Certification Examinations in Clinical Nephrology Technology and Biomedical Nephology Technology

Candidate Handbook

2020

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This Handbook contains necessary information about the Certification Examinations in Clinical Nephrology Technology and Biomedical Nephrology Technology. Please retain it for future reference. Candidates are responsible for reading these instructions carefully. This Handbook is subject to change.

CONTACT INFORMATION

Professional Testing Corporation (PTC) www.ptcny.com (212) 356-0660	• Apply for examination • Obtain general application policy and procedure information • Obtain information about testing policies and procedures • Request Special Accommodations • Request Hand Score • Question about score reports • Miscellaneous inquiries
Prometric www.prometric.com/NNCO (800) 741-0934	• Schedule test appointment • Reschedule test appointment (within a testing period) • Cancel test appointment • Find directions to test site • Questions regarding testing sites and appointments
National Nephrology Certification Organization (NNCO) www.nnco-cert.org	• Core Curriculum • NANT Study Guide

ATTENTION CANDIDATES

This handbook contains necessary information about the NNCO Certification Examinations in Clinical Nephrology Technology and Biomedical Nephrology Technology. It is required reading for those applying and testing for the Examinations. All individuals applying for these examinations must comply with the policies, procedures, and deadlines in this Handbook and attest to this by signing the Candidate Attestation found on the application. Please retain this handbook for future reference. This handbook is subject to change. See www.ptcny.com for handbook updates.

CERTIFICATION

The National Nephrology Certification Organization (NNCO) endorses the concept of voluntary, periodic certification by examination for all individuals in the field of nephrology technology. Certification is one part of a process called credentialing. It focuses specifically on the individual and is an indication of current competence in a specialized area of practice. Certification in nephrology technology is highly valued and provides formal recognition in the profession of nephrology technology. In addition, NNCO certification meets the requirements mandated by the Centers for Medicare & Medicaid Services (CMS) that patient care technicians be certified.

PURPOSES OF CERTIFICATION

TO PROMOTE DELIVERY OF SAFE AND EFFECTIVE CARE IN NEPHROLOGY TECHNOLOGY PRACTICE THROUGH THE CERTIFICATION OF QUALIFIED CLINICAL AND BIOMEDICAL NEPHROLOGY TECHNOLOGY BY:

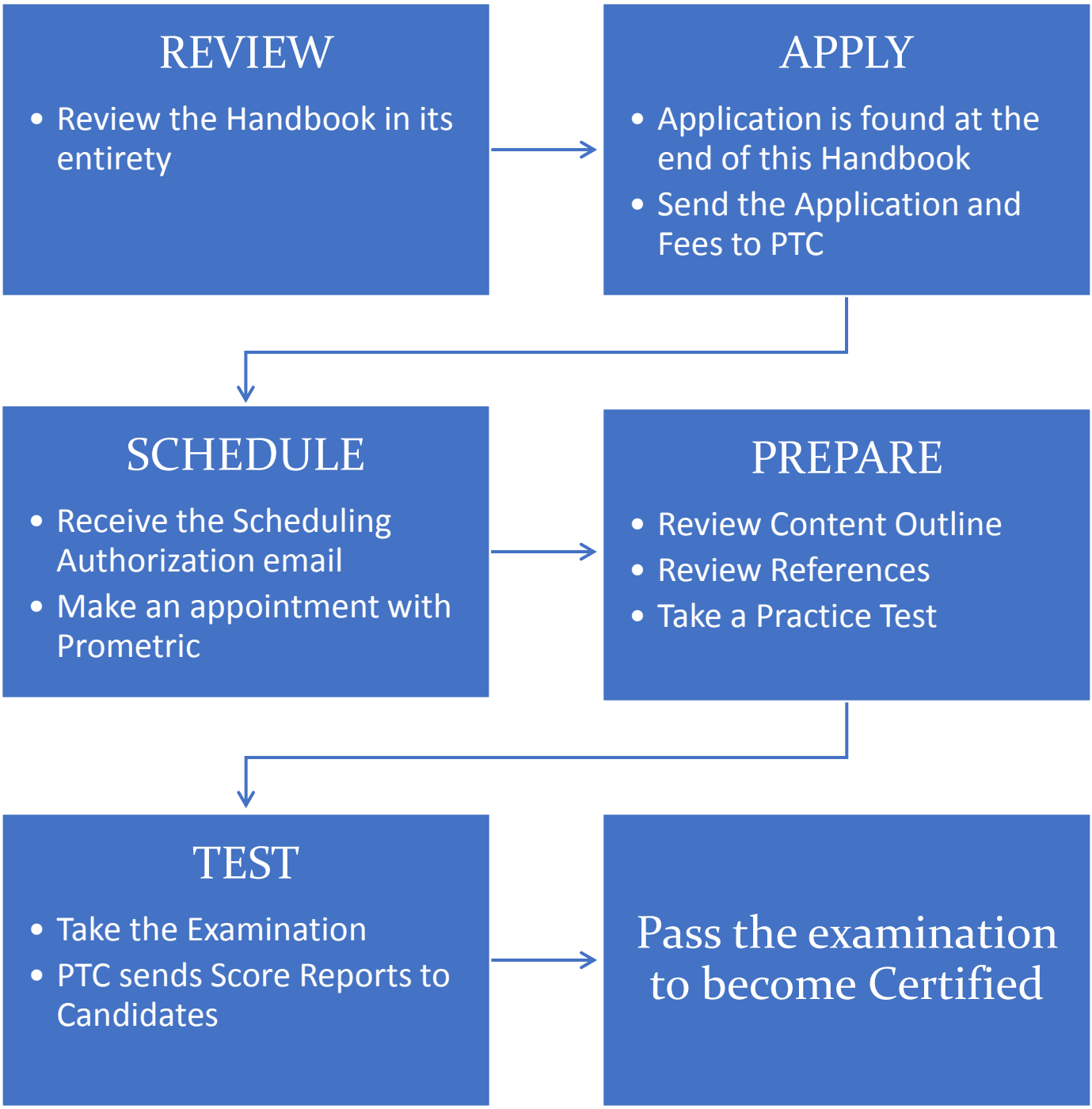
1. Recognizing formally those individuals who meet the eligibility requirements of the National Nephrology Certification Organization and pass the Certification Examination in Clinical Nephrology Technology or Biomedical Nephrology Technology.
2. Encouraging continued personal and professional growth in the practice of nephrology technology.
3. Establishing and measuring the level of knowledge required for the delivery of quality patient care.
4. Providing a standard of knowledge requisite for certification; thereby assisting the employer, state agencies, public, and members of the health professions in the assessment of nephrology technology.

ELIGIBILITY REQUIREMENTS

1. Have a minimum of a High School diploma or the equivalent OR four years of full-time experience in the field of nephrology technology.
2. Completion of a one-year nephrology technology training program* with clinical experience and/or completion of a combination nephrology technology training program of less than one year and work experience equivalent to 1 year.
3. Completion and filing of an Application for the Certification Examination in Nephrology Technology
4. Payment of required fee.

*** Clinical Nephrology Technician Candidates in Ohio please note:** A minimum of 6 months experience in dialysis care is required in addition to the completion of a nephrology technology training program of at least 6 months in order to take the examination. Dialysis care is defined as: performing and monitoring dialysis procedures, including initiating, monitoring, and discontinuing dialysis; drawing blood; administering medications when the administration is essential to the dialysis process; and responding to complications that arise during dialysis.

THE CERTIFICATION PROCESS



COMPLETION OF APPLICATION

PART I:
Complete or fill in as appropriate ALL information requested on the Application. Mark only one response unless otherwise indicated.

