



# Dialysis Technician

## curriculum

This course prepares students for an entry-level position as a Certified Hemodialysis Technician (CHT) with the required skills, knowledge and values to function as members of the clinical care team in both chronic (outpatient) and hospital (acute) setting. The course content includes, but is not limited defined CHT skills, the interpersonal skills, legal and ethical considerations in healthcare and Basic Life Support (BLS). Upon completion, students are eligible to pursue certification immediately through the Board of Nephrology Examiners Nursing Technology (BONENT) as a Certified Hemodialysis Technician (CHT).

Units	Modules	Clinical Lab Skills	Takeaways
<p><b>Unit 1</b> Introduction to Hemodialysis</p>	<ul style="list-style-type: none"> <li>• Introduction to Hemodialysis Health Science</li> <li>• Medical Terminology</li> <li>• History of Dialysis</li> <li>• Scientific Principles of Dialysis</li> </ul>	<ul style="list-style-type: none"> <li>• Osmosis</li> <li>• Diffusion</li> <li>• Ultrafiltration</li> <li>• Blood tests</li> </ul>	<ul style="list-style-type: none"> <li>• Review basic biology.</li> <li>• Review basic chemistry.</li> <li>• Review basic math.</li> <li>• Understand hemodialysis math.</li> <li>• Learn medical terminology.</li> <li>• Learn to recognize and define abbreviations.</li> <li>• Learn how dialysis began.</li> <li>• Get to know the dialysis care team.</li> <li>• Understand osmosis, diffusion, and ultrafiltration.</li> <li>• Learn common blood tests.</li> </ul>
<p><b>Unit 2</b> Water Treatment System</p>	<ul style="list-style-type: none"> <li>• Understand Components/Design of Systems</li> <li>• Maintain Systems</li> <li>• Monitor and Evaluate Systems</li> <li>• Renal Anatomy</li> <li>• Types of Kidney Disease</li> <li>• Diabetes &amp; Clinical Complications</li> </ul>	<ul style="list-style-type: none"> <li>• Dialysis-quality water</li> <li>• Ultraviolet light</li> <li>• AAMI</li> <li>• Chlorine or chloramines</li> <li>• Anatomy of the kidneys</li> <li>• Renal system</li> <li>• Type 1 and Type 2 diabetes.</li> </ul>	<ul style="list-style-type: none"> <li>• Recognize actions</li> <li>• Recognize the process of ultraviolet light exposure</li> <li>• Understand the process of disinfecting water treatment system</li> <li>• Understand the maintenance of all treatment components</li> <li>• Perform water treatment system checks</li> <li>• Understand quality control of reprocessing equipment per AAMI standards</li> <li>• Monitor total chlorine or chloramines</li> <li>• Maintain water treatment systems records for compliance with regulatory and standard setting</li> <li>• Identify contaminants monitored in the water system.</li> <li>• Identify proper dialysis-quality water</li> <li>• Learn the anatomy of the kidneys.</li> <li>• Learn the role of the renal system</li> <li>• Cover the signs and symptoms associated with kidney failure.</li> <li>• Learn the difference between chronic kidney disease and acute kidney failure.</li> <li>• Learn what options patients have once diagnosed.</li> <li>• Learn the possible complications that can happen within the clinic.</li> <li>• Learn the difference between type 1 and type 2 diabetes.</li> <li>• Consider the impact of diabetes on the kidneys</li> </ul>

### Unit 3

#### Hemodialysis Machine Technology

- Maintain Dialysis Machine
- Set-up Machine
- Evaluate Machine Operation

- Dialysis Machine
- Set-up Machine
- Machine Operation
- Safety checks on dialysis equipment
- Bicarbonate and acid solutions
- Medical Instrumentation (AAMI)
- Oxygen therapy
- Glucometer
- pH
- Conductivity meter

- Clean and disinfect dialysis equipment
- Record all machine disinfection
- Check readiness of emergency equipment
- Verify the calibration of ancillary medical equipment
- Recognize errors in blood and dialysate flow rates
- Prepare dialysis equipment for treatment (e.g., prime, rinse, fluid delivery system)
- Prepare auxiliary equipment (e.g., oxygen therapy, glucometer, conductivity meter)
- Rotate dialysis equipment in dialysis unit
- Perform residual chemical checks
- Perform required safety checks on dialysis equipment (e.g., conductivity, pH, temperature)
- Test alarms (e.g., air detector, venous/arterial pressure, blood leak detector)
- Prepare and verify bicarbonate and acid solutions
- Document daily equipment logs
- Understand quality control of dialysis equipment per Association for the Advancement of Medical Instrumentation (AAMI) standards
- Perform rinse procedures for dialysis delivery systems
- Perform disinfect procedures for dialysis delivery systems
- Understand equipment maintenance records for compliances with regulatory and standard setting
- Adhere to equipment maintenance procedures and schedules

