CDN®
CERTIFIED DIALYSIS NURSE

NEW Certification Preparation Guide

For test takers starting on 9/1/2026

nncc®
Nephrology Nursing Certification Commission

CDN Certification Preparation Guide

Contents

About the Nephrology Nursing Certification Commission (NNCC)

Mission

The Nephrology Nursing Certification Commission (NNCC) exists to establish certification mechanisms to promote patient safety and to improve the quality of care provided to nephrology patients.

Philosophy

NNCC supports the philosophy that there should be a diversity of examinations that will effectively provide the opportunity for certification at various levels of education, experience, and areas of practice within nephrology nursing.

Commission

NNCC was established in 1987 to develop and implement certification examinations for nephrology nursing. NNCC is separately incorporated, and an independent organization that collaborates with the Center for Nursing Education and Testing (C-NET) in test development, test administration, and test evaluation. It is the goal of NNCC to promote the highest standards of nephrology nursing practice through the development, implementation, coordination, and evaluation of all aspects of the certification and recertification processes. The NNCC is a charter member of the American Board of Nursing Specialties (ABNS). The ABNS is a membership organization that maintains a national peer review program for nursing specialty certifications.

Center for Nursing Education and Testing (C-NET)

NNCC collaborates with The Center for Nursing Education and Testing (C-NET) whose expertise in the areas of test development, administration, and evaluation is unequaled. C-NET works with the NNCC to ensure that all of the examinations offered are reliable, valid, and meet industry standards. C-NET provides a full range of test development and test administration services, including:

- Performing practice analysis surveys of specialty areas
- Developing test specifications (blueprint)
- Leading item-writing sessions
- Pilot testing of questions
- Statistical analysis of whole test and test questions
- Reporting results of testing to Board and test committees

Relationship to Professional Associations

A professional association is an organization of members for whom educational and professional offerings and events are provided. They promote professional growth, provide approved continuing education, promote, recognize, and endorse certification, but they do not administer certification examinations. Examples of professional associations are:

- American Nephrology Nurses' Association (ANNA)
- National Kidney Foundation (NKF)
- National Association of Nephrology Technicians/Technologists (NANT)
- American Society of Nephrology (ASN)

The NNCC does *not* have members or provide educational programming. The NNCC promotes professional growth by developing and implementing certification examinations for nephrology nursing.

ABNS and ABSNC Accreditation

The American Board of Nursing Specialties (ABNS), established in 1991, is a not-for-profit, membership organization focused on consumer protection and improving patient outcomes by promoting specialty nursing certification. The Accreditation Board for Specialty Nursing Certification (ABSNC), formerly the ABNS Accreditation Council, is the only accrediting body specifically for nursing certification. ABSNC accreditation is a peer-review mechanism that allows nursing certification organizations to obtain accreditation by demonstrating compliance with the highest quality standards in the industry.

The NNCC is a charter member of the ABNS, and the Certified Nephrology Nurse (CNN) certification program was one of the first national certification programs to be recognized and accredited. ABSNC accreditation was initially granted for the CDN examination in January 2011. Currently, the CNN, CDN, and CCHT examinations are accredited by ABSNC.

Organizational Structure

The NNCC is composed of nine commissioners, including one public member. The commission is comprised of members of each examination board. Officers of the NNCC include the President, President-Elect, Secretary and Treasurer. The NNCC staff includes an Executive Director, an Associate Executive Director, and Certification Specialists. The management firm is Anthony J. Jannetti, Inc. in Pitman, New Jersey.

Nursing Examination Board

The Nursing Examination Board is made up of representatives from both the CDN and CNN Testing Committees. The purpose of the Exam Board is to establish, review, and update eligibility criteria relevant to certification and recertification. The members develop knowledge and activity statements for practice analyses in collaboration with the testing agency (C-NET) and the commission (NNCC). In addition, the Exam Board participates in review of the practice analysis role delineation survey tool and data analysis, updates the examination blueprint, and completes audits of certification and recertification applications for quality assurance.

Nursing Test Committee

Members of the CDN Test Committee meet licensure and education requirements, must be NNCC certified, and have nephrology nursing expertise. They are responsible for writing and reviewing questions relevant to the examination. Along with the testing agency representatives, members review current item statistics and develop and revise items as needed.

Examination Development

Valid and reliable tests do not arise spontaneously from item writers. They are carefully planned to ensure that they are legally defensible and psychometrically sound. A test has a specific blueprint, or test plan, which identifies what content needs to be included on the test. In addition, there is a list of the key content or activities performed by dialysis nurses. Both the blueprint and the key content/activities serve as item-writing guides or "test specifications" for the item writers.

Where do these test specifications come from? The content of the CDN examination is based on a practice analysis survey of dialysis nurses that identifies the key tasks/activities performed by dialysis nurses. A national task force is brought together to plan the survey content. This task force includes dialysis nurses, as well as clinical educators and clinical managers of dialysis nurses. Following data collection, the task force reviews the survey results and makes recommendations for the CDN test specifications.

The practice analysis also delineates and differentiates the roles of CDN and CNN. Most importantly, a practice analysis is performed every five years to be sure the test reflects current practice and is kept up to date.

The group that oversees CDN test development is the Nursing Examination Board, which is made up of nurses with expertise in dialysis and nephrology. There is also a CDN Test Committee that writes the actual test questions. Item writers, who are certified dialysis nurses from a variety of geographic and practice settings, write test questions to meet the CDN blueprint requirements. Members of both the Nursing Exam Board and the test committee are considered "content experts" concerning the knowledge and skills needed by dialysis nurses for safe practice.