NOTE: The name you enter on your Application must match exactly the name listed on your government issued photo ID such as driver's license or passport. Do not use nicknames or abbreviations.

CANDIDATE INFORMATION: Starting at the top of the Application, print your name, address, phone number, and e-mail address in the appropriate row of empty boxes.

ELIGIBILITY AND BACKGROUND INFORMATION: All questions must be answered. Mark only one response unless otherwise indicated.

OPTIONAL INFORMATION: These questions are optional. The information requested is to assist in complying with equal opportunity guidelines and will be used only in statistical summaries. Such information will in no way affect your test results.

CANDIDATE SIGNATURE: When you have completed all required information, sign and date the Application in the space provided.

PART II:
Complete all information requested. Be sure to print your name on the line provided as you wish it to appear on your certificate, and to indicate the examination for which you are registering. Read the statement following CANDIDATE AFFIRMATION, sign on the line indicated for your signature, and enter the date.

Mail the Application with the appropriate fee (see FEES on page 6) and all required documentation to:

NNCO EXAMINATIONS
PROFESSIONAL TESTING CORPORATION
1350 Broadway, Suite 800
New York, New York 10018

NOTE: Submit Application at least one month prior to your preferred testing date.

EXAMINATION ADMINISTRATION AND SCHEDULING

The NNCO Certification Examinations in Clinical Nephrology Technology and Biomedical Nephrology Technology are administered on an ongoing basis, Monday through Saturday, excluding holidays, at computer-based testing facilities managed by Prometric.

Scheduling Examination Appointments

Approximately 10 business days after the application has been received, reviewed, and processed, candidates will be emailed a Scheduling Authorization from **notices@ptcny.com**. Please ensure you enter your correct email address on the application and add the 'ptcny.com' domain to your email safe list. If you do not receive a Scheduling Authorization 14 business days after your payment has been processed contact the Professional Testing Corporation at (212) 356-0660 or online at www.ptcny.com/contact.

The Scheduling Authorization will indicate how to schedule your examination appointment with Prometric as well as the dates during which testing is available. Appointment times are first-come, first-serve, so schedule your appointment as soon as you receive your Scheduling Authorization in order to maximize your chance of testing at your preferred location and on your preferred date. **Candidates who wait until the last minute run the risk of missing out on their preferred date, time, and testing center. Candidates unable to schedule an appointment will forfeit their fees.**

Choosing a Testing Date

NNCO Examination candidates have 6 months from the date of application to take the exam. Keep the following in mind when choosing your testing period:

1. Give yourself enough time to study. Practice tests are offered at www.ptcny.com.

2. Emergencies happen. Schedule early to allow enough time to reschedule within your window if need be. Please see Page 5 for information on rescheduling a test appointment.

Candidates have six (6) months from the date of application to sit for the examination. After the six-month period, candidates will need to reapply for the examination and pay a new application fee.

After you make your test appointment, Prometric will send you a confirmation email with the date, time, and location of your exam. Please check this confirmation carefully for the correct date, time, and location. Contact Prometric at (800) 741-0934 if you do not receive this email confirmation or if there is a mistake with your appointment.

Note: International candidates may also schedule, reschedule, or cancel an appointment online at www.prometric.com/NNCO.

IMPORTANT!

You **MUST** present your current driver's license, passport, or U.S. military ID at the test center. Expired, temporary, or paper driver's licenses will **NOT** be accepted.

The name on your Scheduling Authorization **MUST** exactly match the name on your photo ID.

Fees will not be refunded for exams missed because of invalid ID.

Rescheduling Examination Appointments within a Testing Period

Candidates are able to reschedule their examination appointments within the same testing period as long as the request is submitted within the timeframe described below. Reschedule within the permitted time frame by calling 800-741-0934 or going to the Prometric website: www.prometric.com/NNCO.

Time Frame	Reschedule Permitted?	Stipulations
Requests submitted 30 days or more before the original appointment	Yes	None
Requests submitted 5 to 29 days before the original appointment	Yes	Candidate must pay Prometric a rescheduling fee of $50.
Requests submitted less than 5 days before the original appointment	**No**	Candidates who do not arrive to test for their appointment will be considered a no-show and all their examinations fees will be forfeited. Candidates will need to reapply and pay full examination fees for a future testing period.

Candidates are not permitted to transfer to a new testing period. Candidates unable to test during their assigned 6 month testing period will need to reapply for the examination and pay a new application fee.

Failing to Report for an Examination

If you fail to report for an examination, you will forfeit all fees paid to take the examination. A completed application form and examination fee are required to reapply for the examination.

EXAMINATION FEES

Fee Type	Amount	Details
Examination Fee	US $255.00	• Non-refundable • Non-transferable • Includes testing center fees
Rescheduling Fee (29-5 days prior to scheduled appointment; see page 5)	US $50.00	• **Applies to candidates who need to move their appointment within their current testing period** • Payable directly to Prometric • Reschedule with Prometric online or over the phone

All fees are non-refundable and non-transferable.

There will be no refund of fees. **Please be advised: Prometric does not have the authority to grant transfers to another testing period or refunds. All requests must be made through PTC.**

SPECIAL NEEDS

NNCO and PTC support the intent of and comply with the Americans with Disabilities Act (ADA). PTC will take steps reasonably necessary to make certification accessible to persons with disabilities covered under the ADA. According to the ADA, an individual with a disability is a person who has a physical or mental impairment that substantially limits a major life activity (such as seeing, hearing, learning, reading, concentrating, walking) or a major bodily function (such as neurological, endocrine, or digestive system). The information you provide and any documentation regarding your disability and special test accommodations will be held in strict confidence.

All approved testing accommodations must maintain the psychometric nature and security of the examination. Accommodations that fundamentally alter the nature or security of the exam will not be granted.

Special testing arrangements may be made upon receipt of the Application, examination fee, and a completed and signed Request for Special Needs Accommodations Form, available from www.ptcny.com/PDF/PTC_SpecialAccommodationRequestForm.pdf or by calling PTC at (212) 356-0660.

This Form must be uploaded with the online application. Candidates who do not submit their Special Accommodations Form with their application may not be able to test during their chosen testing period and therefore be subject to rescheduling or transfer fees.

Only those requests made and received on the official Request for Special Needs Accommodations Form will be reviewed. Letters from doctors and other healthcare professionals must be accompanied by the official Form and will not be accepted without the Form. All requests must be made at the time of application. Accommodations cannot be added to an existing exam appointment.

PREPARING FOR THE EXAMINATION

- Check your government issued photo ID (driver's license, passport or U.S. Military ID) when you make your examination appointment. Is it expired? Does the name on your ID match the name on your Scheduling Authorization email? Proctors at the Prometric testing center will refuse admission to candidates with expired IDs, IDs with names that do not match their records, and temporary paper IDs. Candidates will be marked as no-shows and will forfeit their exam fees.

- Check your PTC Scheduling Authorization email and Appointment Confirmation email from Prometric to make sure everything is accurate (i.e. your name, exam name, appointment date, time and location).

- Make yourself familiar with the location of your chosen testing site and any requirements they may have for parking and check the weather and traffic conditions before you leave for the testing center. Make sure you give yourself plenty of time to arrive as late arrival may prevent you from testing.

- In the event of inclement weather, check the Prometric website for site closures: https://www.prometric.com/closures.

- Prometric's website provides information on what you can expect on your test day, including a walkthrough of check in and security procedures: https://www.prometric.com/test-center-security.

- This Handbook provides the Content Outline for the Examination (see appendix). Use these to help you start studying for the examination.

