KHYBER MEDICAL UNIVERSITY

RENAL DIALYSIS TECHNOLOGY CURRICULUM

STUDY GUIDE SEMESTER 5th

16 Weeks Activity Planner

2024-25

CENTRAL CURRICULUM & ASSESSMENT COMMITTE FOR NURSING, REHABILITATION SCIENCES & ALLIED HEALTH SCIENCES

Content

Table of Contents

Team for TOS Development

1.	Mr. ABDUR REHMAN	Director IPMS
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Vision & Mission

Khyber Medical University (KMU) Vision:

Khyber Medical University will be the global leader in health sciences academics and research for efficient and compassionate health care.

Khyber Medical University (KMU) Mission:

Khyber Medical University aims to promote professional competence through learning and innovation for providing comprehensive quality health care to the nation.

Institute of Paramedical Sciences Peshawar (IPMS-PESH) Mission:

To produce allied health professionals who excel in their skills, research, compassionate care, and community involvement, thereby enhancing the healthcare system.

Program Introduction

BS Renal Dialysis program at Khyber Medical University is a comprehensive four-year undergraduate degree designed to equip students with the knowledge, skills, and competencies required to become competent renal dialysis technologists. Renal Dialysis is a vital healthcare profession that focuses on treating and managing Renal Failure. Renal Dialysis technologists work closely with patients, healthcare providers, and other medical professionals to improve patient outcomes.

This Program is structured to provide students with a strong foundation in the sciences and specialized training in Renal Dialysis technology. Students will learn about the principles of Dialysis and the latest techniques and technologies used in Hospitals. Throughout the four-year program, students will participate in clinical rotations and internships at top-tier hospitals and healthcare facilities, where they will gain hands-on experience in patient care and develop the skills necessary to work effectively in a fast-paced healthcare environment. Upon completion of the program, graduates will be eligible to take the American Board of Registration and Certification exam and qualified to work as registered Renal Dialysis technologists.

Objectives

By the end of the BS Renal Dialysis Degree, the students will be able to:

Cognitive Domain:

1. Explain the principles of Renal Dialysis & Advantages.
2. Interpret pertinent clinical information to select appropriate treatment procedures for neonatal, pediatric, and adult patients.
3. Identify potential expanded roles for clinical dialysis professionals by examining professional behavior and the history of the field.
4. Discuss the current professional and clinical roles.
5. Apply knowledge of the field to address current or future needs related to renal dialysis practice, administration, education, and/or research.

Psychomotor Domain:

1. Demonstrate proficiency in using the latest techniques and technologies in renal dialysis technology.
2. Perform patient assessments and deliver high-quality diagnoses in a clinical setting.
3. Effectively communicate with patients, healthcare providers, and other medical professionals using appropriate terminology.
4. Work collaboratively with inter-professional teams to deliver effective, patient-centered diagnosis & care.
5. Develop the skills necessary to work efficiently in a fast-paced healthcare environment.

Affective Domain:

1. Exhibit professional behavior and adhere to ethical values in the delivery of clinical Renal dialysis.
2. Incorporate an evidence-based approach to patient care by identifying and accessing appropriate literature and assessing relevant medical research.
3. Demonstrate leadership skills in the Renal dialysis profession, healthcare, and the community.
4. Engage in continuous learning and professional development to stay current with the latest advancements in the field of renal dialysis.
5. Provide compassionate and patient-centered care that respects the dignity and autonomy of each individual.

Fifth Semester Subjects for BS Renal Dialysis Technology

S. No	Subjects	Duration
1	Acute Complication of Hemodialysis, RDT – 605	16 weeks
2	Chronic Complication of Hemodialysis I, RDT – 607	16 weeks
3	Special pathology of kidney ll RDT 604	16 weeks
4	Specialized dialysis RDT 606	16 weeks
5	Peritoneal dialysis RDT 608	16 weeks
6	Leadership and management ANS 610	16 weeks

ACUTE COMPLICATION OF HEMODIALYSIS, RDT- 605 3(2+1)

Course Discription:

Learning Objectives:

Table of Specification

ACUTE COMPLICATION OF HEMODIALYSIS, RDT- 605 3(2+1)

S.No	Weeks	Contents	Learning Outcome	Domain C	Domain P	Domain A	MIT's	Time/Hours	Assessment	No of Items
TOPIC: INTRADIALYTIC HYPOTENSION										
1	Week-1	Introduction	Define hypotension	C1			CBL/SGD	2	MCQs	06
2		Clinical features	Describe clinical features of hypotension	C2						
3		Etiology	Discuss causes of hypotension	C3						
4		Prevention	Describe prevention of hypotension during dialysis	C3						
5		Treatment goal	Discuss management of intradialytic hypotension	C3						
6										
7		Practical	Assessment and prevention of intradialytic hypotension		P4		Demo	1	OSPE	
8		Patient counseling	Counseling of dialysis patient about restriction of salt and water level		A4					
TOPIC: MUSCLE CRAMPS										
9	Week-2	Introduction	Define muscle cramps	C1			CBL/SGD	2	MCQs	05
10		Pathophysiology	Describe pathogenesis of muscle cramps during dialysis	C3						
11		Etiology	Describe causes of intradialytic muscle cramps	C2						
12		Clinical Features	Explain sign and symptom of muscle cramps	C2						
13		Prevention	Discuss prevention of muscle cramps	C2						
14		Treatment goal	Describe management of muscle cramps	C3						
20		Practical	Demonstrate management of muscle cramps		P4		Demo	1	OSPE	
21		Comply to SOPs	comply to sops to prevent muscle cramps		A4				OSCE	
TOPIC: NAUSEA AND VOMITING										
22		Introduction	Identify intradialytic nausea and vomiting	C1			CBL/SDG	2	MCQs	05
23		Etiology	Describe intradialytic causes of nausea	C2						

