SHORT TERM VOCATIONAL CERTIFICATE COURSE

COURSE NAME: DIALYSIS ASSISTANT

(12 months Duration)

Prepared by

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STATE INSTITUTE OF VOCATIONAL EDUCATION
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HYDERABAD, TELANGANA

NAME OF THE COURSE: **DIALYSIS ASSISTANT**

SECTOR : PARAMEDICAL

COURSE CODE : DAHM

ENTRY QUALIFICATION: Intermediate (Bi. P. C/ MLT)

PRE-REQUISITES: Basic knowledge of anatomy and physiology

TERMINAL COMPETENCE: Upon completion, candidates will be able to work as Dialysis Assistant and capable of delivering high-quality care and contribute effectively to a multidisciplinary healthcare team.

DURATION:

12Months - (80 Hours: English + Course content: 400 Hours)

Introduction of the course: The Dialysis Assistant course is designed to equip individuals with the essential skills and knowledge required for proficiently supporting dialysis treatment. This comprehensive program covers the basics and advances of dialysis technology, patient care, and clinical practices, ensuring candidates to meet the demands of this critical healthcare role. With a focus on technical proficiency, clinical competence, patient communication, and safety protocols, they will gain hands-on experience and theoretical understanding.

Objectives:

- To equip students with a thorough understanding of the anatomy and physiology of the renal system, the principles of dialysis, and different types of dialysis treatments.
- To train students in the operation, maintenance, and troubleshooting of dialysis equipment, ensuring effective management of haemodialysis and peritoneal dialysis procedures.

- To prepare students to assess, monitor, and support dialysis patients, addressing both physical and psychological needs, and ensuring adherence to safety and infection control protocols.
- To foster critical thinking and problem-solving skills, encouraging continuous learning and adaptation to new technologies and advancements in the field of dialysis and nephrology.

Skills:

- **Technical Proficiency:** Mastery in setting up, operating, and maintaining dialysis machines and related equipment.
- **Clinical Competence:** Proficient in assessing and monitoring patients before, during, and after dialysis sessions.
- **Safety and Infection Control:** Knowledge and application of infection control protocols to prevent contamination and ensure a sterile environment.
- **Data Management:** Accurate documentation of patient data, dialysis parameters, and treatment outcomes.
- **Team Collaboration:** Ability to work effectively as part of a healthcare team, collaborating with nephrologists, nurses, and other healthcare professionals.
- **Professionalism and Ethical Practice:** Adherence to ethical standards and professional guidelines in dialysis practice.

SCHEME OF INSTRUCTION/MODULE:

1. **Communicative English: 40 hours (per module)**
2. **Course: 200 hours (06 months) & 400 hours (12 months)**

Duration of Course	Theory		On the Job Training		Total	
	Hours	weightage	Hours	weightage	Hours	weightage
2 Modules (12 months)	120	30%	280	70%	400	100%

SYLLABUS

Module 1:

1. **Introduction to Dialysis**

- History and Overview of Dialysis
- Types of Dialysis: Haemodialysis and Peritoneal Dialysis
- Basic Anatomy and Physiology of the Renal System
- Role and Responsibilities of a Dialysis Assistant

2. **Basics of Haemodialysis**

- Principles of Haemodialysis
- Dialysis Machine - Components and Functions
- Dialyzers and Dialysis Solutions
- Blood Access: AV Fistula, Grafts, and Catheters

3. **Basics of Peritoneal Dialysis**

- Principles of Peritoneal Dialysis
- Equipment and Supplies for Peritoneal Dialysis
- Procedures for CAPD and APD
- Patient Education and Home Dialysis

4. **Patient Care and Monitoring**

- Vital Signs Monitoring
- Recognizing and Managing Common Complications
- Infection Control and Prevention

- Patient Communication and Support

5. **Dialysis Procedure and Safety**

- Pre-Dialysis Assessment and Preparation
- Initiating and Terminating Dialysis Sessions
- Monitoring During Dialysis
- Post-Dialysis Care and Documentation

6. **Basic Pharmacology in Dialysis**

- Common Medications Used in Dialysis
- Medication Administration and Safety
- Understanding Prescriptions and Dosages
- Side Effects and Adverse Reactions