- Review What to Expect at the Testing Center and the Rules for the Examination on the next page before your appointment.

WHAT TO EXPECT AT THE TESTING CENTER

PTC has partnered with Prometric Testing Centers to deliver examinations to candidates. Here is what you can expect when you arrive at your Prometric Testing Center.

- Candidate Check-In
  - Candidates will be asked to present their IDs
  - Candidates will be asked to empty and turn out their pockets
  - Candidates will be "wanded" or asked to walk through a metal detector
  - Inspection of eyeglasses, jewelry, and other accessories will be conducted. Jewelry other than wedding and engagement rings is prohibited.
  - Religious headwear may be worn into the testing room; however, it may be subject to inspection by a testing center administrator before entry into the testing room is permitted.
  - Prometric provides lockers for candidates to store their purses, mobile phones, jackets, food, drinks and medical supplies.

- During the Exam
  - No breaks are scheduled during the exam. Candidates who must leave the testing room to take a break will not be given extra time on the exam
  - Accessing mobile phones or study materials during the examination is prohibited
  - Smoking is prohibited at the testing center
  - All examinations are monitored and may be recorded in both audio and video format

Please keep in mind: other exams will be administered at the same time as your examination. Therefore, examinees may hear ambient noises such as typing, coughing, or people entering and exiting the testing room that cannot be avoided. Prometric is unable to provide a completely noise-free environment. However, headphones may be requested to minimize impact.

Please see Prometric's website for more information about what to expect on testing day.

RULES FOR THE EXAMINATION

Please read the information below carefully. You are responsible for adhering to the examination rules while at the testing center.

- ⇨ You must present your current driver's license, passport, or US Military ID at the testing center. Candidates without valid ID will NOT be permitted to test. Temporary or paper copies of your ID will not be accepted.
- ⇨ No Electronic devices that can be used to record, transmit, receive, or play back audio, photographic, text, or video content, including but not limited to, cell phones, laptop computers, tablets, Bluetooth devices; wearable technology (such as smart watches), MP3 players (such as iPods), pagers, cameras, and voice recorders are permitted to be used and cannot be taken in the examination room. Prometric provides lockers for your personal items.
- ⇨ No papers, books, or reference materials may be taken into or removed from the testing room.
- ⇨ No questions concerning content of the examination may be asked during the examination session. The candidate should read carefully the directions that are provided on screen at the beginning of the examination session.
- ⇨ Candidates are prohibited from leaving the testing room while their examination is in session, with the sole exception of going to the restroom.
- ⇨ Bulky clothing, such as sweatshirts (hoodies), jackets, coats, and hats (except hats worn for religious reasons), and most types of jewelry may not be worn while taking the examination. Proctors will ask you to remove such items and place them in your locker. Please see Prometric's statement on Test Center Security for more information.
- ⇨ All watches and "Fitbit" type devices cannot be worn during the examination.
- ⇨ No food/beverages are permitted inside the testing room. Leave these items in your assigned locker.

Contact PTC at (212) 356-0660 or www.ptcny.com/contact with any questions about the Examination Rules.

Violation of any of the rules listed above may lead to forfeiture of fees, dismissal from the testing room, and cancellation of your test scores.

TESTING CONDITIONS OR EXAMINATION FEEDBACK

Any candidate who feels that the examination effort was negatively impacted by the test center conditions should notify the proctor immediately. The situation should also be reported to PTC at www.ptcny.com/contact within 3 business days of the test appointment. Any comments about the test itself should also be reported to PTC at www.ptcny.com/contact within 3 business days of the test appointment.

REPORT OF RESULTS

At the end of the examination, candidates will receive information on how to receive their unofficial test score report. Candidates are not eligible to use the CCNT or CBNT credential until their official score is received. Candidates will be notified in writing by PTC within one week after test data is received by Prometric whether they have officially passed or failed the examination. This is necessary to allow for the psychometric review and administrative time required to ensure accurate and reliable scores. Scores on the major areas of the examination and on the total examination will also be reported. Successful candidates will also receive certificates from the NNCO.

REQUESTING A HANDSCORE

Candidates who fail the examination may request a hand scoring of their data file. Hand scoring is a manual check of the data file by the testing service to determine if there have been any errors in scoring. Although the probability of such an error is extremely remote, this service is available. Requests for hand scoring must be received by PTC no later than 90 days after the date of the examination by completing and returning the Request of Handscore form on www.ptcny.com with payment of $25. Candidates who fail the examination will not be permitted to see the examination questions. For reasons of test security, no candidate is allowed to review the examination or any of its items.

To ensure correct reporting of results, PTC automatically performs handscores of examinations of candidates who score within 3 points of passing as a quality control measure. Thus, it is extremely doubtful that any examination results will change from “fail” to “pass” through handscoring.

VALIDATION OF THE EXAMINATION

Every effort has been made to ensure the reliability and validity of the NNCO Certification Examinations. The Examination construction process constitutes one major effort devoted to the assurance of content validity. Another major facet is the role delineation study to develop practice relevant test specifications for the examination. First, the Examination Committee convened to define the content areas, tasks, and knowledge required for entry-level practice in nephrology technology. This role delineation then underwent a validation study by a representative sample of certified nephrology technologists nationwide. Task statements were rated for frequency of performance and relation to clinical competence; knowledge statements were rated for contribution to public protection and appropriateness for entry-level practice. The test specifications now in use are based on the findings of this role delineation study.

CONFIDENTIALITY OF EXAMINATION SCORES

NNCO will release the individual examination scores ONLY to the individual candidate Any questions concerning test results should be referred to the Professional Testing Corporation, ptcny@ptcny.com.

REEXAMINATION

The Certification Examinations in Clinical Nephrology Technology and Biomedical Nephrology Technology may be taken as often as desired upon filing of a new Application and fee. There is no limit to the number of times an examination may be repeated.

ATTAINMENT OF CERTIFICATION AND RECERTIFICATION

Eligible candidates who pass the Certification Examination in Clinical Nephrology Technology are eligible to use the registered designation CCNT after their names and will receive certificates from the NNCO. Eligible candidates who pass the Certification Examination in Biomedical Nephrology Technology are eligible to use the registered designation CBNT after their names and will receive certificates from the NNCO. A registry of CCNTs and CBNTs will be maintained by the NNCO and may be reported in its publications.

Certification in Nephrology Technology is recognized for a period of four years at which time the candidate must retake and pass the current Certification Examination in Clinical Nephrology Technology or Biomedical Nephrology Technology or meet such alternative requirements as are in effect at that time in order to retain certification. Go to http://www.ptcny.com/clients/NNCO for further information.

REVOCATION OF CERTIFICATION

Certification will be revoked for any of the following reasons:

1. Falsification of an Application.
2. Falsification of any material requested by the NNCO.
3. Misrepresentation of certification status.

The appeals process of the NNCO provides the mechanism for challenging revocation of Certification. It is the responsibility of the individual to initiate this process.

CONTENT OF THE EXAMINATION

1. The Certification Examinations in Clinical Nephrology Technology and Biomedical Nephrology Technology are computer-based examinations composed of a maximum of 200 multiple-choice, objective questions with a total testing time of three (3) hours each.
2. The content for the examinations is described in the Content Outlines starting below.
3. The questions for the examination are obtained from individuals with expertise in nephrology technology and are reviewed for construction, accuracy, and appropriateness by the NNCO
4. NNCO, with the advice and assistance of the Professional Testing Corporation, prepares the examination.

