INODAYA HOSPITAL

DIALYSIS MANUAL

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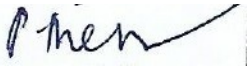
Prepared By:	***Designation: NEPHROLOGIST*** **Name : DR.TEJO KRISHNA** **Signature:** 
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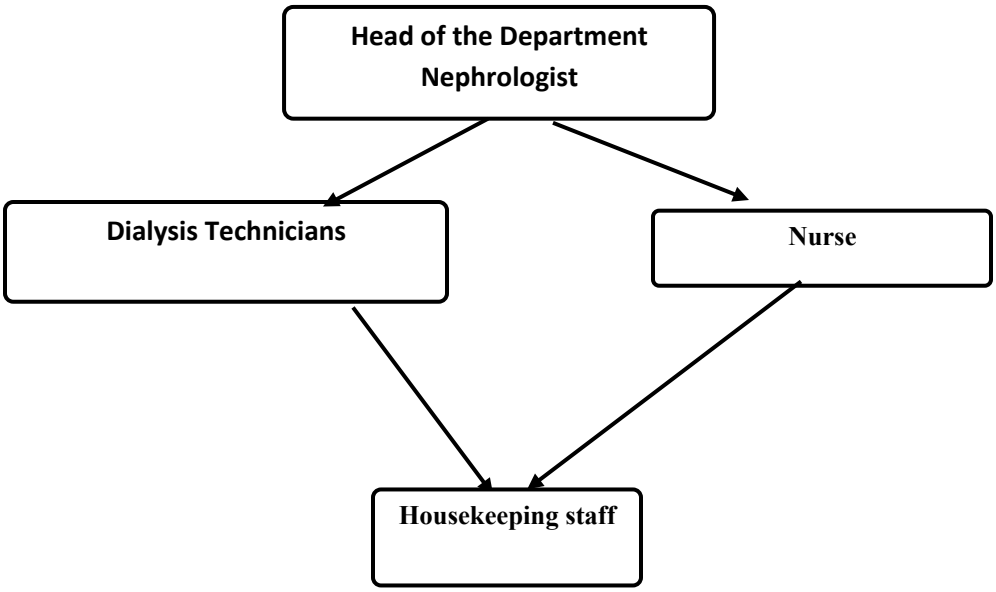
02.	DIALYSIS UNIT

VOCABULARY & ABBREVIATIONS

S. No	Abbreviation	Expansion
1	IH	Inodaya Hospitals
2	HOD	Head of the Department
3	SOP	Standard Operating Procedures
4	CQI	Continuous Quality Improvement
5	PNDT	Prenatal Diagnostic Test
6	VS	Versus
7	MD	Managing Director
8	NABH	National Accreditation Board For Hospitals And Health Care Providers
9	MRM	Management Review Meeting
10	NO.	Number
11	%	Percentile
12	CAPA	Corrective Action & Preventive Action
13	MD	Managing Director
14	IP	Inpatient
15	OP	Out patient
16	HBsAG	Hepatitis B virus
17	+ve	Positive
18	RO Plant	Reverse Osmosis Plant

ORGANOGRAM



Staff Responsibilities

CONSULTANT (NEPHROLOGIST)

1. He/she shall be responsible for carrying out and monitoring dialysis activity of the patients.
2. He/she shall be responsible for the daily operation.
3. He/she shall be responsible for the patients' treatment.
4. He/she shall be responsible for the ordering of supplies.
5. He/she shall be responsible for all the staff under his/her charge.

Dialysis Technicians (DT)

1. He/she shall be responsible directly to the Manager

2. He/she shall be responsible for the preparation of the machines, disposables and the observation of the patients in his/her shift.