Each question on the test can be linked directly to the tasks/activities in the practice analysis survey. The test committee meets in person twice a year to review, evaluate, and write test questions. To be certain that the test content is accurate, all questions are supported, using the most recent edition of the ANNA *Core Curriculum for Nephrology Nurses* and/or other references, including the regulations in the CMS *Conditions for Coverage for End-Stage Renal Disease Facilities*.

The test consists of 150 questions that match the test blueprint. About 25 of the questions are new experimental or "pilot" questions that are not scored. Pilot testing of new questions allows for the evaluation of questions to determine if they are valid before they become scored questions.

The passing score of the test is determined by a panel of dialysis nurses who serve as subject matter experts (SMEs). Both experienced and newly certified nurses serve on this panel. This group performs a standard setting procedure (Angoff) in which each test question is reviewed to determine its level of difficulty. Finally, the passing score is determined. It is based on the SME panel's estimation of the level of difficulty required to identify individuals who have an acceptable level of knowledge and skill. Therefore, each candidate's test score is measured against a predetermined standard, not against the performance of other test takers. Please refer to www.nncc-exam.org for the current percent correct required to pass the CDN examination.

Frequently Asked Questions

What is certification?

Certification is the formal recognition of specialized knowledge, skills, and experience. It is demonstrated by the achievement of standards identified by a nursing specialty to promote optimal health outcomes. Certification validates advanced knowledge and competence in a specialty. Licensure validates the entry level competence of basic nursing knowledge and skill and provides the legal authority to practice nursing. Certification indicates a higher degree of professional competence than the minimal requirement for licensure. It must be designed to protect the public from unsafe and incompetent caregivers, and it allows consumers of health care to easily identify competent caregivers.

Why should I get certified?

The number one reason to become certified is to help ensure patient safety. Additional reasons include professional recognition, validation of skills, self-confidence in decision-making, and enhanced credibility. Certified nurses have an up-to-date knowledge base, in part due to required ongoing professional education. Certification has been linked to patient safety, optimal patient outcomes, decreased errors, improved patient satisfaction, increased staff retention, and job satisfaction. In an ideal world, employers would recognize, support, and reward certification.

What is the difference between the CDN and CNN exams?

The CDN exam is tailored specifically for RNs specializing in dialysis and the care of individuals with CKD stage 5. The CNN exam is for RNs practicing in multiple areas of nephrology and caring for individuals with CKD stages 3-5.

Am I ready to earn the CDN?

To be eligible to sit for the CDN Exam, candidates from the ***United States (& US territories)*** must:

- Hold a current, full, and unrestricted license as a registered nurse in the United States, or its territories.
- Have completed a minimum of 2,500 hours experience as a registered nurse in nephrology nursing caring for patients who require in-center hemodialysis, or educating/supervising staff who care for patients who require in-center dialysis. These hours must occur within the two (2) years prior to submitting the exam application.
- Have completed thirty (30) contact hours of continuing education in nephrology nursing from approved providers within the two (2) years prior to submitting the exam application.

International Candidates must meet the eligibility requirements listed above. In addition, applicants educated and/or licensed outside the United States must hold a current, full, and unrestricted license as a first- level general nurse and meet the eligibility requirements of TruMerit (formerly, the Commission on Graduates of Foreign Nursing Schools, CGFNS). The TruMerit requirements include evidence of:

- Successful completion of secondary school education.
- Graduation from a government-approved, general nursing program that was at least two (2) years in length.
- Theory and clinical education in each of the following areas: nursing care of the adult (which includes medical and surgical nursing), maternal/ infant nursing, nursing care of children, and psychiatric/mental health nursing. *(See trumerit.org for more information.)*

(Please refer to the Certification Application booklet for additional information.)

How do I apply for the CDN exam?

1. Download and complete all sections of the application from the NNCC website, www.nncc-exam.org. Be sure to include the last four (4) digits of your social security number as well as all required signatures.
2. Make certain your immediate supervisor completes the section on employment verification.
3. Attach clear copies of contact hour certificates to total thirty (30) contact hours specific to nephrology.
4. Attach a copy or verification of your current RN license, with the expiration date clearly visible, or a letter or printout from your state board of nursing verifying licensure with license number and date of expiration.
5. Mail the application form, a copy or verification of your current RN license, with the appropriate payment, to the NNCC.
6. If you need special accommodations for the examination, contact C-NET at 1-800-463-0786.

How will I know my application was received?

Within a four (4) week processing time, you will receive an Examination Permit containing instructions for scheduling your exam or an Incomplete Application Letter, requesting further information or documentation. (Note: incomplete applications are subject to an incomplete application fee.)

What study resources are available?

- The test blueprint and practice questions included in this booklet
- The most recent editions of the following references.*
  - ANNA *Core Curriculum for Nephrology Nursing*.
  - Daugirdas' *Handbook of Dialysis*.
  - Kallenbach's *Review of Hemodialysis for Nurses and Dialysis Personnel*.
  - NKF's *Primer on Kidney Diseases*
  - The regulations in the CMS Conditions for Coverage for End-Stage Renal Disease Facilities.
- The **Online Practice Test** (found on www.nncc-exam.org)
  - 50 multiple-choice questions available in two modes:
    - *Practice Mode*: provides the correct answer and rationale after each question
    - *Test Mode*: holds the results until the end of the test
  - Results display percentage correct by blueprint area
  - 90-day access to the test
  - Several scrambled versions of the same 50 questions are offered for retesting

*Please see page 14 and www.nncc-exam.org for the complete list.

Are there secrets or tricks to help me pass the exam?