Content Outline for Clinical Nephrology Technology

The Certification Examination in Clinical Nephrology Technology will be weighted in the following manner:

I.	Principles of Dialysis	10%
II.	Care of the Patient with Kidney Failure	18%
III.	Dialysis Procedures and Documentation	17%
IV.	Complications During Dialysis	15%
V.	Water Treatment & Dialystate Preparation	15%
VI.	Infection Control and Safety	20%
VII.	Dialyzer Reprocessing	5%

I. PRINCIPLES OF DIALYSIS

A. CURRENT DIALYSIS ENVIRONMENT
B. HISTORY OF DIALYSIS
    1. Technology Highlights
    2. Medicare Reimbursement for ESRD Patients
C. DIALYSIS TECHNICIAN PROFESSIONALISM
D. SCIENTIFIC TERMS USED IN DIALYSIS
    1. Solutions
    2. Semipermeable Membrane
    3. Diffusion
        a. Solution
        b. Membrane
    4. Osmosis
    5. Filtration and Ultrafiltration
    6. Fluid Dynamics
E. APPLYING SCIENTIFIC PRINCIPLES TO DIALYSIS
    1. Fluid Dynamics in Dialysis
    2. Diffusion in Dialysis
    3. Ultrafiltration in Dialysis
    4. Osmosis in Dialysis
F. APPLYING DIALYSIS PRINCIPLES TO THE DIALYSIS PRESCRIPTION
    1. Dialyzer
    2. Blood Flow Rate
    3. Dialysate Flow Rate
    4. Dialysis Time
    5. Dialysate Composition
    6. Anticoagulation
G. DIALYSIS AND THE NORMAL KIDNEY COMPARISON

H. DIALYZERS
- 1. Functions and Components
- 2. Membranes
- 3. Dialyzer Characteristics
  - a. Biocompatibility
  - b. Surface Area
  - c. Molecular Weight Cutoff
  - d. Ultrafiltration Coefficients
- 4. Dialyzer Categories
  - a. Conventional
  - b. High-efficiency
  - c. High-flux
- 5. Dialyzer Design

I. MEASURING DIALYZER EFFECTIVENESS
- 1. Dialyzer Clearance
- 2. Ultrafiltration Rates

J. HEMODIALYSIS DELIVERY SYSTEMS
- 1. Purpose
- 2. Dialysate Delivery System
  - a. Proportioning System
  - b. Monitoring System

K. MEASURING DIALYSIS ADEQUACY
- 1. Urea Reduction Ratio
- 2. Urea Kinetic Modeling (UKM)
- 3. Other Methods of Determining Kt/V: The Natural Log Formula
- 4. NKF-DOQI Guidelines

L. FACTORS AFFECTING DIALYSIS TREATMENT
- 1. Clearance Factors
- 2. Time Factors
- 3. Patient Well-being
- 4. Other

M. QUALITY IN DIALYSIS
- 1. Reasons for Measuring Dialysis Quality
- 2. Quality Assurance Standards for Dialysis
- 3. Guidelines for Dialysis Care
  - a. RPA Guideline for Hemodialysis Adequacy
  - b. NKF-DOQI Guidelines
- 4. Continuous Quality Improvement
  - a. CQI
  - b. Quality Tools (PDCA Cycle)

N. VASCULAR ACCESS
- 1. Types of Access
  - a. Arteriovenous (AV) Fistula
  - b. Grafts
  - c. Catheters
  - d. Other
- 2. Vascular Access Procedures
  - a. Venipuncture Procedures
  - b. Catheter Care
  - c. Other
- 3. Complications
  - a. Clotting
  - b. Aneurysms and Pseudoaneurysms
  - c. Bleeding

II. CARE OF THE PATIENT WITH KIDNEY FAILURE

A. RENAL ANATOMY AND PHYSIOLOGY
- 1. How Healthy Kidneys Work
- 2. Structure of the Kidneys
  - a. Nephrons
  - b. Glomerulus
  - c. Tubule
  - d. Excretory Functions
  - e. Endocrine

B. RENAL FAILURE
- 1. Acute Renal Failure
- 2. Chronic Renal Failure
- 3. Causes of Chronic Renal Failure
  - a. Diabetes
  - b. Renal Osteodystrophy
  - c. Glomerulonephritis
  - d. Cystic Disorders or Polycystic Kidneys
  - e. Drug Toxicity
  - f. Interstitial Nephritis
  - g. Obstruction
  - h. Other causes
- 4. Complications of Uremia
  - a. Anemia
  - b. Renal Osteodystrophy
  - c. Pericarditis
  - d. Electrolyte Imbalances
  - e. Nerve Damage (Neuropathy)
  - f. Carpal Tunnel Syndrome
  - g. Itching
  - h. Sleeping Problems

i. Bleeding Abnormalities
j. Reproductive System Changes
k. Renal Disease with Other Illnesses

C. TREATING RENAL FAILURE
1. Choosing a Treatment Modality
2. Transplantation
3. Peritoneal Dialysis
a. CAPD
b. CCPD
4. Hemodialysis
a. Fluid Compartments
b. Treatments
c. In-center
d. Home
e. Nocturnal Home Dialysis
5. No Renal Replacement Therapy

D. NUTRITIONAL CONSIDERATIONS
1. Role of the Renal Dietitian
a. Assessment of Dietary Intake
b. Anthropometric Measurement
c. Biochemical Evaluation
d. Medical History Record
e. Subjective Global Assessment (SGA)
f. Diet Planning
2. Renal Diet Considerations
a. Protein
b. Calories
c. Fluid
d. Sodium
e. Potassium
f. Calcium
g. Phosphorus
h. Vitamins

E. HELPING PATIENTS ADJUST
1. The Role of the Nephrology Social Worker
2. Renal Rehabilitation
a. Encouragement
b. Education
c. Exercise
d. Employment
e. Evaluation
3. Associations with Patient Services
a. The American Association of Kidney Patients (AAKP)
b. The American Diabetes Association (ADA)
c. The American Kidney Fund (AKF)
d. The ESRD Forum of Networks
e. The Life Options Rehabilitation Resource Center (RRC)
f. The National Kidney Foundation (NKF)

F. COMMUNICATION SKILLS
1. Patient Confidentiality – HIPAA
a. Paper Records
b. Electronic Records
2. Active Listening
3. Boundaries
4. Patient Education
a. Readiness
b. Need
c. Appropriate Level
d. Reinforcement
e. Belief

III. DIALYSIS PROCEDURES AND DOCUMENTATION

A. PREDIALYSIS PROCEDURES
1. Following Hemodialysis Orders and Treatment Plan
2. Equipment Preparation Procedures
a. Preparing Dialysate
b. Assembling the Extracorporeal Circuit
c. Priming the Dialyzer and Extracorporeal Circuit
d. Preinitiation Check
3. Predialysis Patient Check Procedures
a. Weight
b. Bood pressure
c. Pulse
d. Respiration
e. Temperature
f. Communicating with Patient
g. Evaluating Vascular Access

B. INITIATION OF DIALYSIS
- 1. Fluid Removal Procedures
  - a. Calculating Amount of Fluid to be Removed
  - b. Predicting Ultrafiltration
  - c. Calculating Transmembrane Pressure (TMP)
  - d. Calculating Ultrafiltration Rate
  - e. Fluid Replacement
  - f. Isolated Ultrafiltration
- 2. Other

C. MONITORING DURING DIALYSIS
- 1. Patient Monitoring Procedures
  - a. Taking Vital Signs
  - b. Monitoring General Patient Condition
  - c. Providing Comfort and Diversion During Dialysis
- 2. Technical Monitoring
  - a. Monitoring Devices
  - b. Equipment Safety Checks
  - c. Extracorporeal Circuit Monitors