### Unit 4

#### Central Venous Catheters

- Central Venous Catheters
- Payment for Dialysis and Transplant
- Infection Control
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- Types of catheters
- Aseptic technique
- Ancillary equipment and supplies
- Glove changing
- Hand washing
- personal protective equipment (PPE).

- Cover types of catheters.
- Understand catheter placement.
- Understand aseptic technique when accessing catheters
- Explain Medicare coverage for dialysis patients.
- Understand regulations for Medicare.
- Learn Medicare coverage for transplant patients.
- Follow all clean/dirty procedures in order to eliminate cross-contamination
- Recognize complications in dialysis treatments regarding infectious diseases (e.g., AIDS, TB, influenza)
- Ancillary equipment and supplies
- Demonstrate understanding and perform cannulation using aseptic technique for needle insertion and all other required procedures
- Glove changing
- Wash machines, station area, and chairs after each patient run
- Hand washing
- Learn proper aseptic technique.
- Cover personal protective equipment (PPE).
- Understand aseptic technique prior to treatment initiation

## Unit 5

### Starting a Dialysis Treatment

- Interacting with Patients
- Starting a Dialysis Treatment
- Pre-Dialysis treatment
- Monitoring During Dialysis
- Post-Dialysis Procedures
- Dialyzer Reuse
- Maintain storage of medications (e.g., heparin, normal saline, Xylocaine)
- Maintain storage of equipment and supplies
- Check reuse dialyzer label
- Inspect dialyzer
- Evaluate access
- Prepare vascular access for cannulation
- Prepare CVC and change dressing
- Gain access
- Collect laboratory samples (e.g., cultures, blood, urine)
- Monitor and record treatment data
- Notify nurse of any changes in patient condition
- Respond to dialysis machine alarms
- Report complaints or observations to nurse
- Document observations in medical record
- Discuss ultrafiltration plan with nurse
- Understand the importance of keeping patient confidentiality.
- Identify how to keep the relationship between patient and caregiver professional.
- Evaluate fluid management
- Replacement therapy
- Sequential ultrafiltration
- Ultrafiltration concepts
- Collect laboratory samples (e.g., cultures, blood, urine)
- Administer heparin for initiation of treatment
- Verify patient identification at initiation of dialysis
- Verify patient identification at initiation of dialysis
- Initiate treatment (e.g., set parameters, blood flow rate, dialysate flow)
- Document observations and patient data
- Identify and respond to complications
- Administer oxygen to patient by cannula or mask
- Document observations and patient data
- Cover the reuse process.
- Learn how to sign off a dialyzer prior to its use.
- Understand what to do if the dialyzer is faulty or unsafe.
- Learn proper documentation of reuse dialyzer

## Unit 6

### Vascular Access

- Renal Nutrition and Diet Restrictions
- Peritoneal Dialysis
- Pediatric Dialysis
- Ethics and Law
- Dialysis Medications
- Helping Patients Cope
- Vascular Access
- pediatric machines
- Peritoneal dialysis
- Medications
- Fistula
- Graft,
- CVC
- NFACT Team
- Understand the role of the renal dietician.
- Identify which foods have a negative impact on the kidneys
- Cover the pros and cons of peritoneal dialysis.
- Identify types of peritoneal dialysis
- Identify types of access placement preferred for each age group.
- Understand the difference between regular hemodialysis and pediatric dialysis
- Identify the organizations meant to uphold dialysis ethics and law
- Learn the different medications for patients on dialysis.
- Learn bedside manners.
- Learn danger signs for patients who are abused.
- Know who to contact in case the patient needs assistance
- Learn the different access options: fistula, graft, or CVC.
- Learn how access placement is determined.
- Understand recovery time and first cannulation
- Learn about the NFACT team.

