

# Certified Nephrology Nurse Certification (CNN) Practice Exam (Sample)

## Study Guide



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**SAMPLE**

## **Questions**

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- 1. What is the most common type of kidney stone?**
  - A. Struvite stones**
  - B. Uric acid stones**
  - C. Calcium oxalate stones**
  - D. Cystine stones**
- 2. Charcoal Hemoperfusion can be used to treat poisoning from which of the following?**
  - A. Heavy Metals**
  - B. Glutethimide**
  - C. Recreational Drugs**
  - D. All of the above**
- 3. How is anemia typically treated in patients with chronic kidney disease?**
  - A. Erythropoiesis-stimulating agents (ESAs) and iron supplementation**
  - B. Blood transfusions and vitamin B12 injections**
  - C. High dose iron IV therapy**
  - D. Stem cell therapy**
- 4. What is the primary purpose of the National Kidney Foundation's Kidney Disease Outcomes Quality Initiative (KDOQI)?**
  - A. To provide funding for kidney research**
  - B. To develop clinical practice guidelines for kidney disease care**
  - C. To promote kidney donation awareness**
  - D. To provide educational resources to patients**
- 5. What is the purpose of renal artery stenosis in hypertension?**
  - A. It promotes blood flow**
  - B. It leads to obstruction, increasing renin release**
  - C. It decreases heart rate**
  - D. It reduces blood volume**

- 6. What are two common causes of Chronic Kidney Disease (CKD)?**
- A. Diabetes and Hypertension**
  - B. Heart disease and Obesity**
  - C. Smoking and High cholesterol**
  - D. Asthma and Liver disease**
- 7. How is peritoneal dialysis performed?**
- A. By using a machine to filter blood externally**
  - B. Through medication administration**
  - C. By instilling a dialysate solution into the peritoneal cavity**
  - D. By flushing the kidneys with saline**
- 8. What is the purpose of standards in clinical practice?**
- A. To improve patient satisfaction**
  - B. To define quality by specifying rules that apply to key processes**
  - C. To assess financial costs**
  - D. To evaluate staff performance**
- 9. Which medication is commonly used for prophylactic treatment of CMV?**
- A. Cyclosporine**
  - B. Ganciclovir**
  - C. Azathioprine**
  - D. Prednisone**
- 10. What is the primary method for diagnosing chronic kidney disease?**
- A. Evaluating urine output**
  - B. Measuring serum creatinine levels**
  - C. Progressive decrease in GFR over time**
  - D. Assessment of electrolytes**

## **Answers**

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

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## **Explanations**

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## 1. What is the most common type of kidney stone?

- A. Struvite stones
- B. Uric acid stones
- C. Calcium oxalate stones**
- D. Cystine stones

Calcium oxalate stones are the most common type of kidney stones, accounting for approximately 70-80% of all stone cases. These stones form from calcium and oxalate, substances that are naturally found in the body and in various foods. Factors that can contribute to the formation of calcium oxalate stones include high levels of calcium in the urine, low fluid intake leading to concentrated urine, and high dietary intake of oxalate-rich foods, like spinach and nuts. Due to their prevalence, it is vital for nephrology nurses to understand the specific dietary recommendations and hydration strategies that can help prevent the recurrence of these types of stones in patients. Moreover, recognizing risk factors for calcium oxalate stone formation can guide the management and treatment of patients who present with urolithiasis.

## 2. Charcoal Hemoperfusion can be used to treat poisoning from which of the following?

- A. Heavy Metals
- B. Glutethimide**
- C. Recreational Drugs
- D. All of the above

Charcoal hemoperfusion is a therapeutic procedure primarily used to enhance the elimination of certain substances from the body, particularly in cases of poisoning. It involves passing blood through a column containing activated charcoal, which adsorbs various toxins and drugs. Glutethimide, a sedative and hypnotic medication, can be effectively removed by charcoal hemoperfusion due to its properties and the mechanism of adsorption. This method utilizes the high surface area of activated charcoal, which effectively binds to glutethimide, thereby facilitating its removal from circulation. In situations where glutethimide poisoning occurs, this treatment can be particularly beneficial since it can reduce the body's overall drug burden and alleviate symptoms more rapidly. While charcoal hemoperfusion can be effective for certain substances, it is not universally applicable to all toxins, including heavy metals and some recreational drugs. Heavy metals typically do not bind well to activated charcoal and require other specific treatments for toxicity. Similarly, the efficacy of charcoal hemoperfusion can be variable with recreational drugs, depending on their chemical structure and lipophilicity. Thus, the treatment is not used for every possible poisoning scenario, highlighting the specificity of charcoal hemoperfusion for certain compounds like glutethimide.

