase and regrow hair in those patches. This approach targets the problem where it matters while minimizing systemic effects, unlike systemic steroids. It's not a cure for the autoimmune condition, and relapses can occur, but intralesional corticosteroids are a standard, effective option for localized disease.

9. Compare first-generation and second-generation antihistamines in terms of CNS penetration and typical clinical use.

A. First-generation cross the blood–brain barrier causing sedation; second-generation minimal CNS penetration, longer duration.

B. First-generation antihistamines do not cross the blood–brain barrier.

C. Second-generation antihistamines cause more sedation.

D. Both generations have the same CNS effects.

CNS penetration by antihistamines shapes both their sedative effects and how they're used clinically. First-generation antihistamines are lipophilic and cross the blood–brain barrier readily, so they block H1 receptors in the brain and produce noticeable sedation and often anticholinergic effects. This makes them useful in some situations where a sedative effect is desired, such as short-term sleep aid or antiemetic use, but it also means daytime drowsiness and cognitive effects can limit daily functioning. Second-generation antihistamines are designed to limit CNS entry. They are less lipophilic and are often pumped out of the brain by P-glycoprotein at the blood–brain barrier, resulting in minimal CNS penetration. This reduces sedation and anticholinergic side effects, and their pharmacokinetics tend to provide longer, more predictable duration of action with typically once-daily dosing, making them preferable for chronic allergic rhinitis and urticaria. So the best restatement is that first-generation agents cross into the CNS and cause sedation, while second-generation agents stay mostly out of the CNS and are used for non-sedating, longer-acting allergy treatment.

10. In evaluating resistant hypertension, which steps are typically recommended?

A. Assess adherence, evaluate secondary causes (sleep apnea, renal disease, endocrine disorders), optimize diuretic therapy (often with mineralocorticoid receptor antagonist), and consider specialist input.

B. Increase salt intake.

C. Stop all antihypertensive therapy.

D. Only focus on lifestyle changes.

In evaluating resistant hypertension, the aim is to confirm true resistance and address factors that can be modified to lower blood pressure. Start by ensuring the patient is truly adherent to therapy and that blood pressure is measured correctly, since nonadherence or improper measurement can mimic resistance. Then search for secondary causes that are treatable—sleep apnea, kidney disease, and endocrine disorders are common culprits that, when identified and managed, can substantially improve BP. Next, optimize the antihypertensive regimen, especially diuretic therapy, because volume overload is a frequent driver of resistance; use a potent diuretic at an adequate dose, and in patients with reduced kidney function consider a loop diuretic. Add a mineralocorticoid receptor antagonist (such as spironolactone or eplerenone) when appropriate, as these have strong evidence for further lowering BP in resistant cases, with careful monitoring for potassium and kidney function. If blood pressure remains uncontrolled after these steps, seek specialist input for further evaluation and management. Removing therapy or focusing only on lifestyle changes won't address true resistance, and increasing salt intake would worsen the problem.

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

https://parmacologypathophysiology.examzify.com

We wish you the very best on your exam journey. You've got this!