ON THE JOB TRAINING

1. **Introduction to Dialysis Units and Protocols**

- Understanding the layout and function of dialysis units
- Familiarization with hospital and clinic protocols
- Introduction to team roles and responsibilities
- Orientation to safety standards and infection control practices

2. **Patient Interaction and Communication**

- Techniques for effective communication with patients and families
- Patient confidentiality and ethical considerations
- Building rapport and managing patient anxiety
- Conducting patient assessments and documenting findings

3. **Dialysis Machine Operation and Maintenance**

- Setting up and calibrating dialysis machines
- Troubleshooting common machine issues
- Routine maintenance and cleaning of equipment
- Understanding water treatment systems in dialysis

4. **Haemodialysis Procedure**

- Preparing patients for hemodialysis
- Cannulation techniques and managing vascular access
- Monitoring patient vital signs during dialysis
- Recognizing and responding to dialysis-related complications

Practical Sessions

- Familiarization with basic anatomy and physiology
- Hospital procedure and different laboratory techniques
- General examination of patient vital parameters and history recording

Module 2

1. Advanced Haemodialysis Techniques

- High-Flux and High-Efficiency Dialysis
- Hemodiafiltration (HDF) and Hemofiltration
- Managing Dialysis for Patients with Special Needs
- Advanced Troubleshooting and Machine Maintenance

2. Vascular Access Management

- Advanced Cannulation Techniques
- Access Site Care and Complications Management
- Surgical Procedures for Access Creation and Repair
- Long-Term Care of Access Sites

3. Dialysis in Special Populations

- Paediatric Dialysis
- Geriatric Dialysis
- Dialysis for Patients with Co-morbid Conditions
- Emergency Dialysis Procedures

4. Nutritional Management in Dialysis

- Dietary Restrictions and Recommendations
- Managing Fluid Balance
- Nutritional Supplements for Dialysis Patients
- Patient Education on Nutrition

5. **Psychosocial Aspects of Dialysis**

- Psychological Impact of Chronic Kidney Disease
- Coping Strategies and Counselling
- Support Systems for Patients and Families
- Role of Dialysis Staff in Patient Support

6. **Legal and Ethical Issues in Dialysis**

- Patient Rights and Confidentiality
- Ethical Dilemmas in Dialysis Care
- Legal Responsibilities of Dialysis Staff
- Understanding Healthcare Policies and Regulations

ON THE JOB TRAINING

1. **Peritoneal Dialysis Procedure**

- Introduction to peritoneal dialysis and patient selection
- Setting up and operating peritoneal dialysis equipment
- Educating patients on home peritoneal dialysis
- Managing complications and troubleshooting

2. **Emergency Procedures and Patient Safety**

- Identifying and responding to dialysis emergencies (e.g., hypotension, hyperkalemia)
- Cardiopulmonary resuscitation (CPR) and basic life support (BLS) for dialysis patients
- Infection control and prevention of cross-contamination
- Fire safety and evacuation procedures in dialysis units

3. **Medication Administration and Management**

- Understanding medications commonly used in dialysis
- Administering medications during dialysis sessions
- Monitoring patient reactions and documenting administration
- Educating patients about their medications and potential side effects

4. Laboratory Procedures and Data Management

- Collecting blood samples and other specimens for laboratory analysis
- Understanding key laboratory tests and their implications for dialysis
- Documenting patient data and maintaining accurate records
- Using electronic health records (EHR) and data management systems

Practical Sessions

- Setting up dialysis machine, AV cannulation
- Setting up of automated peritoneal dialysis equipment
- First assistant in minor procedures

3 months internship is mandatory in a reputed hospital

LIST OF EQUIPMENT

1. **Dialysis Machines**
   a. Haemodialysis machines
   b. Peritoneal dialysis machines
2. **Dialysis Supplies**
   a. Dialyzers
   b. Dialysis solutions and concentrates
   c. Blood tubing sets
   d. Catheters and cannulation needles
   e. Accessory tubing and connectors
3. **Water Treatment System**
   a. Reverse osmosis (RO) water treatment unit
   b. Water quality testing kits
4. **Patient Monitoring Equipment**
   a. Blood pressure monitors
   b. Pulse oximeters

c. Thermometers
d. Weight scales

5. **Emergency Equipment**
a. Defibrillator
b. Emergency crash cart with necessary medications
c. Oxygen supply and masks
d. Suction apparatus

