CCHT

Certified Clinical Hemodialysis Technician

# Certification Preparation Guide

Scan to upload or share

nncc®

Nephrology Nursing Certification Commission

# CCHT 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 effectively will provide the opportunity for certification at various levels of education, experience, and clinical practice within the specialty of nephrology.

**Commission**

NNCC was established in 1987 to develop and implement certification examinations for nephrology nursing. NNCC is a national, separately incorporated, and 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 clinical 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 nurses and technicians.

**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 granted for the CCHT examination in November 2016.

### ICE and NCCA Accreditation

NNCC is a long-time member of the Institute for Credentialing Excellence (ICE), a non-profit professional membership association dedicated to providing educational, networking, and advocacy resources for the credentialing community. ICE is a leading developer of standards for both certification and certificate programs and is both a provider of and a clearing house for information on trends in certification, test development and delivery, assessment-based certificate programs, and other information relevant to the credentialing community.

To help ensure the health, welfare, and safety of the public, ICE created its accrediting body, the National Commission for Certifying Agencies (NCCA) in 1987. Certification programs (organizations that assess professional competence) that receive NCCA accreditation demonstrate compliance with its *Standards for the Accreditation of Certification Programs*, which were the first standards for professional certification programs developed by the industry. NCCA accreditation was granted for the CCHT examination in December 2015.

### 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, Director of Certification Services, and Certification Specialists. The management firm is Anthony J. Jannetti, Inc. in Pitman, New Jersey.

### Examination Board

The Clinical/Technical Examination Board is made up of representatives from the CCHT and CCHT-A Test Committees. The purpose of the Exam Board is to establish, review, and update eligibility criteria relevant to certification. 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 job analysis role delineation survey tool and data analysis, updates to the examination blueprint, and completes audits of certification and recertification applications for quality assurance.

### CCHT Test Committee

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

### CMS Conditions for Coverage

In 2008 the Centers for Medicare and Medicaid Services (CMS) mandated that hemodialysis technicians providing direct patient care in dialysis clinics must be certified under a state certification program or a nationally recognized certification program, such as the CCHT, within 18 months of employment. Technicians who are not certified after 18 months will not be permitted to continue working as a hemodialysis technician until the credential is earned.

## 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 technicians. 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 CCHT examination is based on a job analysis survey of technicians that identifies the key tasks/activities performed by entry-level hemodialysis technicians. A national task force is brought together to plan the survey content. This task force includes technicians, as well as clinical educators and clinical managers of technicians. Following data collection, the task force reviews the survey results and makes recommendations for the CCHT test specifications. Most importantly, a job analysis is performed every five years to be sure the test reflects current practice and is kept up to date.

The group that oversees CCHT test development is the NNCC Clinical/Technical Examination Board, which is made up of technicians and nurses who work with technicians. There is also a CCHT Test Committee that writes the actual test questions. Item writers, who are certified technicians from a variety of geographic and practice settings, write test questions to meet the CCHT blueprint requirements. Members of both the Clinical/Technical Board and the Test Committee are considered "content experts" concerning the knowledge and skills needed by hemodialysis technicians for safe practice.

Each question on the test can be linked directly to the tasks/activities in the job 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 *Core Curriculum for the Dialysis Technician*, the regulations in the CMS *Conditions for Coverage for End-Stage Renal Disease Facilities,* and other references.

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 technicians who serve as subject matter experts (SMEs). Both experienced and newly certified technicians 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. A score of about 74% correct is required to pass the CCHT 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 knowledge and competence in a specialty and is an essential component of specialty nursing practice. 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. Certification is a requirement by the Centers for Medicare and Medicaid Services (CMS) for dialysis technicians since 2008. Certified technicians 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.