D. POSTDIALYSIS PROCEDURES
- 1. Completing Dialysis Treatment Procedures
  - a. Discontinuing Dialysis
  - b. Postdialysis Patient Check
  - c. Taking Vitals Signs and Weight
  - d. Documentation
  - e. Equipment Clean-up

E. MEDICATIONS, SOLUTIONS, AND LABORATORY TESTS
- 1. Medications Commonly Used in Dialysis
  - a. Heparinization During Dialysis
  - b. Other
- 2. Medications and Solution Procedures
  - a. Drawing Solutions
  - b. Using IV Solutions
- 3. Laboratory Test Procedures
  - a. Drawing Blood Specimens
  - b. Blood Sampling Pre and Postdialysis, BUN Measurements
  - c. Monitoring for Anemia
  - d. Determining Random Blood Sugars (Glucose)

F. DOCUMENTING PATIENT CARE
- 1. Treatment Record

IV. COMPLICATIONS DURING DIALYSIS

A. MEDICAL COMPLICATIONS
- 1. Air Embolism
- 2. Anaphylaxis
- 3. Angina
- 4. Arrythmias/Disrythmias
- 5. Cardiac Arrest
- 6. Dialysis Disequilibrium Syndrome
- 7. Fever and/or Chills
- 8. First-use Syndrome
- 9. Headache
- 10. Heparin Overdose
- 11. Hyperkalemia
- 12. Hypertension
- 13. Hypotension
- 14. Muscle Cramps
- 15. Nausea and Vomiting
- 16. Pruritis
- 17. Seizures

B. TECHNICAL COMPLICATIONS
- 1. Air in Bloodlines
- 2. Blood Loss
- 3. Clotting in the Extracorporeal Circuit
- 4. Crenation
- 5. Dialyzer Membrane Leak
- 6. Hemolysis
- 7. Power Failure

V. WATER TREATMENT AND DIALYSATE PREPARATION

A. PURPOSE OF WATER TREATMENT
- 1. Preventing Harm to the Patient
- 2. Preventing Damage to Equipment

B. TYPES OF CONTAMINANTS AND THEIR EFFECTS ON PATIENTS
- 1. How Water Becomes Impure
- 2. Microorganisms
  - a. Bacteria
  - b. Viruses
  - c. Algae
  - d. Fungus
  - e. Mold

f. Endotoxin
g. Biofilm
3. Organic and Chlorine-based Contaminants
a. Chlorine and Chloramines
b. Pesticides and Herbicides
4. Inorganic Contaminants
a. Sediments, Particles, and Silt
b. Salts and Other Chemicals
c. Metals and Heavy Metals
d. Radionuclides

C. COMPONENTS OF A WATER TREATMENT SYSTEM
1. Filters
a. Sediment/Bed Filters
b. Membrane Filters
c. Ultrafilters
2. Carbon Tanks
3. Water Softener
4. Reverse Osmosis (RO) Equipment
a. Cellulose Acetate Membranes
b. Aromatic Polyamide Membranes
c. Thin Film Composite (TFC) Membranes
d. Other Membrane Factors
5. Deionizer
6. Ultraviolet Light

D. MONITORING A WATER TREATMENT SYSTEM
1. Continuous Monitoring
a. Temperature
b. Pressure
c. Flow Rates
d. Conductivity and Resistivity
e. Total Dissolved Solids (TDS)
2. Periodic Monitoring
a. Softener Timer Settings
b. Hardness Testing
c. Total Chlorine and and Chloramines
d. Chemical Analysis
e. pH
f. Others
3. Microbiological Testing
a. ANSI/AAMI RD52 Dialysate for Hemodialysis
b. Other
4. Disinfection Strategies
a. Standard Disinfection
b. High-Level Disinfection

E. DIALYSATE AND CONCENTRATE PREPARATION
1. Dialysate
a. Purpose
b. Types
c. Water Requirements
d. Monitoring
2. Chemical Composition
a. Sodium (Na^+)
b. Potassium (K^+)
c. Magnesium (Mg^{++})
d. Calcium (Ca^{++})
e. Chloride (Cl^-)
f. Glucose
g. Bicarbonate (HCO_3^-)
3. Concentrates
a. Acid Concentrate Preparation
b. Bicarbonate Concentrate Preparation
4. Verification and Monitoring
a. Conductivity Meters
b. Priming Procedures
c. pH Testing
d. Hydrometer - Specific Gravity Testing
e. Microbiological Testing
5. Documentation
a. Recordkeeping
b. Batch Records
6. Disinfection and Cleaning Strategies
a. Regular Disinfection
b. High-Level Disinfection
c. Precipitate Cleaning

VI. INFECTION CONTROL AND SAFETY

A. CDC RECOMMENDATIONS FOR PREVENTING TRANSMISSION AMONG CHRONIC HEMODIALYSIS PATIENTS
1. Proper Infection Control
a. Maintaining Asepsis
b. Microorganisms with Proper Hand Washing and Glove Removal
c. Dialysis Precautions

2. Preventing the Spread of Bloodborne Disease and Antibiotic-Resistant Bacteria
    a. Hepatitis B
    b. Hepatitis C (HCV)
    c. Human Immunodeficiency Virus (HIV)
    d. Methicillin-resistant Staphylococcus Aureas (MRSA)
    e. Vancomycin-resistant Enterococcus (VRE)
    f. Disposing of Infectious Wastes
3. Preventing the Spread of Airborne Infection
    a. Tuberculosis (TB)

B. OSHA BLOODBORNE PATHOGENS STANDARD
1. Written Plan
2. Personal Protective Equipment
3. Appropriate Housekeeping Procedures – Proper Infectious Waste Disposal
4. Appropriate Laundry Handling
5. Training Program
6. Medical Records – Related to Hepatitis B (HBV) Vaccination/ Exposure to HIV or HBV
7. Training Records
8. Surveillance Strategies
9. Engineering Controls – i.e. Clean vs. Dirty Sinks
10. BBP Spill Kit

C. OSHA NEEDLESTICK PREVENTION ACT
1. Written Plan
    a. Engineering Controls – Safety Needles, One-handed Technique, Sharps Containers
    b. Training
    c. Recordkeeping

D. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REGULATIONS
1. Hazard Communications Standard
2. Occupational Exposure to
    a. Acetic Acid
    b. Hydrogen Peroxide
    c. Glutaraldehyde
    d. Bleach
    e. Ozone
3. Ergonomics
4. Body Mechanics
5. Patient Transfer

E. NATIONAL FIRE PROTECTION AGENCY 101: LIFE SAFETY CODE

F. DISASTER PLANNING FEMA, OSHA, NFPA, CMS, STATE

VII. DIALYZER REPROCESSING

A. HISTORY OF DIALYZER REPROCESSING

B. BENEFITS AND RISKS OF REPROCESSING

C. SET-UP AND RECIRCULATION OF A REPROCESSED DIALYZER
1. Presence Testing
2. Reuse Label
3. Priming the Extracorporeal Circuit
4. Recirculation Time
5. Residual Testing

D. POST-TREATMENT HANDLING OF REPROCESSED DIALYZERS
1. Handling Used Dialyzers
2. RUF

E. OTHER RELATED SUBJECTS
1. Clearance
2. Total Cell Volume
3. Chemical Permissible Exposure Limits (PEL)
    a. Acetic Acid
    b. Hydrogen Peroxide
4. Fiber Bundle Integrity Testing (Pressure Holding)
5. AAMI Requirements for Testing
    a. TBV
    b. Microbial and Endotoxin Testing RD47
    c. Pressure Testing
    d. Dialyzer Identification