Caution: Test preparation websites offering alternative and/or shortcuts to test preparation should be avoided. Exam content is confidential and is not shared with any individuals involved in test preparation activities. "Tricks of testing" and "short cut methods for test preparation" are specifically avoided when creating this exam.

We test candidates on content and not on their "test taking skills." If you have any questions about the best methods to prepare, please call NNCC toll free at (888) 884-6622. Our goal is that exam candidates will best use their time and money to reach the end result of demonstrating their excellence in nephrology nursing care through certification.

What should I expect the day of the test?

You should arrive at the testing center 30 minutes before your test is scheduled to begin. Bring your valid government-issued photo ID and examination permit. The name on your ID must match the name on your exam permit. Directions to the testing center are contained in the email confirming you have successfully scheduled your test. Be sure to know the best route to the testing center and pay attention to traffic reports.

- Nothing is permitted in the testing room, so you are encouraged to leave personal items at home or locked in your car. Lockers are available in some, but not all, testing centers to secure personal valuables, such as purses or wallets.
- Cell phones and all other electronic devices are not permitted.
- Upon arrival you will give the proctor your photo ID. You will then have your photo taken, and sign a roster and other regulation sheets. The proctor will read the testing site rules upon registering you for the test.
- Once seated at your computer, you will take a short tutorial explaining the test setup and keyboard key functions just before your test begins.
- You will have three (3) hours to complete the exam.
- Your photo ID will be returned upon completion of the exam.

When will I get my results and how do I interpret them?

Your Score Report will be available to you at the end of your examination. If you pass the exam, the report will reflect your score as well as notify you of when to expect your certificate in the mail and when your name will appear in the online NNCC Certified Directory. If you were unsuccessful on the exam, the report will reflect your score and a breakdown of the test subareas – the Content Areas on the CDN Test Blueprint – with the percent of questions you answered correct in each. This breakdown of subarea scores will help you determine the blueprint areas in which you are weak and need further study.

What if I need to retest?

If you are unsuccessful on the exam, you have one opportunity within one year to retake the examination at a reduced rate. Your score report will indicate how to apply at the reduced rate.

Preparing to take the Examination

Physical and Emotional Preparation

- Think positively.
- Study and prepare for the examination so that you feel confident.
- Moderate anxiety is normal and may be helpful - you may be more mentally and physically alert.
- Even though some test takers may finish the exam early, use as much of the allotted time as you need to think through and answer the questions.
- Get a good night's sleep.
- Eat a good meal with protein before the examination.
- Gather all the materials you need to take the test the night before the exam.
- Allow plenty of time and arrive early.
- If you are distracted by other candidates, ask for a seat where you will be less likely to notice the other candidates.
- Reference books, notes, or other study materials may not be brought into the examination room.

Tips on Answering Examination Questions

- Read the questions carefully and focus on key words in the question such as "first", "most likely", "most important", "best".
- As you read the question, anticipate the correct answer.
- Read each of the four choices carefully. Even if the first option sounds correct, read all options before choosing the answer.
- Do not "read into" the question. Answer the question based only on the information presented, even if you think the answer is too obvious or too easy.
- Do not spend too much time on any one question. Make a note of the questions of which you are uncertain and return to them later if you have time.
- There is no penalty for guessing, so you should make an educated guess if you are not sure of an answer.

Resources

NNCC:

www.nncc-exam.org
(888) 884-6622
Like us on Facebook
Follow us on LinkedIn, Instagram, and YouTube

CNET:

www.cnetnurse.com
(800) 463-0786

NNCC Policies

Statement of Nondiscrimination

It is the policy of NNCC that no individual shall be excluded from the opportunity to participate in the NNCC certification programs on the basis of race, ethnicity, national origin, religion, marital status, sexual orientation, gender identity, age, or disability.

Denial, Suspension, or Revocation of Certification/ Recertification

The occurrence of any of the following actions will result in the denial, suspension, or revocation of the certification:

- Failure to meet all eligibility criteria for certification/ recertification
- Falsification of the NNCC application
- Falsification of any materials or information requested by the NNCC
- Any restrictions such as revocation, suspension, probation, or other sanctions by a nursing or other regulatory authority
- Misrepresentation of certification status
- Cheating on the examination
- Applicable state and/or federal sanctions
- Failure to meet continuing education criteria
- Failure to meet work experience requirements

Falsifying any materials, including continuing education requirements for certification or recertification (number of contact hours or dates), may lead to denial or permanent loss of NNCC certification.

The NNCC reserves the right to investigate all suspected/ reported violations and, if appropriate, notify the certificant's employer/State Board of Nursing or other regulatory authority. The certificant will be notified in writing of NNCC's decision(s)/action(s).

Appeal Process

An applicant who has been denied certification, failed an examination, or had certification revoked has the right of appeal. This appeal must be submitted in writing to the President of the NNCC within thirty (30) days of notification. The appeal shall state specific reasons why the applicant feels entitled to certification. At the applicant's request, the President shall appoint a committee of three (3) NNCC Commissioners who will meet with the applicant and make recommendations to the NNCC. The committee will meet in conjunction with a regularly scheduled NNCC meeting. The applicant will be responsible for his/her own expenses. The final decision of the NNCC will be communicated in writing to the applicant within thirty (30) days following the NNCC meeting. Failure of the applicant to request an appeal or appear before the committee shall constitute a waiver of the applicant's right of appeal.