**3. How is anemia typically treated in patients with chronic kidney disease?**

**A. Erythropoiesis-stimulating agents (ESAs) and iron supplementation**

**B. Blood transfusions and vitamin B12 injections**

**C. High dose iron IV therapy**

**D. Stem cell therapy**

Anemia in patients with chronic kidney disease (CKD) is primarily due to insufficient erythropoietin production by the kidneys, leading to reduced red blood cell production. The treatment most commonly recommended for managing anemia in this population involves the use of erythropoiesis-stimulating agents (ESAs), such as epoetin alfa or darbepoetin alfa, which mimic the action of erythropoietin and stimulate the bone marrow to produce more red blood cells. In addition to ESAs, iron supplementation is often necessary because iron deficiency can exacerbate anemia. Patients with CKD may have impaired iron metabolism or absorption, and regular monitoring of iron levels is critical. By combining ESAs with iron supplementation, the treatment addresses both the hormone deficiency and the potential nutritional deficiencies that contribute to anemia. Other treatment options, such as blood transfusions, may be used in certain situations, particularly when an immediate increase in hemoglobin levels is necessary, but they are not the first-line approach due to risks, including immunological reactions and iron overload. Vitamin B12 injections are generally not indicated in anemia from CKD unless there is a specific diagnosis of B12 deficiency. High-dose iron IV therapy and stem cell therapy are not standard treatments for anemia.

**4. What is the primary purpose of the National Kidney Foundation's Kidney Disease Outcomes Quality Initiative (KDOQI)?**

**A. To provide funding for kidney research**

**B. To develop clinical practice guidelines for kidney disease care**

**C. To promote kidney donation awareness**

**D. To provide educational resources to patients**

The primary purpose of the National Kidney Foundation's Kidney Disease Outcomes Quality Initiative (KDOQI) is to develop clinical practice guidelines for kidney disease care. KDOQI seeks to improve the quality of care for patients with kidney disease by establishing evidence-based guidelines that healthcare providers can follow. These guidelines are designed to assist nephrologists and other healthcare professionals in making informed decisions regarding patient care, thereby enhancing treatment outcomes and ensuring that patients receive the best possible care. The initiative emphasizes the importance of standardizing practice across the board, which can lead to improved patient outcomes due to more consistent and scientifically supported approaches to treatment. By focusing on clinical practice guidelines, KDOQI plays a crucial role in bridging the gap between research findings and practical applications in the care of kidney disease patients.

**5. What is the purpose of renal artery stenosis in hypertension?**

- A. It promotes blood flow**
- B. It leads to obstruction, increasing renin release**
- C. It decreases heart rate**
- D. It reduces blood volume**

The primary purpose of understanding renal artery stenosis in the context of hypertension is its role in the pathophysiological mechanisms of increased blood pressure. Renal artery stenosis is characterized by the narrowing of the renal artery, which leads to a decrease in blood flow to the kidneys. As a response to this perceived low blood flow, the kidneys increase the release of renin, an enzyme that plays a crucial role in the renin-angiotensin-aldosterone system (RAAS). Renin initiates a cascade of events that leads to the production of angiotensin II, a potent vasoconstrictor that elevates blood pressure by constricting blood vessels. Additionally, angiotensin II stimulates the adrenal glands to release aldosterone, which promotes sodium retention, further increasing both blood volume and arterial pressure. This mechanism illustrates how renal artery stenosis can contribute significantly to hypertension through the overactivation of the RAAS, resulting in an obstruction that triggers compensatory physiological processes that escalate blood pressure rather than stabilize it.

**6. What are two common causes of Chronic Kidney Disease (CKD)?**

- A. Diabetes and Hypertension**
- B. Heart disease and Obesity**
- C. Smoking and High cholesterol**
- D. Asthma and Liver disease**

Diabetes and hypertension are the two most prevalent causes of chronic kidney disease (CKD). Both conditions lead to kidney damage through different mechanisms. In diabetes, high blood sugar levels can lead to diabetic nephropathy, a specific type of kidney damage. Over time, excess glucose in the bloodstream causes inflammation and scarring in the kidneys, impairing their function. Hypertension, or high blood pressure, contributes to kidney damage as well by causing strain on the blood vessels within the kidneys. Elevated blood pressure can lead to atherosclerosis, reducing blood flow to the kidneys and contributing to the deterioration of renal function. Both conditions can also exacerbate each other, where uncontrolled blood sugar levels can lead to higher blood pressure and vice versa, creating a cycle that significantly increases the risk of developing CKD. Understanding the relationship between these factors is crucial for nephrology nursing and managing patient care effectively.