Content Outline for Biomedical Nephrology Technology

The Certification Examination in Biomedical Nephrology Technology will be weighted in the following manner:

I.	Principles of Dialysis	25%
II.	Scientific Concepts	10%
III.	Electronic Applications	10%
IV.	Water Treatment	20%
V.	Equipment Functions	13%
VI.	Environmental/Regulatory Issues	12%
VII.	Dialyzer Reuse/Reprocessing	10%

I. PRINCIPLES OF DIALYSIS

A. HAZARD COMMUNICATION AND SAFETY
- 1. Prevention of Occupational Injuries
- 2. Hazard Prevention and Control
- 3. Power Failure/Manual Dialysis
- 4. Water Failure: Main Water Valve
- 5. Disaster Procedure/Evacuation Kit
- 6. Employee-related Incidents
- 7. Chemical Emergencies/Hazardous Communication/Spill Kit
- 8. Life Cycle of Bacteria
- 9. Patient-related Incidents
- 10. Risks and Hazards of Peracetic Acid Solution (Renalin)
- 11. Chemical Agents
  - a. Uses
  - b. Effects
  - c. Potential Hazards

B. DIALYSIS CLINIC
- 1. Professionalism of Role
- 2. Health Care Professionals
- 3. Team Participation
- 4. Single Patient Machine versus Central Delivery System
- 5. Relationships of Professional Duties

C. WATER
- 1. Effects of Constituents in Water
- 2. Rinsing of Dialysis and Equipment
- 3. Predialysis Water Testing Requirements
- 4. Suspected Pyrogens and Bacteria
- 5. Purpose of Water Treatment
- 6. Chlorine/Chloramine Awareness

D. DIALYSIS PATIENT
- 1. Monitoring Patient During Treatment
- 2. Artificial versus Normal Kidneys
- 3. Blood Chemistry versus Dialysate Chemistry
- 4. Routine Tests
- 5. Preparation of Concentrate
- 6. Acute and Chronic Renal Failure
- 7. Pathophysiology of Kidney and Urinary System
- 8. Diet
- 9. Hypokalemia/Hyperkalemia
- 10. Pulmonary Edema
- 11. Patient Rights

E. STANDARD PRECAUTIONS
- 1. Practicing Safe Habits
- 2. Disposal of Supplies
- 3. Infection Control Policies and Procedures
- 4. Routes of Transmission of Biological and Chemical Agents
- 5. Bloodborne Pathogens
- 6. Hazards of Biological Effects

F. DIALYSIS PROCESS
- 1. Adjunctive Therapy
- 2. Treatment Modalities for ESRD Patients
- 3. Heparinization
- 4. Fluid, Electrolyte, Acid-base Balance, Composition
- 5. Dialyzers
- 6. Charting
- 7. Adequacy
- 8. Laboratory Values

9. Bone Disease
10. Dialysis
    a. Solute Transfer During Dialysis
    b. Principles
    c. Procedures
11. Transport Mechanisms Through Semipermeable Membranes
12. Blood Access
13. Ultrafiltration and TMP
14. Dialysis Machines
    a. Functional Parts
    b. Monitoring Parts
    c. Acceptable Machine Parameters
15. Kinetic Modeling/Urea Reduction Ratio
16. Medications

II. SCIENTIFIC CONCEPTS

A. Chemistry
1. Dialysate
    a. Functions
    b. Chemical Composition
    c. Types
    d. Water Requirements
    e. Dialysate Verification
    f. Monitoring
2. Dialysate Composition
    a. Augmentation of Concentrates
    b. Monitoring of Electrolytes
    c. Methods for Verifying Composition
3. Concepts

B. Physics
1. Fluid Dynamics
    a. Pressure, Flowrate, and Restriction
    b. Diffusion
2. Thermodynamics
3. Centigrade (Celsius)/Fahrenheit/Rankan/Kelvin

C. Mathematics
1. Statistics
    a. Mean
    b. Median
2. Metric versus English System
3. Calculations
4. Scientific Notation

III. ELECTRONIC APPLICATIONS

A. Electronics
1. Components of Electrical Equipment
2. Relationships – Voltage, Amperage, Resistance
3. Basic Multimeter Skills
4. Concepts
    a. Transformers
    b. Relays
5. Reading Wiring Diagrams/Schematics
6. Electrical Safety
7. Handling of PC Boards
8. Soldering Skills

B. Computers
1. Cabling
2. Operating Systems
3. Computer Components

IV. WATER TREATMENT

A. Water Treating Systems
1. Disinfection and Rinsing Procedures
2. Testing Procedures
3. Facility Needs
4. System Monitoring

B. pH Theory
C. Bleach, Renalin, Formaldehyde
D. Reverse Osmosis
E. Analysis of Source Water
F. Filtration Methods
G. Plumbing Requirements
H. System Design/Removal of Abnormal Water Constituents
I. Deionization
J. Water Cultures
K. Chloramine Checks
L. Start-up
M. Monitoring and Logging
N. Record Keeping Practices
O. Bacteriology Monitoring, Microbiology Cultures
P. Softening
Q. Constituents in Water
R. Laminar Flow versus Turbulent Flow
S. Suspected Pyrogens
T. Ultraviolet Treatment

U. Culture Record
V. Water Sample Collection
W. Carbon Service/Automated

V. EQUIPMENT FUNCTIONS

A. Machine Functions
- 1. Modular Operational Aspects
- 2. Machine Disinfecting Procedures
- 3. Single Patient versus Central Delivery
- 4. Machine Functions
  - a. Patient Safety
  - b. Other Functions
- 5. Dialysis Fluid Delivery Systems
- 6. AAMI Standards for Dialysate Supply Systems
- 7. Ancillary Equipment
- 8. Conductivity
- 9. Machine Safety
- 10. Rinsing Procedures
- 11. Machine Disinfection
- 12. Dialysis Machine Alarm Values and Testing Procedures
- 13. Machine Parameters
- 14. Altering Composition of Dialyzing Fluid
- 15. pH
- 16. Operating Parameters of Equipment
- 17. Concentrate Storage/Delivery
- 18 Machine Component Relationships
- 19. Machine Internal Component Identification and Function
- 20. AAMI Electrical Leakage Testing

B. Maintenance and Repair of Equipment
- 1. Manufacturer's Guidelines
  - a. Technical Assistance
  - b. Preventive Maintenance/Repair
  - c. Use of Equipment
- 2. Service Logs
- 3. Water Treatment Equipment
- 4. Vinegar
- 5. Repair Maintenance Records
- 6. Abnormal Machine Functions
- 7. Equipment Manuals
- 8. Evaluation of Dialysis Equipment & Supplies
- 9. Tool Identification
- 10. Plumbing Fittings, Sizes, Material

VI. ENVIRONMENTAL/REGULATORY ISSUES

A. Plant Layout and Inventory Control
- 1. Receiving Supplies
- 2. Stock Room Orientation
- 3. Disposal of Boxes
- 4. Maintaining Stock
- 5. Supply/Inventory
- 6. Checking Availability of Supplies
- 7. Physical Plant Maintenance Resources
- 8. Unit Design

B. Standards
- 1. AAMI Standards
  - a. Concentrate
  - b. Hemodialysis Systems
  - c. Disinfection
  - d. Parameters of Safe Product Water
- 2. ADA Requirements
- 3. CDC Specifications/Guidelines
- 4. Water Quality Requirements
  - a. Bacteriology
  - b. Heavy Metal
  - c. Reduction from City to Treated Quality
- 5. OSHA Regulations
- 6. HIPAA