Content of the CDN Examination

The CDN examination is designed to test the knowledge needed to provide safe care to patients who are receiving dialysis treatments. There are two dimensions in the test blueprint, Content and Objectives. Content includes four sections: (A) Chronic Hemodialysis Unit (End Stage Renal Disease), (B) Concepts of Kidney Disease in Adults, (C) Chronic Hemodialysis Unit (Acute Kidney Injury and Delayed Graft Function), and (D) Water for Dialysis. The exam also includes seven Objective areas: (1) Pathophysiology/Complications, (2) Interventions, (3) Physical/Technical Principles, (4) Teaching, (5) Medications, (6) Infection control, and (7) Collaboration/Administration. Specific nursing activities are tested in each of these areas.

Each question on the test fits into one Content area and one Objective area. This is shown on the blueprint grid (*see page 7*). In the boxes next to Chronic HD Unit (ESRD), there are 12-13 questions under the Pathophysiology/Complications label. The entire test is mapped out in this manner to guide the item writers when they are developing the test.

Content Areas:

A. Chronic Hemodialysis Unit - End-Stage Renal Disease (ESRD) (52%)

The Hemodialysis area is the largest part of the test, making up 52% of the test content. Questions in this area deal with physiological and technical principles of hemodialysis. They ask the nurse to select appropriate actions to take while caring for patients with ESRD who are being treated with hemodialysis. These include concepts of hemodialysis administration and monitoring of the vascular access. Examples of the kinds of CDN activities tested in this area include:

1. Preparing, initiating, monitoring, and discontinuing the hemodialysis treatment.
2. Identifying and troubleshooting variations of blood flow through the extracorporeal circuit, e.g., arterial pressure, venous pressure, blood flow rate.
3. Administering medications.
4. Following protocol when intervening for dialysis-related problems/symptoms, e.g., hypotension, access malfunction.
5. Teaching patient and caregivers the importance of adherence to the dialysis prescription.

B. Concepts of Kidney Disease in Adults (32%)

This area is the second largest part of the test, making up 32% of the test content. In this area, questions deal with broader aspects of care of patients receiving hemodialysis, such as infection prevention and control, teaching the patient and caregivers about the effects of kidney disease, participating in care planning, and considering the patient's response to the illness and its implications. Examples of the CDN activities tested in the Kidney Disease in Adults area include:

1. Using clean or aseptic technique, as appropriate, to initiate and terminate treatments or procedures.
2. Maintaining a safe patient and staff work environment.
3. Teaching patient and significant others about multisystem effects of kidney disease.
4. Participating in interdisciplinary rounds and care plan development.
5. Evaluating patient's and significant others' adaptation to illness and its treatment.

C. Chronic Hemodialysis Unit - Acute Kidney Injury (AKI) and Post-Transplant Delayed Graft Function (DGF) (8%)

Beginning in 2017, outpatient hemodialysis facilities are able to treat patients with acute kidney injury and kidney transplant recipients who have not yet achieved kidney function. This growing group has unique care needs, which are addressed in this content area. Because this population is relatively small, it represents 8% of the exam. Examples of the activities tested in the Hemodialysis for Patients with AKI or DGF include:

1. Recognizing differences in presentation and treatment of ESRD and AKI or DGF.
2. Assessing and caring for vascular accesses of patients who have AKI or DGF.
3. Identifying the most serious complications that may occur with AKI and DGF
4. Taking special precautions when dialyzing patients who have AKI or DGF.
5. Managing the Increased risk of infection in patients with AKI or DGF.

D. Water for Dialysis (8%)

The water used to prepare dialysate must be highly processed and continuously monitored to ensure safe hemodialysis treatments. Nurses must understand the dialysis water treatment system and its role in patient safety. Examples of the nursing activities tested in this area include:

1. Teaching staff why all activities involved with water treatment are necessary for patient safety.
2. Explaining to staff the functions of the various parts of the water treatment system.
3. Identifying problems related to bacteria and pyrogens in water treatment.
4. Assuring documentation of performance of all required tests to maintain the water treatment system.
5. Instructing staff how to recognize patient reactions to a contaminated water system and actions to take.

The complete list of activities can be found on the NNCC website in the CDN section. Click on The Exam, then on Exam Specifications.

Test Specifications (Blueprint) for the CDN Examination

Objectives:

1. Recognize pathologic processes and complications that occur with kidney disease and/or treatment modalities. **(18%)**
2. Select interventions appropriate to the pathologic processes and complications that occur with kidney disease and/or treatment modalities. **(22%)**
3. Apply physiologic and technical principles of renal replacement therapies. **(20%)**
4. Select appropriate teaching/learning strategies to educate patient, family, other health professionals, and the public. **(10%)**
5. Select appropriate actions in administering medication(s) to the patient being treated for kidney disease. **(14%)**
6. Apply principles of infection control. **(8%)**
7. Recognize the importance of promoting positive patient outcomes through interdisciplinary collaboration, consideration of the psychological and cultural effects of kidney disease, staff development, and quality improvement. **(8%)**

Distribution of 150 Question in the CDN Exam
(Approved 2025)

Objective / Content Area	1. Path/ Comp	2. Interven-tions	3. Phys/ Tech	4. Teach	5. Meds	6. Infection Control	7. Collaboration/ Administration	Total
A. Chronic HD Unit (ESRD)	12-13	17-18	15-16	7-8	10-11	6-7	7-8	**77-78 (52%)**
B. Concepts of Kidney Disease in Adults	7-8	10-11	9-10	4-5	6-7	3-4	4-5	**47-48 (32%)**
C. Chronic HD Unit (AKI & GDF)	1-2	2-3	2-3	1-2	1-2	1-2	1-2	**11-12 (8%)**
D. Water for Dialysis	1-2	2-3	2-3	1-2	1-2	1-2	1-2	**11-12 (8%)**
Total	**26-27 (18%)**	**32-33 (22%)**	**29-30 (20%)**	**14-15 (10%)**	**20-21 (14%)**	**11-12 (8%)**	**11-12 (8%)**	**150**

Types of Questions on the CDN Examination

Several different types of questions appear on the CDN examination. Some questions require a basic recall of knowledge, while others test the nurse's ability to comprehend a concept. Most of the questions ask the nurse to apply knowledge in a clinical situation. The CDN test blueprint specifies the percent of each type of question in the test. Examples of each of these types of question appear below with the correct appear below with the correct answer marked with a checkmark (✓).