**Am I ready to earn the CCHT?**

To be eligible to sit for the CCHT Exam, you must:

- Have a minimum of a high school diploma or its equivalent, General Educational Development (GED), and submit a copy of a government-approved high school diploma.
- Have successfully completed a training program for clinical hemodialysis technicians that included both classroom instruction and supervised clinical experience.*
- Provide the number of hours spent in clinical, hands-on patient care experience obtained as part of the training program and the facility name where the clinical training occurred.*

**AND**

- Provide the name of your employer, if you have held a position as a clinical hemodialysis technician within the last eighteen (18) months.*
- If unemployed for (18) months or longer, you must provide proof of current retraining and hands-on experience.*

* ***Designated signatures are required***

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

**How do I apply for the CCHT 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. Attach a copy of your high school diploma or documentation to verify your General Educational Development (GED), and proof of name change, if applicable. **The high school diploma or GED must be from a government-approved program, e.g., recognized by a state board of education.**
3. Diplomas NOT issued within the 50 United States or its territories must be accompanied by a credential evaluation report showing U.S. equivalence.
4. Mail the application form, a copy of your high school diploma, with the appropriate payment, to C-NET. (No personal checks will be accepted.)

**How will I know my application was received?**

Within a four (4) week processing period, you will receive either 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.)

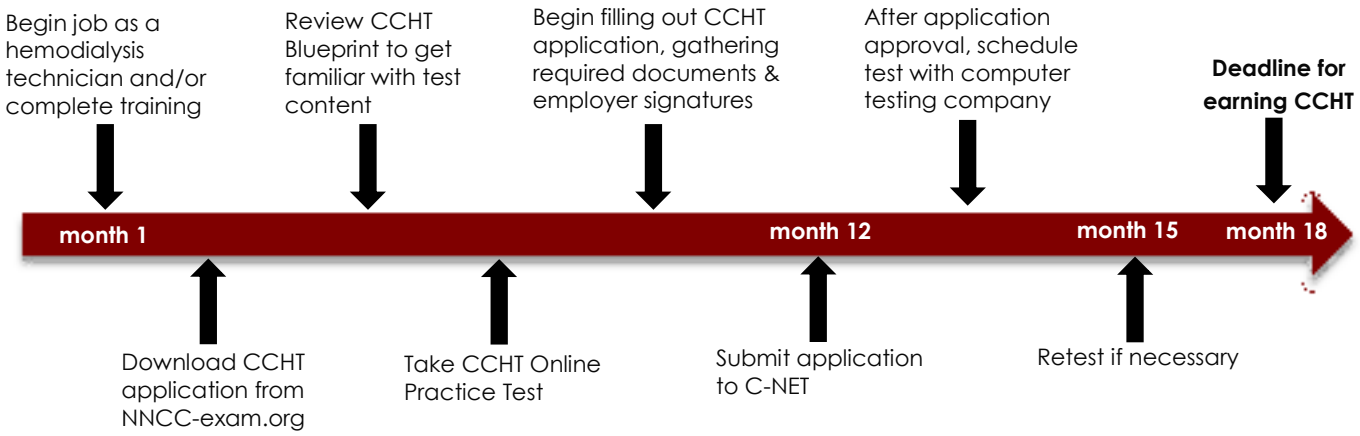
**What if I need to test right away?**

Expedited review, or *FAST TRACK,* is a service for applicants who need to test right away. Instead of your application being processed in the order in which it was received, C-NET pulls your application to the front of the line for immediate processing. *FAST TRACK* exam permits will be issued within 1 to 3 business days from the time the application is received by C-NET. Examination permits are issued only to applicants with completed, approved applications. (Note: there is an additional fee for *FAST TRACK*.)

**What study resources are available?**

- The test blueprint and practice questions included in this booklet
- References used by the CCHT item writers, which include current editions of:
  - Core Curriculum for the Dialysis Technician.
  - Kallenbach's Review of Hemodialysis for Nurses and Dialysis Personnel.
  - 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

**What is the recommended timeline for getting certified?**




**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 "shortcut" methods for test preparation are specifically avoided when creating this exam. NNCC tests 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 clinical 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 can be found 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 be given 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 NNCC Certified Directory. If you were unsuccessful on the exam, the report will reflect your score and a breakdown of the test subareas – the Dialysis Practice Areas on the CCHT 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?**

There is no limit to the number of times you can take the exam. If you are unsuccessful on the exam, you may reapply by mailing in a new application. You can avoid the paperwork and 3-4 week processing time by registering online at www.cnetnurse.com and applying through the expedited *FAST TRACK* process, as long as C-NET has one complete paper application on file for you for the current calendar year. Once you apply through the *FAST TRACK* process, you will be processed within 3 business days. (Note: there is an additional fee for *FAST TRACK*.) See page 3, *"What if I need to test right away?"*