VII. DIALYZER REUSE/REPROCESSING

A. Dialyzer Dynamics
- 1. Clearance, KoA, Dialysis Pressures, Backfiltration
- 2. Concentrate Storage/Delivery
- 3. Clinical Layout
- 4. Determining Adequate Dialysis
- 5. Hemodialyzers
- 6. KUF on Transmembrane Pressure and Ultrafiltration Rate

B. Reprocesssing
- 1. Reused Dialyzer
  - a. Testing Procedures
  - b. Positive and Negative Aspects
  - c. Contraindicated Conditions
  - d. Autorinse
- 2. Automated Reprocessing Equipment
- 3. Manual Reuse

4. Improper Reuse
5. Patient Consequences
6. Record Keeping Practices
7. Flow Sheet Requirements
8. Dialyzer Reprocessing
9. Priming Procedures
10. Sterilization/Disinfection/Cleaning of Dialyzer
11. Program Monitoring
12. Consent Form
13. Procedure
14. Master Manual Compilation
15. Prerinsing/Prefilling
16. Efficiency of Dialyzer
17. Storage
18. Safety Precautions
19. Bacteriology
20. Related Incident Reports
21. Chemical Agents

SAMPLE EXAMINATION QUESTIONS

In the following questions, choose the one best answer.

1. Which of the following counteracts the effects of heparin?

    1. Vitamin K
    2. Coumadin
    3. Aspirin
    4. Protamine sulfate

2. The surface area of a dialyzer is measured by which of the following increments?

    1. Angstroms
    2. Cubic meters
    3. Square meters
    4. Cubic millimeters

3. With reference to current in a typical circuit path, the switching voltage in components is generally referred to as

    1. ac and dc.
    2. high and low.
    3. analog and digital.
    4. positive and negative.

4. Which of the following is NOT a function of the nephron?

    1. Filtration
    2. Metabolism
    3. Secretion
    4. Reabsorption

5. Which of the following veins is used most often for routine venipuncture?

    1. Radial vein
    2. Basilic vein
    3. Cephalic vein
    4. Dorsal venous network

ANSWER KEY	
Q	**A**
1	4
2	3
3	4
4	2
5	1

ONLINE PRACTICE TEST

WHAT IT IS: A practice test to provide candidates with a better understanding of what the actual certification examination is like. Each practice test consists of 50 questions, has a testing time of two hours, and is taken over the internet.

WHY TAKE IT: To experience taking a computerized exam, to review an example of the type of content included in the Certification Examination, and to learn more about question format, style, and level of difficulty.

SCORE REPORT: After completing the online practice test, you will receive an instant score report showing test performance in each of the content areas. The score report does not provide correct answers or indicate which questions were answered correctly or incorrectly. Once the practice test is scored, you cannot return to the test to review the questions.

NOTE: The online practice test is an optional tool candidates may use as they prepare for the certification examination. While the practice test may help candidates identify areas of strengths and weakness, it should not be used as the only means to determine candidate preparedness or readiness to test. Since the practice test is NOT intended to be a study guide nor the sole source of preparation for the actual certification examination, candidates are NOT provided with the answer key, rationales for each question, nor notification of which specific items were answered correctly or incorrectly.

Though the specific questions that are on the practice test will not appear on the actual certification examination, it allows candidates to become familiar with the style of questions that may be asked. The instant score report received after practice test submission shows overall test performance as well as performance in each of the content areas. Candidates may find this information useful in determining future study needs. Once the practice test is scored, candidates cannot return to the test to review the questions. Performance on the practice test does not guarantee similar performance on the actual certification examination.

The PTC Online Testing System does not demonstrate the testing software used during the certification examinations. Those who purchase the online practice test should be aware that they will use a different testing platform when they take certification examinations at designated proctored testing centers.

The practice test is not a requirement for certification eligibility nor does it contribute in any way to success on the certification examination. There are many ways candidates should prepare for the certification examination. Candidates should use a variety of resources and consider their own education and experiences. Review the content outline and reference materials listed in the handbook for additional exam-related information.

CONTENT INCLUDED IN THE ONLINE PRACTICE TEST IN CLINICAL NEPHROLOGY TECHNOLOGY

I. Principles of Dialysis
II. Care of the Patient with Kidney Failure
III. Dialysis Procedures and Documentation
IV. Complications of Dialysis
V. Water Treatment and Dialysate Preparation
VI. Infection Control and Safety
VII. Dialyzer Reprocessing

CONTENT INCLUDED IN THE ONLINE PRACTICE TEST IN BIOMEDICAL NEPHROLOGY TECHNOLOGY

I. Principles of Dialysis
II. Scientific Concepts
III. Electronic Applications
IV. Water Treatment
V. Equipment Functions
VI. Environmental/Regulatory Issues
VII. Dialyzer Reuse/Reprocessing

FEE: $60, payable by credit card online.

APPLY: Go to www.ptcny.com, scroll down to the section on Online Practice Tests, and select either the Online Practice Test in Clinical Nephrology Technology or the Online Practice Test in Biomedical Nephrology Technology, depending upon which Certification Examination you are preparing to take.

FURTHER INFO: Visit http://www.ptcny.com or call Professional Testing Corporation at 212-356-0660.

STUDY GUIDE

An exam review course is available through the NNCO website. Visit www.nnco-cert.org for more information.

REFERENCES

The National Nephrology Certification Organization has prepared a suggested reference list to assist in preparing for the Certification Examinations in Clinical Nephrology Technology and Biomedical Nephrology Technology. These references contain journals and textbooks which include information of significance to nephrology technology. This list does not attempt to include all acceptable references nor is it suggested that the Nephrology Certification Examinations are necessarily based on these references.

Amgen Technician Core Curriculum 4th Ed.

ANSI/AAMI RD47, 52, 62

CDC 50(RR05); 1-43 Recommendations for Preventing Transmission Among Chronic Hemodialysis Patients, 2001, OSHA BBP Standard.

CMS

HIPAA Act of 1996.

Gibilsco, S. (2005). Electronics Demystified. NY: NY: McGraw Hill.

Gutch, C.F, Stoner, M.H., and Corea, A.L. Review of Hemodialysis for Nurses and Dialysis Personnel, 6th edition. Mosby.

Hazard Communication Standard

Morelli, C. (1996). Basic Principles of Water Treatment. Littleton, CO: Tall Oaks Publishing, Inc.

NANT Reprocessing Core Curriculum.

NFPA Life Safety Code

OSHA CFR (various)

Osmonics (1996). Pure Water Handbook, 2nd ed. Minnetonka, MN.

Ward, Luehmann, et al, 1992, FDA A Manual on Water Treatment for Hemodialysis.

PTC19041

Application for Certification Examinations in

Nephrology Technology - Part I

MARKING INSTRUCTIONS: This form will be scanned by computer, so please make your marks heavy and dark, filling the circles completely. Please print uppercase letters and avoid contact with the edge of the box. See example provided. →

A B C D E F 1 2 3 4 5 6

Candidate Information

Please enter your Name exactly as it appears on your current Government-Issued Photo I.D.

○ Mr. ○ Mrs. ○ Ms. ○ Dr.

Last Name

Middle Initial

First Name

Suffix (Jr., Sr. , etc.)

Home Address - Number and Street

Apartment Number

City

State/Province

Zip/Postal Code

Daytime Phone - -

Evening Phone - -

Email Address (Please enter only ONE email address. Use two lines if your email address does not fit in one line.)

Eligibility and Background Information

Darken only one choice for each question unless otherwise directed.