A. Recall of Knowledge (10%)

Test questions at the knowledge level ask the nurse to remember specific facts, common terms, basic concepts, and principles. Definitions of terms are examples of recall items.

1. Intradialytic hypotension is defined as a
    1. rise in blood pressure between hemodialysis treatments.
    2. rise in blood pressure during the hemodialysis treatment.
    3. fall in blood pressure between hemodialysis treatments.
    4. fall in blood pressure during the hemodialysis treatment. ✓

B. Comprehension (25%)

Test questions at the comprehension level go beyond basic recall to determine the nurse's deeper understanding of a concept. Examples of words used to describe comprehension might include interpret, compare, contrast, explain, estimate, and translate.

2. A patient's pre-dialysis blood pressure was 156/86 mm Hg. Two hours into the treatment, the patient's blood pressure is 102/60 mm Hg. The nurse should understand that the change is blood pressure is most likely the result of
    1. increased central circulation contraction.
    2. decreased plasma refilling rate. ✓
    3. increased biventricular output.
    4. decreased parasympathetic outflow.

C. Application of Knowledge (65%)

Test questions at the application level ask the nurse to apply previously learned facts and concepts to new situations and to solve problems. These questions present a clinical situation and ask what problem is occurring or what action to take in the situation.

3. The nurse would anticipate which of the following orders to treat a patient's intradialytic hypotension?
    1. Instruct the patient to eat a carbohydrate-rich meal one hour prior to the hemodialysis treatment.
    2. Set the patient's treatment for the prescribed hemodialysis time followed by one hour of isolated ultrafiltration.
    3. Advise the patient to take daily antihypertensive medication after, not before, the dialysis treatment. ✓
    4. Increase the temperature of the patient's dialysis solution to 37.5° C (99.5° F).

CDN Certification Preparation Test

This Preparation Test has been developed to give you experience with the type of questions that are on the CDN examination. On page 14, the correct answers and rationales for each of the questions are given. Compare your answers with the correct answers.

1. Fluid is removed in hemodialysis ***primarily*** by which of these pressures?
    1. Convective.
    2. Oncotic.
    3. Hydrostatic.
    4. Diffusive.

2. Signs and symptoms of an air embolism include
    1. dyspnea.
    2. abdominal pain.
    3. Kussmaul respirations.
    4. headache.

3. A patient who receives chronic hemodialysis treatments is brought to the emergency department on the weekend. Laboratory tests reveal a serum potassium of 7.0 mEq/L. Which of these treatments would ***most*** effectively lower the patient's total body potassium?
    1. Furosemide (Lasix).
    2. Calcium gluconate (Kalcinate).
    3. Sodium phosphate (Fleet) enema.
    4. Sodium polystyrene sulfonate (Kayexalate).

4. Long-term exposure to low levels of endotoxin in water used for dialysis may result in patients becoming resistant to
    1. antibiotics.
    2. parenteral calcimimetic therapy.
    3. phosphate binders.
    4. erythropoiesis-stimulating agents.

5. Auscultation is a routine part of the predialysis assessment of the arteriovenous (AV) access prior to cannulation. The rationale for auscultation is to
    1. document the access patency.
    2. listen for a thrill.
    3. differentiate between an AV fistula and synthetic graft.
    4. determine the appropriate needle gauge.

6. A patient who receives maintenance hemodialysis treatments in an outpatient facility has a methicillin-resistant *Staphylococcus aureus* (MRSA) infection. The nurse should realize that MRSA is ***most*** frequently transmitted via
    1. contaminated chairside computer keyboards.
    2. inanimate vector contamination.
    3. contaminated hands of healthcare providers.
    4. machine touchscreen contamination,

7. A 78-year-old male was started on hemodialysis two years ago. Since then, he has experienced a number of complications related to co-occurring chronic illnesses. He says to the nurse, "I've done a lot of thinking about this, and I'm ready to discontinue dialysis treatments." He explains that the debilitating changes that have occurred limit multiple areas of his life. Which of these responses by the nurse would be ***most*** appropriate?
    1. "We can ask your doctor to prescribe some medications to help you feel better."
    2. "We will provide you with any information you need to make this important decision."
    3. "You need to try all therapies before electing to stop treatment."
    4. "You need to understand that withdrawal from dialysis will be very uncomfortable for you."

Robert Elliott, a 68-year-old patient who has CKD Stage 5, recently began receiving maintenance hemodialysis.

---

8. When instructing Mr. Elliott about taking his calcium carbonate (Tums®) as a phosphate binder, the nurse should be sure he understands that the Tums should be taken

    1. with meals.
    2. between meals.
    3. anytime, but spread throghout the day.
    4. with vitamins to aid absorption.

10. Mr. Ellliott's serum potassium level is increased. The nurse reviews with him the type of foods highest in potassium. Following the review, Mr. Elliott should identify that a single serving of which of the following foods is ***highest*** in potassium?

    1. Frozen peaches.
    2. Fresh peaches.
    3. Dried peaches.
    4. Canned peaches.

10. When encouraging Mr. Elliott to adhere to his plan of care, the nurse informs him about patient outcome findings from the Dialysis Outcome Practice and Pattern Study (DOPPS). By using the DOPPS data to educate Mr. Miller, the nurse is demonstrating

    1. research utilization.
    2. regulatory adherence.
    3. observational analysis.
    4. quality control.