# 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 (e.g., photo ID, directions to testing center, etc.).
- 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

**C-NET:**

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 recertification (number of contact hours or dates), may lead to permanent loss of CCHT 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 members 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 CCHT Examination

The CCHT examination is designed to test the knowledge needed to provide safe care to patients who are receiving hemodialysis treatments. There are two dimensions in the test blueprint, Dialysis Practice Areas and Cognitive Levels. Dialysis Practice Areas include four sections: Clinical, Technical, Environment, and Role Responsibilities. Specific technician activities are tested in each dialysis area. There are also three Cognitive Levels: Knowledge, Comprehension, and Application. These are described in this booklet on page 7, "*Types of Questions on the CCHT Examination.*"

Each question on the test fits into one Dialysis Practice Area and one Cognitive Level. This is shown on the blueprint grid. The entire test is mapped out in this manner to guide the item writers when they are developing the test.

### I. Clinical (48-52%)

Questions in the Clinical area deal with patient care before, during, and after a dialysis treatment. Sometimes a patient case is described and several questions follow, such as the case of Ivan Jackson in the Prep Test at the end of this booklet. Other questions are individual items that stand alone. The Clinical area is the largest part of the test, making up 50% of the test content. Examples of the kinds of technician activities tested in the Clinical area include:

1. Using aseptic technique for dialysis procedures.
2. Evaluating patient's access pre-dialysis.
3. Cannulating patient's access.
4. Monitoring patient during dialysis treatment, e.g., vital signs.
5. Discontinuing patient's dialysis treatment with arteriovenous fistula or graft.

### II. Technical (21-25%)

Questions in this area deal with principles of water treatment, components of the extracorporeal circuit, and actions to take when alarms sound or machine-related problems occur. The Technical area is the second largest part of the test, making up 23% of the test content. Examples of the kinds of technician activities tested in the Technical area include:

1. Participating in monitoring the water treatment system.
2. Checking conductivity and pH of dialysate solution with an independent device.
3. Mixing concentrates from powder (bicarbonate, electrolyte solution).
4. Processing patient's laboratory samples.
5. Identifying/reporting/documenting an adverse event, e.g., equipment set-up problems.

### III. Environment (13-17%)

Questions in this area deal with infection control and other safety issues in the dialysis setting. These issues include chemical spills, transfer of patients from wheelchair to treatment chair, using correct body mechanics to avoid injury. The Environment area makes up 15% of the test content. Examples of the kinds of technician activities tested in the Environment area include:

1. Using dialysis/standard precautions.
2. Using chemicals to disinfect environmental surfaces.
3. Following infection control precautions, e.g., isolation, vaccinations, supplies.
4. Using proper body mechanics.
5. Maintaining an unobstructed emergency exit pathway.

### IV. Role Responsibilities (10-14%)

Questions in this area deal with roles of various staff members in the dialysis facility, as well as communication skills. These skills include interactions between technicians and patients that maintain professional boundaries, as well as respect the patients' privacy, dignity, and confidentiality. The Role Responsibilities area makes up 12% of the test content. Examples of the kinds of technician activities tested in the Role Responsibilities area include:

1. Maintaining patient's confidentiality.
2. Maintaining appropriate caregiver/patient relationships.
3. Using appropriate communication techniques/skills with patients (verbal/nonverbal).
4. Identifying roles and responsibilities of care-team members.
5. Communicating patient's dialysis treatment outcomes to appropriate personnel.

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

**Type of Questions on the CCHT Examination**

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

### A. Recall of Knowledge (8-13%)

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

1. A shortage of oxygen-carrying red blood cells is called
    1. uremia.
    2. anemia. ✓
    3. hypoxemia.
    4. leukopenia.

### B. Comprehension (23-28%)

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

2. The technician would expect a patient's anemia to be monitored by which of these laboratory tests?
    1. Calcium.
    2. Phosphorous.
    3. Hemoglobin. ✓
    4. Albumin.

### C. Application of Knowledge (63-67%)

Test questions at the application level ask the technician to apply previously learned facts and concepts to new situations and to solve problems. These questions present an on-the-job situation and ask what problem is occurring or what action to take in the situation.