3. He/she shall be responsible for the reprocessing of dialyzers.

4. He/she shall be responsible for the safe disposable of bio-hazards materials.

5. He/she shall be responsible for the safe environment of the Centre.

6. He/she shall be responsible for inserting the femoral catheter.

7. He/she shall be responsible for fistula cannulation.

8. He/she shall be responsible for removing of the needles.

9. He/she shall be responsible for updating the record.

Staff Nurses

1. He/she shall be responsible directly to the Shift Incharge.

2. He/she shall be responsible for the shift operation.

3. He/she shall be responsible for the patients' treatment and well-being.

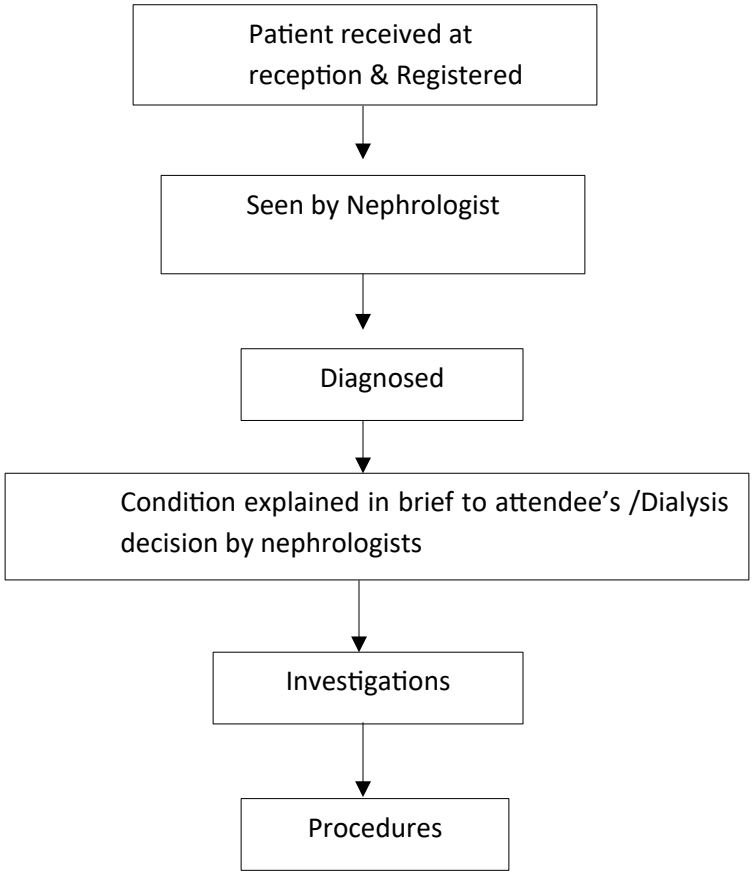
4. He/she shall be responsible for the safe environment of the Centre.

5. He/she shall be responsible to check the vitals of the patient half hourly.

6. He/she shall be responsible for taking the Hemodialysis consent

7. He/she shall be responsible for priming of the dialyzer and tubing

PROCESS FLOW



LIST OF RECORDS

S.no	Record no.	Registers Name	Responsibility	Location	Retention Period
1	IH/DIA/R/01	Mater Register	Manager-Dialysis	Dialysis unit	Continuous
2	IH/DIA/R/02	Haemodialysis Schedule	Manager-Dialysis	Dialysis unit	Continuous
3	IH/DIA/R/03	Patient Record	Manager-Dialysis	Dialysis unit	Continuous
4	IH/DIA/R/04	RO Plant Maintenance Book	Manager-Dialysis	Dialysis unit	Continuous
5	IH/DIA/R/05	Fogging Register/ terminal cleaning register	Manager-Dialysis	Dialysis unit	Continuous
6	IH/DIA/R/06	Machine Maintenance Record	Manager-Dialysis	Dialysis unit	Continuous
7	IH/DIA/R/07	Swab Culture Reports	Manager-Dialysis	Dialysis unit	Continuous
8	IH/DIA/R/08	Machine Disinfection Records	Manager-Dialysis	Dialysis unit	Continuous
9	IH/DIA/R/09	Machine Breakdown Register	Manager-Dialysis	Dialysis unit	Continuous
10	IH/DIA/R/10	Incidental form	Manager-Dialysis	Dialysis unit	Continuous
11	IH/DIA/R/11	Patient Complaint/ Suggestion Register	Manager-Dialysis	Dialysis unit	Continuous
12	IH/DIA/R/12	CSSD Register	Manager-Dialysis	Dialysis unit	Continuous
13	IH/DIA/R/14	Serology Register	Manager-Dialysis	Dialysis unit	Continuous

14	IH/DIA/R/15	Stock Register	Manager-Dialysis	Dialysis unit	Continuous
15	IH/DIA/R/16	HD record Register	Manager-Dialysis	Dialysis unit	Continuous

REGISTRATION OF PATIENT

1. Purpose:

To give a Geographical brief detail about the registration of patient in dialysis unit.

2. SCOPE:

Applicable to all the staff of the dialysis unit.

3. RESPONSIBILITY:

Dialysis technicians and Consultant, Nurse.