11. Mr. Elliott has had hypotensive episodes several times during the last hour of his hemodialysis treatments. The ***most*** appropriate nursing action is to

    1. determine if the blood flow rate is appropriate.
    2. check the function of the vascular access.
    3. assess for signs of congestive heart failure.
    4. re-evaluate his target weight.

12. Mr. Elliott is receiving heparin sodium during his dialysis treatments. Which of these statements about heparin is correct?

    1. Its effect is increased by pantoprazole sodium (Protonix).
    2. Its metabolism is via the reticuloendothelial system.
    3. Its dosage is adjusted according to prothrombin time results.
    4. Its half-life is 90 minutes.

13. During Mr. Elliott's hemodialysis treatment, the nurse observes tiny air bubbles in the venous bloodline. The ***most*** likely source of these air bubbles is a loose connection

    1. before the blood pump.
    2. after the blood pump.
    3. in the affluent dialysate line.
    4. in the effluent dialysate line.

* * *

Elaine Scott, 45 years old, has CKD Stage 5 secondary to glomerulonephritis. She began hemodialysis emergently two months ago and has a cuffed, tunneled CVC access, which is being used while her newly placed A-V fistula matures.

14. According to the Centers for Disease Control and Prevention (CDC), which of these nursing actions is ***most*** important in preventing hemodialysis catheter-related infection in patients like Ms. Scott?

    1. Performing routine exit site care with povidone iodine (Betadine).
    2. Using aseptic technique when starting/ending dialysis.
    3. Locking each port with heparin post dialysis.
    4. Monitoring blood and dialysate flow rates.

15. Ms. Scott consistently has above-normal serum phosphorus levels. The nurse consults the dietitian who emphasizes that foods ***highest*** in phosphorus content include

    1. fats and oils.
    2. fruits and vegetables.
    3. processed meats and seafood.
    4. enriched white bread and pastas.

16. The laboratory test results indicate that Ms. Scott is positive for hepatitis B surface antigen (HBsAg). Based on this finding, the nurse should realize that Ms. Scott

    1. requires immunization.
    2. has been successfully immunized.
    3. previously had a hepatitis B infection.
    4. currently has a hepatitis B infection.

* * *

Samuel Kirby, 77 years old, has CKD Stage 5 secondary to diabetic nephropathy. He recently started hemodialysis emergently via a cuffed, tunneled CVC in his right internal jugular vein. He has a newly placed right forearm A-V graft.

17. At Mr. Kirby's next treatment, the nurse performs an exit site assessment. Which of these findings is characteristic of a ***healthy*** exit site?

    1. Visible catheter cuff.
    2. Erythema with crusting.
    3. Lack of neck or facial edema.
    4. Slight purulent drainage on dressing.

18. It is noted that Mr. Kirby's hemoglobin A1C level is elevated. Which of these actions should the nurse take ***initially***?

    1. Restrict his carbohydrate intake during dialysis treatments.
    2. Consider changing his insulin to a long-acting form.
    3. Increase the ultrafiltration rate during the first half of his dialysis treatment.
    4. Try to determine the underlying cause of his poor glucose control.

19. Which of the following is an ***advantage*** of a graft over a fistula access?

    1. Lower rate of infection.
    2. Easier to cannulate.
    3. Longer lifespan.
    4. Less chance of thrombosis.

* * *

Victor Warren, a 65-year-old male, developed acute kidney injury following cardiac surgery and is receiving hemodialysis while awaiting renal recovery. He is receiving intermittent hemodialysis treatments through a tunneled cuffed CVC.

---

20. The nurse has been teaching Mr. Warren how to reduce the risk of infection of his CVC access site. The ***best*** way to evaluate his learning is by asking him to

    1. list measures used to reduce infection risk.
    2. demonstrate how to protect the site while bathing.
    3. complete a written test about site care.
    4. answer oral questions about infection prevention.

21. Which of the following classifications of drugs is nephrotoxic and should be used with caution in patients like Mr. Warren to preserve residual kidney function?

    1. Aminoglycosides.
    2. Fluoroquinolones.
    3. Neuromuscular blockers.
    4. Calcium channel blockers.

* * *

Tricia Kelly, 47 years old, received a kidney transplant ten days ago. The new kidney has not functioned and she is diagnosed with delayed graft function (DGF). Ms. Kelly is scheduled to receive hemodialysis treatments at an outpatient facility pending graft function.

---

22. The ***most*** common cause of DGF is

    1. acute tubular necrosis.
    2. renal artery stenosis.
    3. ureteral leaking.
    4. renal artery thrombosis.

23. Ms. Kelly says to the nurse, "I'm so depressed. I did so well for so long. Now I'm losing everything." Which of these initial responses of the nurse would be best?

    1. "Feelings of loss are common among people in your situation."
    2. "Losing the kidney doesn't mean you're losing everything."
    3. "Tell me more about what you feel you're losing."
    4. "Let's talk about the ways loss of the kidney can be treated."

24. Which of these medications, if taken by Ms. Kelly, is likely to contribute to her altered mood?

    1. Calcium acetate (PhosLo).
    2. Prednisone (Deltasone).
    3. Epoetin alfa (Epogen).
    4. Sevelamer carbonate (Renvela)

* * *

Questions 25 to 30 are individual items.