3. A patient's laboratory results reveal a significant drop in hemoglobin. Which medication would the technician expect the nurse to administer to the patient during dialysis treatments?
    1. Calcitriol (Calcijex).
    2. Doxercalciferol (Hectoral).
    3. Vancomycin (Vancocin).
    4. Erythropoietin (Epogen). ✓

**Distribution of 150 Question in the CCHT Exam**

*(Accepted April 2018, Effective 2019)*

| Cognitive Level / Dialysis Practice Area | A. Knowledge | B. Comprehension | C. Application | Total |
|---|---|---|---|---|
| I. Clinical | 6-8 | 18-20 | 48-50 | 71-78 (48-52%) |
| II. Technical | 4-5 | 8-10 | 20-23 | 32-38 (21-25%) |
| III. Environment | 1-3 | 6-8 | 12-14 | 19-25 (13-17%) |
| IV. Role | 1-3 | 3-4 | 10-14 | 15-20 (10-14%) |
| **Total** | 12-19 (8-13%) | 35-42 (23-28%) | 90-101 (63-67%) | **150** |

# CCHT Certification Preparation Test

***This Preparation Test has been developed to give you experience with the type of questions that are on the CCHT examination. None of these questions will appear on the actual exam. On page 12, the correct answers and rationales for each of the questions are given. Compare your answers with the correct answers.***

1. Which of the following practices helps to build a patient's immunity to hepatitis B?

    1. Isolation.
    2. Decontamination.
    3. Vaccination.
    4. Sequestration.

2. A patient asks the technician, "What does uremia mean?" The technician's response should be based on the understanding that uremia is

    1. a decrease in the number of red blood cells.
    2. an increase in the serum potassium level.
    3. a decrease in urine output.
    4. an increase of wastes in the blood.

3. A central venous catheter may be used as a vascular access when a

    1. patient has a limb amputation.
    2. patient has inadequate blood vessels in the limbs.
    3. patient's dialysis adequacy needs to be reduced.
    4. patient has an allergy to expanded polytetrafluoroethylene (Gore-Tex).

4. Before a dialysis treatment, the patient tells the technician, "Yesterday, I felt terrible and vomited up some blood. I feel much better today." The technician can expect the patient's treatment will be modified by

    1. decreasing the heparin dose.
    2. decreasing the erythropoietin (EPO) dose.
    3. increasing the dialysis flow rate.
    4. increasing the ultrafiltration rate.

5. The technician is unsure which one of a patient's arteriovenous (AV) graft's anastomoses is arterial and which one is venous. In order to differentiate between the two, the technician should

    1. cannulate both sides of the graft and observe the color of the blood.
    2. apply a tourniquet to the arm and feel for venous resistance.
    3. compress the graft in the middle and palpate each side.
    4. determine the anatomical structure of the area and palpate the radial pulse.

6. At the end of a patient's treatment, which of these findings, if observed by the technician, should be reported to the nurse?

    1. A pulse rate of 55 beats per minute.
    2. Temperature of 98°F (36.3°C).
    3. A weight loss of 6.6 lb (3 kg).
    4. Blood pressure of 122/68 mm Hg.

7. A patient asks the dialysis technician, "Why am I getting vitamin D therapy?" Which of these responses would be accurate?

    1. "Vitamin D prevents infection."
    2. "Vitamin D protects nervous tissue."
    3. "Vitamin D is needed for healthy bones."
    4. "Vitamin D stimulates production of red blood cells."

8. Why are dialysis patients more likely to become infected with germs like methicillin-resistant *Staphylococcus aureus* (MRSA)?

    1. Their diet is usually restricted in vitamin C.
    2. They usually have weak immune systems.
    3. Their kidneys cannot filter out toxins.
    4. They often have allergies to most antibiotics.

---

**Ivan Jackson, 63 years old, has been receiving in-center hemodialysis for three years. Mr. Jackson's pre-dialysis blood pressure is 143/92 mm Hg.**

---

9. The technician prepares and cannulates Mr. Jackson's arteriovenous (AV) fistula. An AV fistula is an example of

    1. a peripheral access.
    2. a central venous access.
    3. a temporary access.
    4. an artificial graft access.