4. AWARENESS:

All the staff of the dialysis unit.

5. POLICY

5.1 REGISTRATION OF PATIENT:

- Need for dialysis established by the Nephrologists for all kinds of patient IP/OP.
- Prescription for dialysis for patient is written by the Nephrologists
- Patient registers himself and the IP\Op file is generated.

- All subsequent hemodialysis sessions are decided by the Nephrologist on case to case basis, depending on the medical needs and condition of the patient.
- An appointment for the same is given.

STRUCTURAL AWARENESS OF DIALYSIS UNIT

1. **Purpose**:

   To give a brief detail about the structural facility available at dialysis unit.

2. **Scope:**

   Applicable to all the staff of the dialysis unit.

3. **Responsibility:**

   Dialysis technicians and Consultant, Nurse.

4. **Awareness:**

   All the staff of the dialysis unit.

5. **POLICY**

5.1 Dialysis unit is located at the 3rd Floor, opposite General ward, access for doctors, patient and attendee's is by a lift/ trolley/wheel chair/ ramp/steps respectively.

Floor are tiled and colour contrast depicted to identify any trash or sharps conveniently to prevent any injury and for easy housekeeping.

- Single unit.
    1. First for changing the footwear & provision of face mask at the entrance.
    2. Hand wash left side of the entrance. And for preparation of the dialysate solution & storage area Bi-carb opposite hand wash facility.

3. A patient as of now the hemodialysis machine is used for other patients, (at present we don't have any serology positive patients – referring to govt. Hospital.

1.1 Beds:

- There is provision for 6beds in dialysis unit but presently 4 machines are functioning.
- Impervious mattresses/ pillow/ linen are provided.
- HIC practices and housekeeping is carried out as per protocols on hospital furniture\ linen in the dialysis unit.
- Hospital beds are movable and elevators also available

1.2 Lighting & Temperature Control:

- Natural lighting is accorded.
- Air conditioning facilitated to provide an ambient temperature (check carried out on day to day basis and records maintained for preventive maintenance).

1.3 Plumbing:

- Lines are adequately secure and checks carried out routinely and on any complaints from the user department
- Lines from RO Plant are checked routinely for any leaks.
- Effluent dialysate outlet is secured and checked for any leak.

1.4 Electricity:

- Load is adequate to the capacity
- UPS available for any voltage variations
- Connected to the generator incase of cut in electricity
- Maintenance of the electricity lines is carried out at routinely as per maintenance schedule of the hospital
- Ensuring no loose wire/exposed wire is present in the unit

1.5 Equipment:

- 4 Hemodialysis machines are available

- At present we don't have any provision for positive patient dialysis.
- The machines are calibrated yearly.
- Before each dialysis machine disinfection will carrying out.
- Record for the same exist
- Alarms are monitored for pressure, blood leak, flow & air bubbles.
- External cleaning and disinfecting of the machine is carried out once in a day and instantly in case of any infected patient being dialysed as per protocols.
- Internal disinfection, flushing carried out as per protocols of the equipment manual.
- Disinfection is carried out on the machine internally and externally in between two patients as per protocols.
- In case of any variation in the above mentioned points the machine in use is kept on hold and the biomedical engineer will be called, if it is beyond their level inform to call for the engineer from the manufacturer for corrective and preventive action.
- All such incidences are recorded.

1.6 Dialyser:

- It is the heart of any dialysis process
- 5 times reuse (based on TMP(Trans membrane pressure 100-200)

1.7 Water:

- The water used for mixing the Bi-carb powder is processed from the RO plant ensuring the efficiency of the prepared solution free from contaminants (chemical & microbiological)
- Checks for functioning of the processing of the water in the RO plant are carried out as per manufacturer manual\protocols.
- Records for the same exist
- Microbiological test of the RO water is carried out monthly and reports are analyzed for any corrective and preventive action as per acceptable standards.

- Chemical test is carried out monthly to ensure that acceptable limits are available in the RO water as per acceptable standards.
- Endotoxin water analysis is tested once in a month.
- Culture for Effluent of the dialysate solution is checked monthly.

1.8 Citrosterile:

- Check for its efficacy from the manufacture and good manufacturing practice certificate is procured.

1.9 Human Resource:

- Adequate manpower accorded in the form of-

  Consultant (Nephrologist) – 01

  Intensive care physicians - as per requirement

  Staff Nurse - 02

  Patient care technician - 02

  Housekeeping - 01
- Respective staffs are aware of their job description.
- Adequate training in the policy \ procedure \ dialysis manual.
- Records available for the same
- All the nursing staff is trained for initiating BLS.
- All staffs are aware of the code blue team announcement.
- Nursing staff are aware to assist in the ACLS situation.
- Records available for the same.