---

25. Which of the following factors affects the removal of toxins during hemodialysis?

    1. The lower the dialysate temperature, the greater the solute removal.
    2. The smaller the molecular weight, the less the solute removal.
    3. The lower the concentration gradient, the higher the removal of solutes.
    4. The more permeable the membrane, the greater the removal of solutes.

26. When providing education to a new 48-year-old patient, the nurse should remember that

    1. adults have a significant decline in learning abilities after the age of 40.
    2. selective perception prevents incorporation of new information.
    3. organized information is more easily perceived and processed.
    4. abstract concepts are more easily learned than technical information.

27. A 76-year-old male patient who has type 2 diabetes mellitus is being sent for a coronary angiogram. Because of his age, diabetes, and the ordered procedure, the patient is at risk for

    1. an allergic reaction.
    2. acute kidney injury.
    3. microangiopathic disease
    4. a vasovagal response.

28. Patients who have CKD Stage 5 are at risk for which of these gastrointestinal conditions?

    1. Polyps.
    2. Giardiasis.
    3, Paralytic ileus.
    4. Bleeding ulcers.

29. The ***primary*** reason to use evidence-based practice for directing care is to

    1. achieve the best clinical outcomes.
    2. maximize critical thinking.
    3. standardize the use of resources.
    4. address unexpected problems.

30. The water provider has alerted the unit of its temporary plan to increase the concentration of disinfectant in the water source. To ensure patient safety, the staff in charge of the water system should increase the

    1. reverse osmosis rejection rate.
    2. permeate (product) water production.
    3. frequency of water testing.
    4. size of the carbon media.

* * *

CDN Certification Preparation Test Answers

Below, you will find the correct answer to each of the Preparation Test questions, as well as a rationale explaining the correct answer. Also indicated is the blueprint area that each question falls under. The references used in developing these questions are listed below:

- Bodin, S.M. (Ed.) (2022). *Contemporary Nephrology Nursing,* 4th ed. Pitman, NJ: ANNA.
- Counts, C.S. (Ed.) (2020). *Core Curriculum for Nephrology Nursing*. 7th ed. Pitman, NJ: ANNA.
- Daugirdas, J.T., Blake, P.G., & Ing, T.S. (2025). *Handbook of Dialysis*. 6th ed. Philadelphia, PA: Wolters Kluwer.
- ., Shields, K.M., Fox. K.L., & Leibrecht. C. (2027). *Pearson Nurse's Drug Guide 2027*. Hoboken, NJ: Pearson Education, Inc.
- Gilbert, S.J., *et al*. (2023). *NKF's Primer on Kidney Diseases*, 8th ed. Philadelphia: Elsevier and National Kidney Foundation.
- Gomez, N. (Ed.). (2022). *Nephrology Nursing Scope and Standards of Practice*. 9th ed. Pitman, NJ: ANNA.
- Kallenbach, J. Z. (2026). *Review of Hemodialysis for Nurses and Dialysis Personnel*. 11th ed. St. Louis, MO: Elsevier.
- Centers for Medicare & Medicaid Services. Conditions for Coverage. www.cms.gov
- Centers for Disease Control and Prevention. www.cdc.gov
- National Kidney Foundation. KDOQI Clinical Hemodialysis Practice Guidelines. www.kidney.org

1. **Answer:** 3
   Blueprint Area: A. Chronic Hemodialysis Unit (ESRD) - Physical/Technical
   The hydrostatic or hydraulic pressure has the most influence on fluid removal during hemodialysis. This is the pressure that a liquid exerts against the wall of its container. In ultrafiltration, the blood circuit exerts positive pressure against the membrane while negative pressure is exerted from the dialysate side.

2. **Answer:** 1
   Blueprint Area: A. Chronic Hemodialysis Unit (ESRD) - Physical/Technical
   The classic symptoms of an air embolism include chest pain or tightness, dyspnea, and cough.

3. **Answer:** 4
   Blueprint Area: A. Chronic Hemodialysis Unit (ESRD) - Medications
   Sodium polystyrene sulfonate (Kayexalate) is used for the treatment of hyperkalemia. It removes potassium from the body by exchanging sodium for potassium, primarily in the large intestine. Calcium gluconate protects the heart from the effects of potassium does not lower total body potassium.

4. **Answer:** 4
   Blueprint Area: D. Water for Dialysis – Pathology/Complications
   Long term exposure to low levels of endotoxins that emanate from gram negative bacteria may cause chronic inflammatory disease in patients. Signs may include resistance to ESAs.

5. **Answer:** 1
   Blueprint Area: A. Chronic Hemodialysis Unit (ESRD)- Physical/Technical
   Auscultation is performed prior to a dialysis treatment to document the patency of the vascular access.

6. **Answer:** 3
   Blueprint Area: B. Concepts of Kidney Disease in Adults - Infection Control
   Adherence to hand hygiene guidelines is essential for providing safe patient care. The most common method of pathogen transfer from patient to patient or from staff to patient is by hands. Hand hygiene reduces the risk of transferring contaminants from hands to other individuals, to other areas of the body, or to other surfaces that another health care worker may later contact.

7. **Answer**: 2
   Blueprint Area: B. Concepts of Kidney Disease in Adults - Collaboration/Administration
   Discussing end-of-life care and/or palliative care decisions with patients is an important role of the dialysis nurse. If the nurse is not comfortable in this role, it is important to find somebody else on the staff to fill this role. Often, a social worker has skills in this area and can become a role model for nurses through collaboration.

8. **Answer:** 1
Blueprint Area: A. Chronic Hemodialysis Unit (ESRD) - Medication
The active substance in a phosphoric binder attaches to phosphorus when present. Phosphorus binders are most effective when given with meals when the phosphorus in the food is physically available.