A. EXAMINATION FOR WHICH YOU ARE APPLYING:

○ Clinical Nephrology Technology
○ Biomedical Nephrology Technology
○ Dialysis Water Specialists

B. ARE YOU CURRENTLY OR WERE YOU EVER CERTIFIED IN ANY OF THESE SPECIALTY AREAS BY THE NNCO?

○ No ○ Yes (Select certificate below)

☐ CCNT - Certified Clinical Nephrology Technology

CURRENT CCNT CERTIFICATE #

CCNT MONTH/YEAR CERTIFICATION LAPSES: _____/_____ (MM/YYYY)

☐ CBNT - Certified Biomedical Nephrology Technology

CURRENT CBNT CERTIFICATE #

CBNT MONTH/YEAR CERTIFICATION LAPSES: _____/_____ (MM/YYYY)

☐ CDWS - Certified Dialysis Water Specialists

CURRENT CDWS CERTIFICATE #

CDWS MONTH/YEAR CERTIFICATION LAPSES: _____/_____ (MM/YYYY)

C. HAVE YOU TAKEN THIS EXAMINATION BEFORE?

○ No ○ Yes

If yes, indicate month, year, and name under which the examination was taken.

Date (month/year): _____

Name: _____

D. EXPERIENCE IN THE FIELD OF NEPHROLOGY:

○ Less than 1 year
○ 1 year (or 2000 hours part-time)
○ 2 to 4 years
○ 5 to 10 years
○ More than 10 years

E. CURRENT PRIMARY POSITION: (Darken one response.)

○ Patient Care Technician
○ Equipment Technician
○ Chief Technician
○ Reuse Technician
○ Administrator
○ Student
○ Field Service Technician
○ Other (specify): _____

F. PRIMARY FORM OF DIALYSIS IN WHICH YOU ARE INVOLVED: (Darken only one response.)

○ Chronic Hemodialysis ○ PD ○ In-Patient Hemodialysis
○ Home Hemodialysis ○ Other (specify): _____

G. PRIMARY AREAS OF DIALYSIS IN WHICH YOU ARE INVOLVED:

○ Patient Care
○ Administration
○ Equipment Maintenance
○ Transplant
○ Water Treatment
○ Reuse
○ Other (specify below): _____

H. PERCENT OF WORKING TIME YOU CURRENTLY SPEND IN NEPHROLOGY TECHNOLOGY:

○ Less than 25%
○ 25 to 50%
○ 51 to 75%
○ Over 75%

I. EMPLOYMENT SETTING:

○ Community Hospital
○ University Medical Center
○ Free Standing Unit
○ Manufacturer/Supplier
○ Other (specify below) _____

(Continue on page 2)

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Application for Certification Examinations in

Nephrology Technology - Part I

Eligibility and Background Information

J. HIGHEST ACADEMIC LEVEL:

- ◯ High School Diploma or Equivalent
- ◯ Certificate in Nephrology Technology
- ◯ Associate's Degree
- ◯ Bachelor's Degree
- ◯ Master's Degree
- ◯ Doctorate

K. ARE YOU A MEMBER OF NANT?*

- ◯ No
- ◯ Yes: Membership # _____

L. ARE YOU A MEMBER OF AAMI?*

- ◯ No
- ◯ Yes: Membership # _____

M. ARE YOU A MEMBER OF ANNA?*

- ◯ No
- ◯ Yes: Membership # _____

*Note: Membership is not required.

N. ARE YOU AN LPN/LVN?

◯ No ◯ Yes

O. ARE YOU AN RN?

◯ No ◯ Yes

Clinical Nephrology Technician Candidates in Ohio Only

PLEASE NOTE: Clinical Nephrology Technician Candidates in Ohio are required to have at least 6 months of experience in dialysis care as well as completion of a 6 month nephology techology program. Dialysis care is defined as: performing and monitoring dialysis procedures, including initiating, monitoring, and discontinuing dialysis; drawing blood; administering medications when the administration is essential to the dialysis process; and responding to complications that arise during dialysis.

YEARS OF EXPERIENCE IN DIALYSIS CARE:

◯ 1 year ◯ 2 to 3 years ◯ 4 to 5 years ◯ More than 5 years

Optional Information

Note: Information related to race, age, and gender is optional and is requested only to assist in complying with general guidelines pertaining to equal opportunity. Such data will be used only in statistical summaries and in no way will affect your certification.

Race:

- ◯ African American
- ◯ Asian
- ◯ Hispanic
- ◯ Native American
- ◯ White
- ◯ No Response
- ◯ Other

Age Range:

- ◯ Under 25
- ◯ 25 to 29
- ◯ 30 to 39
- ◯ 40 to 49
- ◯ 50 to 59
- ◯ 60+

Gender:

- ◯ Male
- ◯ Female

Candidate Signature

I have read the Handbook for Candidates and understand I am responsible for knowing its contents. I certify that the information given in this Application is in accordance with Handbook instructions and is accurate, correct, and complete. I am aware that my application is valid for six (6) months. If I do not sit for the exam within six months, I will need to reapply for the examination and pay a new fee.

CANDIDATE SIGNATURE: _____ DATE: _____

CREDIT CARD PAYMENT If you want to charge your application fee on your credit card provide all of the following information.

Name (as it appears on your card): _____

Address (as it appears on your statement): _____

Charge my credit card for the total fee of: $ ____

Expiration date ____ / ____

Card type: ◯ Visa ◯ MasterCard ◯ American Express

Card Number: ____

SIGNATURE: _____

FOR OFFICE USE ONLY

Date

Fee: ____

☐ CC ☐ Check

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APPLICATION FOR CERTIFICATION EXAMINATIONS IN NEPHROLOGY TECHNOLOGY - PART II

NAME: (please print) _____ **Date of Birth:** _____/_____/_____
Last Name First Name Middle Initial

HAVE YOU EVER BEEN KNOWN BY ANY OTHER NAME? (including maiden name) _____ No _____ Yes Other name(s): _____

Name for Certificate: _____

WORK ADDRESS: _____ **TELEPHONE NUMBER:** (_____)_____
Street City State ZIP Code

HOME ADDRESS: _____ **TELEPHONE NUMBER:** (_____)_____
Street City State ZIP Code

EXAMINATION FOR WHICH YOU ARE APPLYING: _____**Clinical Nephrology Technology** _____**Biomedical Nephrology Technology** _____**Dialysis Water**

EDUCATIONAL HISTORY: List each school, nephrology technology program, college, or university attended. Use separate sheet if necessary.

Institution: _____ Address: _____
City State
Year of Graduation: _____ Degree/Diploma/Certificate earned: _____

Institution: _____ Address: _____
City State
Year of Graduation: _____ Degree/Diploma/Certificate earned: _____

Institution: _____ Address: _____
City State
Year of Graduation: _____ Degree/Diploma/Certificate earned: _____

EMPLOYMENT HISTORY: List most recent first. Use separate sheet if necessary.

Date of Employment: From _____ To _____ Employer: _____ Position Title:_____
Address: _____ Supervisor: _____ Hours/week: _____

Date of Employment: From _____ To _____ Employer: _____ Position Title:_____
Address: _____ Supervisor: _____ Hours/week: _____

Date of Employment: From _____ To _____ Employer: _____ Position Title:_____
Address: _____ Supervisor: _____ Hours/week: _____

PROFESSIONAL AFFILIATIONS: _____

CANDIDATE AFFIRMATION: **I understand the National Nephrology Certification Organization reserves the right to verify any or all information on this application and that certification depends upon successful completion of the specified eligibility requirements and examination. To the best of my knowledge, the information contained in this application is true, complete, correct, and is made in good faith.**

➡

_____
Signature of Candidate Date