ROUTINE PRE-START PROCEDURE FOR THE DAY

1. **PURPOSE:**
   - To give a brief detail about the routine pre-start procedure.
   - Verify that all safety PPE are in place.
   - Inspect for any signs of damage of machines

2. **SCOPE:**

Applicable to all the staff of the dialysis unit.

3. **RESPONSIBILITY:**

Dialysis Technicians, Consultant and Nursing Team.

4. **AWARENESS:**

All the staff of the dialysis unit.

5. POLICY

5.1 ROUTINE PRE-START PROCEDURE FOR THE DAY:

- The dialysis therapist checks the functions of each machine at the start of the day according to the manufacturer's manual.
- Ensure that the functions are normal for effective functioning of the machine.
- Ensure for smooth functioning of the dialysis session for each machine is adequate and any variation is recorded for corrective and preventive action

BEFORE FIRST SESSION OF DIALYSIS

1. **PURPOSE:**

To give a brief detail before first session of dialysis.

2. **SCOPE:**

Applicable to all the staff of the dialysis unit.

3. **RESPONSIBILITY:**

Dialysis Technicians, Consultant and Nursing Team.

4. **AWARENESS:**

All the staff of the dialysis unit.

5. POLICY

5.1 BEFORE FIRST SESSION OF DIALYSIS:

- Consent Taken once in schedule procedures, in case of variation in the treatment re consent to be obtain as per NABH guidelines
- Counselled the patient and attendants followed by documentation
- Vascular access established

  Temporary- Femoral

  Jugular

  Permanent- AV Fistula
  AV Graft
  Perm Cath
- Decide on the session duration depending on the report of the patient and his condition as per the advice by the Nephrologists.
- Priming carried out
- Heparinisation carried out as per protocols.

TREATMENT PRE ASSESSMENT

A. Policy

1. To ensure proper assessment of the patient is done before treatment begins.
2. Minimized complications/problems during treatment.
3. Document the assessment for future reference.

B. Procedure

1. To do a general assessment of the patient:

- If the general condition is good, proceed with the next assessment.
- If the general condition is not good, consult with the Nephrologist.

2. Assess the Blood Access

   - If functioning well, proceed to the next assessment.
   - If not functioning well, investigate further, consult the Nephrologist if necessary.

3. Take the patient's weight:

   - If the intra-dialytic weight gain is 3 kg or less proceed with the next assessment.
   - If the intra-dialytic weight gain is more that 3 kg, patient needs a counseling session.

4. Take the patient's blood pressure (B/P) reading.

   - If the BP reading is out the normal range, investigate further, consult with the Nephrologists'/Intensivist if necessary.

5. Take patient's pulse rate:

   - If the pulse rate is within normal range: 60 – 100 beats per min. Proceed with the next assessment.
   - If the pulse rate is outside the normal range, investigate further, consult the Nephrologist if necessary.

6. Take patient's body temperature:

   - If the body temperature is not within normal range: investigate further, consult with the Nephrologist \ Intensivist if necessary.
   - Proceed with the documentation of the assessment in the prescribed form. If the assessment is satisfactory, proceed with the treatment. If the assessment is not satisfactory, consult the Nephrologist as to the next course of action.

DIALYSIS TREATMENT - COMMENCEMENT

A. Policy

To ensure the treatment commences properly without any interruptions or delay which can

Affect the required treatment outcome or cause complications.

B. Procedure

Priming of the dialyzer and tubing

1. Switch off the blood pump.

2. Clamp both the arterial and venous ends of the bloodline.

3. Disconnect the arterial end from the venous end leaving the connector with the venous end.

4. Place a piece of cotton swab or swipe beneath the connection point as the connection is be done, this to prevent any spillage of blood / blood contaminated fluid.

5. Connect the arterial end to the arterial AVF needle.

6. Open both the arterial and venous clamps and that of the arterial AVF needle.

7. Switch on the blood pump to 100ml/min.

8. Observe the blood flow within the bloodline.

9. As the blood reaches the “heparin line” unclamps the clamp and push in 1,500 IU (1.5ml) into the extra-corporeal circuit.

10. When the blood has filled the dialyser completely, invert the dialyser with the arterial end pointing 45 degrees towards the front of the machine.