9. **Answer:** 3
Blueprint Area: A. Chronic Hemodialysis Unit (ESRD) - Teaching/Learning
Food preparation affects the potassium level. The potassium concentrates in dried fruit as the water is removed, leaving very high levels of potassium in a single serving of fruit.

10. **Answer:** 1
Blueprint Area: A. Chronic Hemodialysis Unit (ESRD) - Collaboration/Administration
Research utilization is applying knowledge gained from research in a clinical situation.

11. **Answer:** 4
Blueprint Area: A. Chronic Hemodialysis Unit (ESRD) - Physical/Technical
If the patient's target or "dry" weight does not reflect the patient's euvolemic state, the patient will likely become hypotensive as the intravascular volume falls and can no longer support the blood pressure.

12. **Answer:** 4
Blueprint Area: A. Chronic Hemodialysis Unit (ESRD) - Medication
Heparin has a half-life of 90 minutes. The other options are all incorrect.

13. **Answer: 1**
Blueprint Area: A. Chronic Hemodialysis Unit (ESRD) - Physical/Technical
Whenever a pump is used to propel blood through the extracorporeal circuit, some degree of negative pressure is created at the intake site. Air may be sucked into the line at connections that are not absolutely tight, through needle punctures, venous needle displacement, or breaks in the tubing. If the quantity is sufficient, air may pass the venous bubble trap and cause a massive air embolism in the patient.

14. **Answer: 2**
Blueprint Area: B. Concepts of Kidney Disease in Adults - Infection Control
To prevent catheter-related infection, it is most important to use scrupulous aseptic technique when starting or ending dialysis.

15. **Answer: 3**
Blueprint Area: A. Chronic Hemodialysis Unit (ESRD) - Collaboration/Administration
Patients can best control their phosphorus levels by following a reduced phosphorus diet. Foods higher in phosphorus include dairy products, meat, fish, processed foods, nuts, peanuts and other legumes, chocolate, and colas.

16. **Answer: 4**
Blueprint Area: B. Concepts of Kidney Disease in Adults - Infection Control
A positive HBsAg is indicative of active hepatitis B infection.

17. **Answer: 3**
Blueprint Area: B. Concepts of Kidney Disease in Adults - Interventions
A healthy exit site is characterized by lack of neck or facial edema. All the other options are signs of infection or cuff extrusion.

18. **Answer: 4**
Blueprint Area: A. Chronic Hemodialysis Unit (ESRD) - Interventions
Initially, the nurse should try to determine the underlying cause of the patient's poor glucose control. After determining possible causes, the nurse can then determine which intervention(s) to use.

19. **Answer: 2**
Blueprint Area: A. Chronic Hemodialysis Unit (ESRD) - Physical/Technical
Although AV fistulas generally have far more advantages over AV grafts, it is true that grafts have the advantage of being easier to cannulate than fistulas. They also can be cannulated more quickly, since they do not require much time to mature.

20. **Answer: 2**
Blueprint Area: C. Chronic Hemodialysis Unit (AKI, DGF) - Teaching/Learning
In this situation, directly observing the behavior that was taught is the most accurate and appropriate method to evaluate psychomotor skills. All of the other answers refer to indirect measurements of successful learning and are not as effective.

21. **Answer: 1**
Blueprint Area: B. Concepts of Kidney Disease in Adults - Medications
Aminoglycosides can cause acute kidney injury through direct tubular injury. They must be avoided in patients who have DGF.

22. **Answer: 1**
Blueprint Area: C. Chronic Hemodialysis Unit (AKI, DGF) - Pathology/Complications
Acute tubular necrosis is the ***most*** common cause of DGF.

23. **Answer: 3**
Blueprint Area: C. Chronic Hemodialysis Unit (AKI, DGF) - Collaboration/Administration
Patients with delayed graft function need emotional support. Only option 3 allows the patient to express her feelings about fear of losing the graft.

24. **Answer: 2**
Blueprint Area: C. Chronic Hemodialysis Unit (AKI, DGF) - Collaboration/Administration
A side effect of prednisone is disturbance in mood, which can range from euphoria to depression. This is especially true in individuals who have a previous history of psychiatric issues.

25. **Answer: 4**
Blueprint Area: A. Chronic Hemodialysis Unit (ESRD) - Physical/Technical
Diffusion in hemodialysis occurs across the semi-permeable membrane that separates the blood compartment from the dialysate compartment. A semipermeable membrane allows passage of some molecules while restricting or preventing the transit of others. Therefore, the more permeable the membrane, the greater the removal of solutes.

26. **Answer: 3**
Blueprint Area: B. Concepts of Kidney Disease in Adults – Teaching/Learning
By presenting information in an organized fashion, learning is facilitated.

27. **Answer: 2**
Blueprint Area: B. Concepts of Kidney Disease in Adults - Pathology/Complications
The nurse should recognize that a patient with these characteristics is at increased risk for acute kidney injury when undergoing angiography.

28. **Answer: 4**
Blueprint Area: B. Concepts of Kidney Disease in Adults - Pathology/Complications
Gastrointestinal bleeding is a result of irritation of the gastric mucosa resulting from the uremic environment and from capillary fragility as urea in the GI tract breaks down, releasing the irritant ammonia.

29. **Answer: 1**
Blueprint Area: B. Concepts of Kidney Disease in Adults – Collaboration/Administration
Evidence-based practice is a powerful tool to help achieve excellent clinical outcomes.

30. **Answer: 3**
Blueprint Area: D. Water for Dialysis - Physical/Technical
When changes such as increasing the disinfectant concentration are made by the water provider, the facility must increase the frequency of water testing to assure patient safety.