10. Mr. Jackson says to the technician, "The doctor says that I have mineral bone disorder. What does that mean?" The technician is not sure about the answer. Which of these responses by the technician would be appropriate?

    1. "It's not a problem that will affect your quality of life."
    2. "It's pretty complicated. I'll ask the nurse to explain it to you."
    3. "It's nothing to worry about. I think it involves your thyroid gland."
    4. "It's more important right now for you to focus on your fluid retention."

11. The technician notices that Mr. Jackson has a notebook in which he records results of his blood tests, weights, and medications. The technician should have which of these understandings about Mr. Jackson's recordkeeping?

    1. Documentation of patient data is the responsibility of dialysis staff members, not patients.
    2. Compulsive, repetitive behaviors are a patient's attempt to control anxiety.
    3. Patients who feel insecure in a dialysis facility keep journals in case legal action is required.
    4. Patients who are involved with self-managing their care feel empowered.

12. During the last hour of his hemodialysis treatment, Mr. Jackson's blood pressure measures 82/40 mm Hg. After changing the fluid removal rate, the technician should take which of the following actions?

    1. Stop the blood pump.
    2. Increase his dialysate flow rate.
    3. Place him in Trendelenburg position.
    4. Administer five 4-gram glucose tablets.

* * *

---

**Questions 13-15 are individual items.**

---

13. Legally, if a treatment was performed but not charted in the patient's record, it was

    1. insignificant.
    2. confidential.
    3. only partially billable.
    4. not done.

14. The ***most*** common cause of a low conductivity alarm during hemodialysis is

    1. an exhausted concentrate supply.
    2. depleted salt in the brine tank.
    3. residual sterilant.
    4. a clotted dialyzer.

15. A patient who has diabetes mellitus should be observed for signs of low blood sugar, which include

    1. fever and chills.
    2. anxiety and confusion.
    3. thirst and weight gain.
    4. low blood pressure and heart rate.

---

**Linda Chase, 65 years old, undergoes hemodialysis treatments for four hours, three times per week. Her target weight has been established at 154 lb (70 kg).**

---

16. Mrs. Chase's weight before her hemodialysis treatment today is 158.4 lb (72 kg). The technician determines that the fluid to be removed during today's treatment should be how many mL?

    1. 4,000
    2. 2,000
    3. 400
    4. 200

17. At her target post-dialysis weight of 154 lb (70 kg), Mrs. Chase is likely to be

    1. edematous.
    2. dehydrated.
    3. normotensive.
    4. hypotensive.

18. Mrs. Chase begins her hemodialysis treatment. The water supply to the water treatment system is called

    1. ground water.
    2. carbonated water.
    3. desalinated water.
    4. feed water.

19. Mrs. Chase overhears a nurse discussing a QAPI (Quality Assessment and Performance Improvement) meeting and asks, "What does QAPI mean?" The technician should understand that the ***primary*** goal of QAPI in a dialysis facility is to

    1. achieve better patient outcomes.
    2. promote hierarchical management.
    3. improve the ratio of staff to patients.
    4. increase fragmentation of care.

20. After her hemodialysis treatment, Mrs. Chase's standing blood pressure is 90/58 mm Hg. She complains of "feeling dizzy" but insists that she can walk to the scale. The technician's ***initial*** response should be to

    1. assist her to the scale.
    2. instruct her to sit down.
    3. inform the charge nurse.
    4. administer normal saline.

21. At Mrs. Chase's next treatment, the technician suspects that her access is clotted. The technician's suspicion would be true if

    1. there was redness over the area.
    2. there was swelling over the area.
    3. a bruit was absent.
    4. a thrill was present.

* * *

---

**Questions 22-30 are individual items.**

---

22. A patient asks the technician why a high venous pressure alarm is sounding. The technician should explain that a high venous pressure alarm might indicate a

    1. decrease in the blood flow rate.
    2. kink in the arterial blood tubing.
    3. separation of venous blood tubing.
    4. clotting of blood in the access.

23. In hemodialysis, the term "reuse" refers to the cleaning and disinfecting of

    1. dialyzers.
    2. bloodlines.
    3. catheters.
    4. needles.