11. As the blood reaches the venous end of the bloodline, switch off the blood pump.

12. Clamped the venous end of the bloodline.

13. Place a piece of cotton swab or swipe beneath the connection point as the connection is be done, this to prevent any spillage of blood / blood contaminated fluid.

14. Connect the venous end to the venous AVF needle.

15. Ensure there is no air bubble in the tip of the venous end of the bloodline and the venous AVF needle.

16. Open the clamp of venous bloodline set. If there are bubbles, direct the bubbles back to venous chamber by gravity.

17. Open the clamp of the venous AVF needle.

18. Switch on the air bubble detector.

19. Switch the blood pump to 100ml/min.

20. Unclamp both the arterial and venous pressure monitoring lines.

21. Observe the flow of extra-corporeal blood and the arterial and venous pressure.

22. Ask the patient how he/she is feeling be alert to switch off the pump at sign of a problem.

23. Increase the blood pump speed to the required speed.

24. Secure the bloodlines to the patient hand by a tourniquet.

25. Set the treatment parameters as required and start the treatment.

26. Do the necessary documentation.

27. Clean and tidy-up the area.

28. Make the patient as comfortable as possible.

TREATMENT POST ASSESSMENT

A. Policy

1. To ensure proper assessment of the patient is done after treatment.

2. Detect any signs of complications and to minimized complications/problems during treatment.

3. Document the assessment for future reference.

B. Procedure

1. To do a general assessment of the patient:

1.1 If the general condition is good, proceed with the next assessment.

1.2 If the general condition is not good, consult with the Nephrologist.

2. Assess the Blood Access

2.1 If functioning well, proceed to the next assessment.

2.2 If not functioning well, investigate further, consult the Nephrologist if necessary.

3. Take the patient's weight:

3.1 If the patient weight decrease is within the there about the targeted goal, proceed with the next assessment.

3.2 If the patient weight decrease is much less then the targeted goal, patient needs a counseling session.

4. Take the patient's blood pressure (B/P) reading.

   - 4.1 If the B/P reading is out the normal range, investigate further, consult with the Nephrologist \ Intensivist if necessary

5. Take patient's pulse rate:

- If the pulse rate is outside the normal range, investigate further, consult the Nephrologist \ Intensivist if necessary.

6. Take patient's body temperature:

- 6.1If the body temperature is not within normal range: investigate further, consult with the Nephrologist \ Intensivist if necessary.
- 6.2 Proceed with the documentation of the assessment in the prescribed form. If the assessment is satisfactory, patient is allowed to go home. If the assessment is not satisfactory, consult the Nephrologist as to the next course of action.

INFECTION CONTROL PRACTICES IN THE DIALISYS

1. **PURPOSE:**

   To keep entire patient care areas in Dialysis absolutely clean and to prevent cross infection.

2. **SCOPE:**

   This policy describes Infection Control practices in dialysis unit.

3. **RESPONSIBILITY:**

   Dialysis Technician, Consultant, Nurses, Ayah.

4. **AWARENESS:**

   All the staff of the dialysis unit.

5. PROCEDURES

5.1 Sanitary Conditions, Hygienic Practices and Infection Control

- All medical and nursing staff is trained to practice universal standard precautions in the dialysis unit.

- Universal precautions are followed in the facility for all patient care activities.
- Hand washing sinks are readily accessible in the patient care area to allow hand washing before and after each patient contact.
- Gloves, aprons, face-masks, goggles and sharps containers are readily available.
- All staff including janitorial staff is educated with clear instruction on handling blood spillage on equipment and the floor.
- All blood stained surface shall be treated as per hospital blood spill protocols.
- All new dialysis patients or patients who return to the dialysis unit after treatment from high- or unknown-risk areas are tested for HbsAg and Anti-HCV, and HIV.
- If patient is found to be HbsAg and HIV, HCV-positive referred to government Hospital.

5.2 Hepatitis B

5.2.1 Patients shall be tested for HBsAg and anti-HBs at 6-monthly intervals.

- Patients who are HBsAg and HCV, HIV positive shall be isolated and referred to government hospital.

DIALYSER REPROCESSING (MANUAL PROCEDURE)

1. Once dialysis treatments completed, carry the blood tubing and dialyzer in a plastic tray to reuse room

2. Separate the dialyzer and do water wash as per guidelines for 2-3 min.

3. If the clots in the headers appear small and friable the header may be removed from the dialyzer to be cleaned separately.