6. **Laboratory Equipment**
a. Blood sample collection kits (needles, tubes, etc.)
b. Centrifuge
c. Glucometer
d. Laboratory reagents and test kits

7. **Medical Furniture and Fixtures**
a. Dialysis chairs or beds
b. IV poles
c. Patient privacy screens
d. Sterile dressing and procedure trays

8. **Cleaning and Maintenance Supplies**
a. Disinfectants and cleaning solutions
b. Maintenance tools for dialysis machines
c. Personal protective equipment (gloves, masks, gowns)

9. **Training Simulators and Models**
a. Vascular access models for cannulation practice
b. Simulated dialysis machine interface for training

10. **Medication Administration Tools**
a. Syringes and needles
b. Medication dispensing carts

c. Infusion pumps

11. **Communication and Documentation Tools**

a. Computers with access to Electronic Health Records (EHR)

b. Documentation forms and charts

c. Intercom or communication devices

12. **Safety Equipment**

a. Fire extinguishers

b. First aid kits

c. Hand sanitizing stations

13. **Educational and Training Materials**

a. Textbooks and reference materials

b. Instructional videos and software

c. Handouts and lecture notes

14. **Miscellaneous Supplies**

a. Disposable gloves

b. Gauze and bandages

c. Sharps disposal containers

d. Waste disposal bags

Qualifications of Teaching Faculty:

1. **Bachelor's Degree:** A bachelor's degree in nursing (BSN), medical technology, or a related healthcare field is essential from any recognized university with an aggregate of 55% marks.

Advance degree (Preferred): A master's degree or higher in a healthcare-related field can be an added advantage.

2. **Clinical Experience:** A minimum of 3-5 years of clinical experience working as a dialysis nurse, technician, or in a related role.

3. Teaching Experience (preferred): Prior experience in teaching or training healthcare professionals or students is highly beneficial.

Reference books:

1. Handbook of Dialysis by John T. Daugirdas, Peter G. Blake, Todd S. Ing
2. Core Curriculum for Nephrology Nursing by Caroline Counts
3. Dialysis Therapy by Allen R. Nissenson and Richard N. Fine
4. Henrich's Principles and Practice of Dialysis by Edgar Lerma, Mitchell H. Rosner
5. Understanding Kidney Diseases by Hugh C. Rayner, Mark P. Thomas, David C. Wheeler

Other references:

1. National Kidney Foundation Primer on Kidney Diseases edited by Scott Gilbert
2. Nephrology Nursing Standards of Practice and Guidelines for Care by American Nephrology Nurses Association (ANNA)
3. Essentials of Peritoneal Dialysis by Hitesh Sharma
4. Clinical Practice Guidelines for Nutrition in Chronic Renal Failure by National Kidney Foundation
5. Cannon and Cecil's Textbook of Medicine by Paul G. Barash, et al.

Division of Marks:

Theory: 100 Max. Marks

1. Communicative English: 20 marks
2. Short Questions: 6 x5m = 30 marks
3. Long Questions: 4x10 = 40 marks
4. Multiple Choice Questions: 10x1=10 marks

Practical: 100 Max. Marks

1. External: 40 marks
2. Record/ Mini Project & Viva: 10 marks
3. Internship /OJT: 50 marks

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REGD. NO:

TIME: 3 HRS **MAX MARKS: 100**

DIALYSIS ASSISTANT
MODEL QUESTION PAPER (THEORY)

SECTION- A

COMMUNICATIVE ENGLISH 20 MARKS

SECTION- B

Note: a) Answer ALL questions.

b) Each question carries **5 Marks**. **6X5M=30 MARKS**

1. Define haemodialysis and peritoneal dialysis. Compare their mechanisms of action in removing waste products from the body.
2. Describe the components of a dialysis machine and their functions. Explain the process of dialysate preparation and its role in haemodialysis.
3. Explain the importance of monitoring vital signs during dialysis sessions. Discuss how to recognize and manage hypotension in dialysis patients.
4. Outline the steps involved in initiating and terminating a haemodialysis session. Discuss the key safety considerations during dialysis and post-dialysis care procedures.
5. Discuss the ethical principles guiding dialysis care decisions. Provide examples of legal issues that may arise in the context of dialysis treatment and patient rights.