24. A 30-year-old male, new to hemodialysis, is scheduled for treatments at 6:00 AM, three times a week. He tells the technician, "I've walked a mile every morning for years. I guess I'll have to give that up now." Which of these responses by the technician would be ***best***?

    1. Suggest that he limit his walking to days when he has no dialysis treatment scheduled.
    2. Explore his willingness to participate in a physical therapy program.
    3. Suggest that he substitute a nonphysical activity, such as reading, for walking,
    4. Explore changing his dialysis schedule to hours that would let him continue his usual routine.

25. A hemodialysis patient tests positive for hepatitis B surface antigen. The technician should take which of these actions to prevent the spread of hepatitis B?

    1. After dialyzing the patient in the main treatment area, rinse the machine.
    2. Ask the nurse to vaccinate the patient.
    3. Require the patient to wear a mask during hemodialysis treatments.
    4. Dialyze the patient using a dedicated machine in an assigned area.

26. Which of these parts of the water treatment system removes endotoxins?

    1. Ultrafilter.
    2. Resin bed.
    3. Deionization tank.
    4. Softener.

27. A patient asks the technician, "Why do I need ultrafiltration profiling?" The technician's response should be based on the understanding that the purpose of ultrafiltration profiling is to

    1. minimize clotting.
    2. minimize hypotension.
    3. maximize flow rate.
    4. maximize clearance.

28. Which of the following occurs when the dialysis machine alarms and goes into bypass?

    1. Arterial pressure increases after the dialyzer.
    2. Heparin is not administered.
    3. Dialysate stops flowing through the dialyzer.
    4. Ultrafiltration does not occur.

29. Care providers ***must*** wash their hands with soap and water instead of using an alcohol-based hand rub in which of these situations?

    1. At the end of each shift.
    2. If they have latex allergy.
    3. If they have weeping dermatitis.
    4. When their hands are visibly soiled.

30. The technician is asked to move a heavy box of supplies to the treatment unit. The box is on the floor of the supply room. When handling the box, the technician should

    1. bend at the waist.
    2. hold the box close to the body.
    3. lift the box using the back muscles.
    4. stand with the feet together.

# CCHT 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, and a reference where the correct answer can be found. The references used are:

- Medical Education Institute, Inc. (2018). *Core Curriculum for the Dialysis Technician: A Comprehensive Review of Hemodialysis* (6th ed.). Madison, WI: MEI.
- Kallenbach, J. (2016). *Review of Hemodialysis for Nurses and Dialysis Personnel* (9th ed.). St. Louis, MO: Mosby.

1. **Answer:** 3
   **Blueprint Area:** Clinical/Knowledge
   Vaccination with hepatitis B vaccine helps to build immunity by stimulating the patient's immune system to create antibodies to hepatitis B.
   *Review of Hemodialysis for Nurses and Dialysis Personnel, p. 122; Core Curriculum, p. 215*

2. **Answer:** 4
   **Blueprint Area:** Clinical/Comprehension
   Uremia is a build-up of wastes in the blood that would normally be excreted in the urine. It occurs in the last stage of kidney failure or in patients who are not receiving adequate dialysis.
   *Core Curriculum, p. 29*

3. **Answer:** 2
   **Blueprint Area:** Clinical/Comprehension
   In hemodialysis, a catheter can be placed in a large, central vein for temporary use during acute illness or when a patient's permanent access (fistula or graft) is maturing. A catheter may be used as a permanent dialysis access if the blood vessels in the patient's limbs are not able to support an arteriovenous (AV) fistula or graft. Patients who have central venous catheters are at increased risk for bloodstream infections.
   *Review of Hemodialysis for Nurses and Dialysis Personnel, p. 157.*

4. **Answer:** 1
   **Blueprint Area:** Clinical/Application
   Vomiting of blood indicates gastrointestinal bleeding. The technician should notify the nurse to assess the patient and determine the cause of the bleeding. The technician would expect that the heparin--an anticoagulant (blood thinner)--would be decreased in dose or not given at all.
   *Core Curriculum, p. 36*

5. **Answer:** 3
   **Blueprint Area:** Clinical/Application
   The technician compresses the graft in the middle and feels the pulse (or thrill) on both sides. The stronger pulse will be on the arterial side. The pulse or thrill will be faint or not palpable at the venous end.
   *Core Curriculum, p. 174*