4. If the header is removed special care should be taken to check the O ring and replace it properly. Improper placement of the O ring or failure to replace it will result in a blood leak when the dialyzer is next used.

5. Clean Dialyzer with Per Acetic Acid (Renalin) fill dialyzer with solution prepared as per ratio given below

If per acetic acid not available, then fill dialyzer with Hydrogen Peroxide (1:1 ratio) / Hypochlorite (1%)

6. Keep the dialyzer a side for 1 to 2 min (Not more than 2 min)

7. Once the blood stains are removed from the dialyzer, give once again water wash to dialyzer.

8. After water wash refill RENALIN solution in to Dialyzer and close with sterile caps.

9. Disinfectant solution preparation (dilution ratio 965ml RO water + 35 ml Per Acetic Acid) or (dilution of 950 ml RO water + 50 ml of Formalin). Prepare solution every day freshly in 5 lit can.

10. Keep the dialyzer for 11 to 18 hrs. before using it for patient (if disinfected with Per acetic acid) & for 24 hrs. before using it (if disinfected with Renalin)

Solution Preparation (As per ISN Guidelines):

Per acetic Acid (Renalin/Hem clean etc.) The undiluted solution should be diluted to prepare 2 solutions of

- 2% (20 ml in 1 liter of water) as a cleaning agent and

- 3.5% (35 ml in 1 liter of water) as a disinfectant (To store dialyzer)

Bloodline Reprocessing

1. Reprocessing of Bloodline must be done immediately after termination of dialysis

2. Connect RO water line to the dialyzer connector port of Artery segment of the bloodline and let water flow for Two minutes and tap the "A" chamber gently until all the cots are removed completely. Open the Heparin line, Sample port and Transducer connector line for flushing out.

3. Connect RO water line to the dialyzer connector port of Venous segment of the bloodline and let water flow for Two minutes and tap the "V" chamber gently until all the cots are removed completely. Open the Sample port and Transducer connector line for flushing out.

4. Fill 1% Sodium hypo chlorite in both A and B bloodline and let it be for 3 minutes.

5. Drain the Sodium hypo chlorite.

6. Repeat Step #2, #3 and #4 if any blood clots have not been removed

7. Now, connect the RO water line to both A & V segment one by one to wash out all the Per- acetic solution.

8. Visually inspect the bloodline to make sure there are no clots and it is not damaged in any manner. If clots are present, repeat from steps #2 to #7. If bloodline is damaged, immediately bring it to the notice of the Lead Technician and discard it.

9. Fill the bloodline completely with 3.5% Per-acetic acid and make sure there are no air gaps or bubbles present.

10. Rinse the caps of the bloodline with Per-acetic acid and lock all the openings of the bloodline with these caps.

11. Label the bloodline with the Guest name, ID, age and gender and place it in the Dialyzer box for the guest

QUALITY ASSURANCE AND SAFETY IN DIALYSIS UNIT

It discusses quality assurance for water treatment equipment, equipment used to evaluate the acceptability of the dialysate concentrate, dialysate delivery equipment with its associated monitors and alarms, extracorporeal blood components, dialyzers, dialyzer reprocessing and testing equipment, and all other equipment.

1. PURPOSE:

To give a brief detail about the quality and safety in dialysis unit.

2. SCOPE:

Applicable to all the staff of the dialysis unit.

3. RESPONSIBILITY:

Technician Dialysis, Consultant, Nurses, Ayah.

4. AWARENESS:

All the staff of the dialysis unit.

5. POLICY

5.1 Quality assurance and safety in dialysis unit:

- Schedule microbiological and chemical testing of RO water monthly
- Schedule microbiological testing of required dialysate
- Cultures will be sent from the effluent dialysate of any one machine every month and report compared to standard and acceptable guidelines, any variation noticed corrective and preventive action initiated.
- Educate the staff in HIC practices
- Training on fire fighting
- CPR training for concerned staff.
- Analyzing the BUN\URR.

- Checks are carried out to ensure the presence of TDS values below the desire level once in a day.
- Blood chemistry and hematocrit (or hemoglobin) of each dialysis patients are checked at regular interval (preferably quarterly) to ensure patient's wellbeing.
- Regular testing of dialysate for electrolytes is suggested to ensure proper function of hemodialysis machines.
- Repair, maintenance and microbiological testing results of the hemodialysis machine are recorded with corrective actions where indicated.