## 7. How is peritoneal dialysis performed?

- A. By using a machine to filter blood externally
- B. Through medication administration
- C. By instilling a dialysate solution into the peritoneal cavity**
- D. By flushing the kidneys with saline

Peritoneal dialysis is a form of dialysis that utilizes the peritoneal cavity, which is the space within the abdomen that houses the intestines, liver, and other abdominal organs. In this process, a sterile dialysate solution is infused into the peritoneal cavity through a catheter. The dialysate solution contains a specific concentration of electrolytes and other substances that interact with the blood vessels in the peritoneal membrane. This interaction allows for the diffusion and osmosis of waste products and excess fluids from the bloodstream into the dialysate, which can then be drained out, effectively cleansing the blood of toxins. This method is particularly beneficial for patients with kidney failure, as it can be performed at home, providing flexibility and independence compared to other forms of dialysis. Understanding this process emphasizes the importance of the peritoneal membrane as a natural filter within the body. Other methods, such as using a machine to filter blood externally or flushing the kidneys with saline, do not utilize the capabilities of the peritoneal cavity and focus on different aspects of renal replacement therapy, while medication administration is not a form of dialysis.

## 8. What is the purpose of standards in clinical practice?

- A. To improve patient satisfaction
- B. To define quality by specifying rules that apply to key processes**
- C. To assess financial costs
- D. To evaluate staff performance

The purpose of standards in clinical practice is primarily to define quality by specifying rules that apply to key processes. Standards provide a framework to ensure that healthcare practices meet established criteria for safety, effectiveness, and efficiency. By creating clear guidelines, healthcare professionals can consistently apply best practices in patient care, leading to improved outcomes and a higher level of care. In defining quality, standards serve as measurable benchmarks that can be used to assess compliance with desired performance levels in clinical settings. They are essential for both individual practitioners and institutions to maintain accountability and to identify areas needing improvement. Ultimately, the use of standards can enhance the overall healthcare delivery system, ensuring that patients receive care that adheres to the latest evidence-based practices. While patient satisfaction, financial costs, and staff performance evaluation are important components of healthcare delivery, they are secondary to the overarching goal of ensuring quality care defined by established standards. These aspects can be influenced by adherence to standards, but they do not encapsulate the main purpose of standards themselves.

**9. Which medication is commonly used for prophylactic treatment of CMV?**

- A. Cyclosporine
- B. Ganciclovir**
- C. Azathioprine
- D. Prednisone

Ganciclovir is the medication commonly used for prophylactic treatment of Cytomegalovirus (CMV) infections, particularly in immunocompromised individuals, such as transplant recipients or patients with HIV/AIDS. Its primary function is to inhibit viral DNA synthesis, effectively preventing the replication of CMV in the body. By doing so, Ganciclovir helps lower the risk of developing CMV disease, which can lead to serious complications in patients with weakened immune systems. The use of Ganciclovir as a prophylactic agent is critical, especially in patients undergoing organ transplantation, where the risk of opportunistic infections, including CMV, is notably higher. Its efficacy in reducing the incidence of CMV disease has made it a standard part of care for at-risk populations. Other medications listed, such as Cyclosporine, Azathioprine, and Prednisone, are commonly used for immunosuppressive therapy but do not have a direct role in the prophylaxis of CMV. Cyclosporine and Azathioprine are used to prevent organ rejection, while Prednisone is a corticosteroid that reduces inflammation and suppresses the immune response, but none possess the antiviral activity specific to targeting CMV as Ganciclovir.

**10. What is the primary method for diagnosing chronic kidney disease?**

- A. Evaluating urine output
- B. Measuring serum creatinine levels
- C. Progressive decrease in GFR over time**
- D. Assessment of electrolytes

The primary method for diagnosing chronic kidney disease (CKD) is based on the progressive decrease in glomerular filtration rate (GFR) over time. CKD is characterized by a gradual loss of kidney function, which is reflected in a sustained reduction in GFR. This decrease can be measured through various laboratory tests, but monitoring the GFR is critical for diagnosing and staging CKD. Over time, the trending of GFR values helps healthcare providers understand the progression of the disease and make informed decisions regarding management. Additionally, CKD is defined as a decrease in kidney function or evidence of kidney damage, lasting for three months or more, which is assessed through consistent measurements of GFR. While serum creatinine levels can indicate kidney function and may help in estimating GFR, they are not the sole or primary means of diagnosing CKD. Other factors, such as urine output and electrolyte levels, can offer additional insights but do not primarily establish the diagnosis of CKD. Thus, the progressive decrease in GFR is the cornerstone of identifying and understanding chronic kidney disease.