6. **Answer:** 1
   **Blueprint Area:** Clinical/Application
   A pulse rate of 55 beats per minute is outside the normal range of 60 to 100 beats per minute. Therefore, it should be reported to the nurse.
   *Core Curriculum, p. 230*

7. **Answer:** 3
   **Blueprint Area:** Clinical/Application
   Vitamin D controls the balance of calcium and phosphorus that is required for bone metabolism.
   *Core Curriculum, pp. 33-34*

8. **Answer:** 2
   **Blueprint Area:** Environment/Comprehension
   Dialysis patients have weakened immune systems, which makes them more likely to become infected with pathogenic organisms, such as MRSA.
   *Core Curriculum, p. 216*

9. **Answer:** 1
**Blueprint Area:** Clinical/Knowledge
The definition of peripheral is "away from the center of the body." The AVF is most commonly placed in the patient's upper extremity, from the distal (away from the body) lower arm to proximal (closer to the body) upper arm. The lower extremities may also be used.
*Core Curriculum, p. 353 - definition of "peripheral"*

10. **Answer:** 2
**Blueprint Area:** Role/Application
If a technician does not know the answer to a patient's question, the patient should be referred to the right member of the care team, the nurse in this case. The other options do not address the patient's concern and/or give wrong information.
*Core Curriculum, pp. 66-67*

11. **Answer:** 4
**Blueprint Area:** Role/Application
The dialysis technician should encourage the patient to actively participate in care. This allows the patient to feel more in control. Self-management behaviors that encourage the patient to feel empowered include keeping a record of medications, weights, and laboratory test results.
*Core Curriculum, pp. 65-66*

12. **Answer:** 3
**Blueprint Area:** Clinical/Application
The Trendelenburg position involves raising the patient's feet higher than the heart and increasing blood flow to the head via gravity. Placing the patient in the Trendelenburg position, decreasing/discontinuing fluid removal, and giving the patient normal saline are interventions used to increase the patient's blood pressure.
*Review of Hemodialysis for Nurses and Dialysis Personnel, pp. 169-170.*

13. **Answer:** 4
**Blueprint Area:** Role/Comprehension
Legally, if something was not charted (documented), it was not done.
*Core Curriculum, p. 223*

14. **Answer:** 1
**Blueprint Area:** Technical/Comprehension
The conductivity alarm is designed to notify the clinician when the dialysate solution is not in the proper solute range. The most common cause of a low conductivity alarm is running out of either the acid or bicarbonate concentrate.
*Core Curriculum, p. 115*

15. **Answer:** 2
**Blueprint Area:** Clinical/Application
Low blood sugar (hypoglycemia) means below normal levels of sugar in the blood. In the patient with diabetes mellitus, this can cause hunger, confusion, anxiety, sleepiness, or dizziness. The treatment is a fast-acting carbohydrate, such as juice.
*Core Curriculum, p. 241, 348*

16. **Answer:** 2
**Blueprint Area:** Clinical/Application
The conversion for desired weight loss is1 kg = 1,000 mL. The ultrafiltration goal for today's treatment will be 2,000 mL (2 kg).
*Core Curriculum, p. 235, see Table 8; Review of Hemodialysis for Nurses and Dialysis Personnel, p. 339, Box 27-1.*

17. **Answer:** 3
**Blueprint Area:** Clinical/Comprehension
The target post-dialysis weight or estimated dry weight is the patient's weight without excess fluid. When estimated dry weight is reached, there are no signs of fluid overload or dehydration and blood pressure is normal.
*Review of Hemodialysis for Nurses and Dialysis Personnel, p. 162*

18. **Answer:** 4
**Blueprint Area:** Technical/Comprehension
Feed water is the water that comes from outside of the dialysis center. Feed water must pass through all parts of a water treatment system before it is used for mixing concentrates and making dialysate.
*Core Curriculum, p. 343*

19. **Answer:** 1
**Blueprint Area:** Role/Application
Each dialysis facility must have a QAPI program as part of Medicare's Conditions for Coverage. This systematic approach includes improving safety outcomes and increasing patient satisfaction.
*Core Curriculum, p. 12*