<p style="text-align: center;"><b>Unit 7</b></p> <p style="text-align: center;"><b>Skills Laboratory Training</b></p>	<ul style="list-style-type: none"> <li>• Prepare treatment for individual patient</li> <li>• Set up equipment including rationale</li> <li>• Prepare and evaluate patient's access</li> </ul>	<ul style="list-style-type: none"> <li>• Collect pre-dialysis data</li> <li>• Initiate Dialysis</li> <li>• Vital signs</li> <li>• Weight evaluation</li> <li>•</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare treatment for individual patient</li> <li>• Set up equipment including rationale</li> <li>• Collect pre-dialysis data</li> <li>• Prepare and evaluate patient's access</li> <li>• Initiate Dialysis</li> <li>• Proper monitoring during treatment</li> <li>• Discontinue treatment</li> <li>• Collect post-dialysis data collection and discharge</li> <li>• Disassemble and clean equipment</li> <li>• Respond appropriately to emergencies</li> <li>• Vital signs</li> <li>• Weight evaluation</li> <li>• Need for supplemental oxygen</li> </ul>
<p style="text-align: center;"><b>Unit 8</b></p> <p style="text-align: center;"><b>Hemodialysis Clinical Simulation</b></p>	<ul style="list-style-type: none"> <li>•</li> <li>• Onsite hands on practice experience skills</li> <li>• Practices priming the dialyzer (artificial kidney)</li> <li>• Cannulation Technique</li> </ul>	<ul style="list-style-type: none"> <li>• Cleaning and Disinfection of Dialysis Equipment</li> <li>• Preparation and set up of dialysis machines</li> <li>• Cannulation</li> <li>• Priming the dialyzer (artificial kidney)</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Practices priming the dialyzer (artificial kidney)</li> <li>• Identify Cannulation Technique</li> <li>• Practices priming the dialyzer (artificial kidney)</li> <li>• Infection control technique and practices</li> <li>• Dialysis Patient Assessment and Observations</li> <li>• Dialysis treatment required documentation</li> <li>• Responding to dialysis complications</li> </ul>
<p style="text-align: center;"><b>Unit 9</b></p> <p style="text-align: center;"><b>Professional Development</b></p>	<ul style="list-style-type: none"> <li>• Document incidents</li> <li>• Maintain documentation/data</li> <li>• Storage of medications</li> <li>• Storage of equipment and supplies</li> </ul>	<ul style="list-style-type: none"> <li>• Process improvement</li> <li>• Treatment</li> </ul>	<ul style="list-style-type: none"> <li>• Describe personality traits important to employers.</li> <li>• Identify personality traits, technical skills, and transfer skills.</li> <li>• Describe how to develop a career objective and identify personal needs</li> <li>• Participate in quality assurance process improvement (QAPI) activities</li> <li>• Participate in the development of dialysis unit objectives</li> <li>• Identify organizations that aid in professional development.</li> <li>• Demonstrate communication skills with staff members</li> <li>• Promote a teamwork approach by offering information, advice, and assistance</li> <li>• Contribute to constructive working relationships</li> <li>• Participate in self and/or peer evaluations as directed</li> <li>• Ensure the confidentiality of patient and employee information</li> <li>• Assist in orientation of new staff members</li> </ul>

**Unit10  
Career Development  
Services**

- Job Search Process
- Interview Process and Starting a new Job
- Create a resume and cover letter.
- Describe tips when interviewing
- Create a career portfolio
- Medical Assistant Certification Exam Preparation

- Complete an online profile and job application
- Negotiating wages and benefits

- Preparing resumes and developing job interviewing skills
- Identifying job position openings and following up with employers after interviews
- Maintaining employment and securing opportunities for advancement once hired
- Developing and utilizing a network of professional contacts that can aid the job search effort.
- Describe how to create a career portfolio
- Describe how to prepare for a job interview.
- Identify the following related to the interview
- Explain how to follow up after an interview and create a thank you note for an interview
- Describe ways to improve your job opportunities
- List legal and illegal interview questions
- Explain common human resource hiring requirements, getting started on the job, maintaining your job, and leaving

**Unit 11  
BONENT  
Examination Prep**

- Board of Nephrology Examination Technology (BONENT) Examination
- CHT- Certified Hemodialysis Technician
- CCHT- Certified Clinical Hemodialysis Technician
- CCNT- Certified Clinical Nephrology

- BONENT Online Practice Exam

- Prepare student for the Certified Hemodialysis Technician (CHT) Examination
- Prepare student for the Certified Clinical Hemodialysis Technician (CCHT) Examination
- Prepare student for the Certified Clinical Nephrology (CCNT) Exam