SECTION- C

Note: a) Answer any **Four** questions.

b) Each question carries **10 Marks**. **4X10M = 40 MARKS**

1. Describe strategies that dialysis assistants can implement to support patients' psychosocial needs during their treatment journey.
2. Explain the principles and benefits of high-flux and high-efficiency dialysis. Discuss how these techniques differ from traditional hemodialysis and their implications for patient care.
3. Describe the surgical procedures involved in creating arteriovenous fistulas (AVFs) and grafts for hemodialysis. Discuss the long-term care strategies to prevent complications associated with vascular access.
4. Compare and contrast the challenges and considerations involved in pediatric and geriatric dialysis. Discuss specific adjustments in dialysis protocols and patient management strategies for these populations.
5. Evaluate the ethical dilemmas often encountered in dialysis care, such as resource allocation and patient autonomy.
6. Discuss the legal responsibilities of dialysis staff and the importance of adhering to healthcare policies and regulations.

SECTION-D 10X1=10 Marks

1. Which type of dialysis involves using the peritoneum as a natural filter for waste removal?
   A) Haemodialysis
   B) Peritoneal Dialysis
   C) Hemofiltration
   D) Hemodiafiltration
2. What is the purpose of the dialyzer in haemodialysis?
   A) To monitor blood pressure
   B) To remove waste products from the blood
   C) To regulate electrolyte levels
   D) To measure blood pH
3. Which type of peritoneal dialysis allows for continuous overnight therapy?
   A) CAPD (Continuous Ambulatory Peritoneal Dialysis)
   B) CCPD (Continuous Cycling Peritoneal Dialysis)
   C) APD (Automated Peritoneal Dialysis)

D) IPD (Intermittent Peritoneal Dialysis)

4. What is a common complication associated with haemodialysis that requires careful monitoring?
   A) Hypernatremia
   B) Hypokalaemia
   C) Hypotension
   D) Hypocalcaemia
5. What is the primary function of pre-dialysis assessment?
   A) To ensure the patient's comfort during dialysis
   B) To establish vascular access for dialysis
   C) To monitor electrolyte levels
   D) To assess the patient's readiness for dialysis
6. What is the primary objective of hemodiafiltration (HDF) in dialysis?
   A) To achieve higher ultrafiltration rates
   B) To enhance solute removal by convective transport
   C) To minimize fluid overload during dialysis
   D) To maintain electrolyte balance without dialysate
7. Which complication is most commonly associated with arteriovenous grafts used for haemodialysis access?
   A) Thrombosis
   B) Aneurysm formation
   C) Infection
   D) Stenosis
8. In paediatric dialysis, which factor is critical in determining dialysis adequacy?
   A) Body surface area
   B) Serum creatinine levels
   C) Blood pressure readings
   D) Haemoglobin concentration
9. Which dietary component is typically restricted in patients undergoing haemodialysis?
   A) Protein
   B) Fiber
   C) Calcium
   D) Vitamin C
10. What is an effective intervention for addressing depression in dialysis patients?
    A) Providing nutritional supplements
    B) Encouraging physical exercise
    C) Offering counselling and support groups

D) Adjusting dialysis prescription

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DIALYSIS ASSISTANT
MODEL QUESTION PAPER (PRACTICAL)

Note: a) Answer ALL questions.

b) Each question carries **10 Marks**. **4X10=40MARKS**

1. You are assigned to set up a haemodialysis machine for a patient scheduled for a session. Describe step-by-step how you would prepare the machine, including priming the blood lines and preparing the dialysate solution. After setup, demonstrate the process of AV cannulation on a mannequin, explaining the key considerations and techniques involved.
2. As part of your training, you need to demonstrate your understanding of basic anatomy and physiology relevant to dialysis. Identify and describe the major anatomical structures involved in vascular access for dialysis. Explain how knowledge of these structures informs the AV cannulation procedure and contributes to patient safety.
3. You are shadowing a technician in the hospital laboratory. Outline the standard procedures and safety protocols followed during routine laboratory tests related to dialysis patients, such as electrolyte analysis or blood count. Discuss the importance of accuracy and timeliness in laboratory results for patient management.

4. You are tasked with conducting a general examination of a dialysis patient before their session. Describe how you would assess vital parameters including blood pressure, heart rate, respiratory rate, and temperature. Discuss the significance of each parameter in assessing the patient's health status and monitoring during dialysis.

Record/ Viva: 10 marks

Internship/ OJT: 50 marks