20. **Answer:** 2
**Blueprint Area:** Clinical/Application
Hypotension, low blood pressure, occurs most often when too much fluid is removed during dialysis. Symptoms reported by the patient include muscle cramps, headache, feeling warm, dizzy or faint, and nausea. A patient with hypotension is at increased risk for falling. To prevent the patient from falling, the technician should ask the patient to sit down and place the patient in the Trendelenburg position. The Trendelenburg position (raising the feet higher than the heart) could help to improve the patient's blood pressure.
*Core Curriculum, p. 263*

21. **Answer:** 3
**Blueprint Area:** Clinical/Application
The arteriovenous fistula (AVF) is created surgically by connecting the patient's artery to a vein. This allows the high pressure arterial blood to flow into the vein, causing the vein to enlarge. The flow from the artery to the vein causes a whooshing sound known as a bruit. The absence of the bruit is a sign that the access is clotted.
*Core Curriculum, p. 182*

22. **Answer:** 4
**Blueprint Area:** Technical/Comprehension
A clotting access will cause an increase in venous pressure due to outflow obstruction. Resistance to flow can be caused by narrowing of the vessel (by stenosis or clotting) and results in high venous pressure.
*Core Curriculum, p. 127, see Table 8; Review of Hemodialysis for Nurses and Dialysis Personnel, p. 175*

23. **Answer:** 1
**Blueprint Area:** Environment/Knowledge
Many dialyzers are cleaned and disinfected to be used again by the same patient instead of being thrown away after one treatment. This is called "reuse."
*Core Curriculum, p. 135*

24. **Answer:** 4
**Blueprint Area:** Role/Application
Staying active in life is important for patients who require dialysis therapy. Walking is an excellent exercise that will contribute to the patient's physical and mental well-being. Patients new to dialysis need support and information so they can understand how they can help themselves live better while coordinating their treatment schedule.
*Core Curriculum, p. 65, 69*

25. **Answer:** 4
**Blueprint Area:** Environment/Application
Hepatitis B is a highly contagious virus. According to CMS regulations, patients who are positive for hepatitis B must be dialyzed in a dedicated area, on a separate machine, with separate supplies and equipment from other patients.
*Core Curriculum, p. 215*

26. **Answer:** 1
**Blueprint Area:** Technical/Knowledge
An ultrafilter is a fine membrane filter that removes very small particles. It is the most effective water treatment component for removing bacterial endotoxins.
*Core Curriculum, p. 292, 361*

27. **Answer:** 2
**Blueprint Area:** Technical/Application
Ultrafiltration profiling removes fluid from the patient's blood in a systematic pattern (typically removing more fluid in the first part of the hemodialysis treatment) designed to reduce hypotension. Hypotension episodes can be reduced while still accomplishing the ultrafiltration goal.
*Review of Hemodialysis for Nurses and Dialysis Personnel, pp. 87-88*

28. **Answer:** 3
**Blueprint Area:** Technical/Application
When the dialysis machine goes into bypass, the dialysate flow bypasses the dialyzer and goes directly to the drain. The dialysate in the dialyzer stops flowing. Bypass keeps unsafe dialysate from reaching the patient and causing harm.
*Core Curriculum, p. 111, 337*

29. **Answer:** 4
**Blueprint Area:** Environment/Application
According to the Centers for Disease Control and Prevention (CDC), alcohol-based hand rubs are not appropriate when hands are visibly dirty, contaminated, or soiled. Soap and water should be used.
*Core Curriculum, p. 212, see Table 2; Review of Hemodialysis for Nurses and Dialysis Personnel, p. 118*

30. **Answer:** 2
**Blueprint Area:** Environment/Application
Good body mechanics are necessary to avoid fatigue, muscle strain or injury. The proper way to lift objects is to stand with feet shoulder-width apart and bend from the hips and knees. The hands are placed around the object, holding it close to the body before lifting it. It is important to bend the knees, keep the back straight, and use arm and leg muscles to lift.
*Core Curriculum, pp. 220-221*

Nephrology Nursing Certification Commission

PO Box 56

Pitman, NJ 08071-0056

888-884-6622

www.nncc-exam.org