			and vomiting							
24		Prevention	Explain prevention of nausea and vomiting	C3						
25	Week-3	Management	Discuss treatment of nausea and vomiting	C3						
27										
30		Practical	Interpretation of lab reports of surgery dialysis patients		P4		Demo	1	OSCE	
31		Patient monitoring	Develop a monitoring plan for patient during dialysis			A4			OSCE	
TOPIC: HEADACH										
32		Introduction	Identify headach during dialysis	C1			CBL/SDG	2	MCQs	04
33		Etiology	Explain causes of headach	C2						
34		Prevention	Discuss prevention intradialytic headach	C2						
35	Week-4	Treatment	Describe management of headach during dialysis	C3						
36										
38		Practical	Assess headach during dialysis		P4		Demo	1	OSPE	
39		SOPs compliance	Comply sops for observation of intradialytic headach		A4					
TOPIC: CHEST PAIN AND BACKACH PAIN										
40	Week-5	Introduction	Define intradialytic chest pain and backache pain	C1			CBL/SDG	2	MCQs/SEQs	05
41		Etiology	Discuss differential causes of chest pain and back pain	C3						
42		Clinical features	Describe differential sign and symptoms of chest pain and back pain	C3						
43		Pathophysiology	Explain pathogenesis of chest and back pain	C2						
44		Treatment goal	Explain management of chest pain and back pain	C3						
45		Practical	Assess intradialytic chest and back pain		P4		Demo	1	OSCE	
46		Comply to SOPs	Comply sops for observation of chest pain and back pain during dialysis			A4	Role Play			
TOPIC: DISEQUILIBRIUM SYNDROME										
47		Introduction	Define disequilibrium syndrome	C1			CBL/SDG	2	MCQs	06
48		Etiology	Explain causes of disequilibrium syndrome	C2						
49		Pathophysiology	Discuss pathogenesis of disequilibrium syndrome	C3						

50		Prevention	Explain prevention of disequilibrium syndrome in dialysis patients	C2						
51	week 6	Treatment	Describe management of disequilibrium syndrome during dialysis	C3						
52		Practical	Interpretation of laboratory investigation of disequilibrium syndrome		P4		Demo	1	OSCE	
		Monitoring	Maintain dialysis session and appropriate dialysis time		A4					
TOPIC: DIALYZER REACTION										
53		Introduction	Define dialyzer reaction	C1			CBL/SDG	2	MCQs	04
54		Incidence rate	Discuss Incidence Rate of dialyzer reaction	C1						
55	Week-7	Etiological factors	Describe common causes of dialyzer reaction	C2						
56		Prevention	Explain prevention of dialyzer reaction during dialysis	C2						
57		Treatment	Discuss management of dialyzer reaction during dialysis	C3						
58		PRACTICAL	Demonstration of supportive treatment to patient with dialyzer reaction		P4			1	OSPE	
59		SOPs	Comply to SOPs assess management of dialyzer reaction during dialysis		A4					
TOPIC: SEIZURES										
	Week-8	Introduction	Define seizures during dialysis	C1			CBL /SDG	2	MCQs	03
61		Etiology	Explain causes of intradialytic seizures	C2						
62		Pathophysiology	Describe pathogenesis of seizures during dialysis	C3						
63		Prevention	Explain prevention od seizures	C2						
64		Treatment	Discuss management of seizures in dialysis dependent patient	C3						
65		Practical	Demonstrate laboratory investigation for seizures		P4		Demo	1	OSPE	
		SOPs	Comply to sops for observation of intradialytic seizures		A4					
TOPIC: HEMOLYSIS										
66	Week-9	Introduction	Define hemolysis	C1			CBL/SDG	2	MCQs/SEQs	04
67		Etiology	Explain causes of hemolysis	C2						
68		Prevention	Discuss prevention of hemolysis during dialysis	C2						

69		Treatment	Describe management of intradialytic hemolysis	C3						
73		Practical	Assess sign and symptoms of intradialytic hemolysis		P4		Demo	2	OSCE	
74		SOPs	Comply SOPs for observation of hemolysis during dialysis		A4					
TOPIC: FEVER AND CHILLS										
75	Week-10	Introduction	Identify intradialytic fever and chills	C1			CBL/SDG	2	MCQs/SEQs	05
76		Incidence rate	Explain pre and post dialysis incidence of fever and chills in dialysis dependent patients	C2						
77		Etiology	Discuss causes of fever and chills	C3						
78		Diagnosis	Describe differential diagnosis of fever during dialysis	C3						
79		Treatment	Discuss management of fever and chills in dialysis patients	C1						
81		Practical	Interpretation of laboratory reports of dialysis patients related with fever and chills		P4		Demo	2	OSCE	
82		SOPs	Comply SOPs for assess fever and chills during dialysis			A4				
TOPIC: ARRHYTHMIA										
83	Week-11	Introduction	Define arrhythmias	C1			CBL/SDG	2	MCQs/SEQs	04
84		Causes	Discus causes of arrhythmia during dialysis	C2						
85		Diagnosis	Explain diagnostic investigation for arrhythmias during dialysis	C2						
86		Treatment	Describe management of intradialytic arrhythmias	C3						
90		Practical	Demonstrate investigation for arrhythmias during dialysis		P4		Demo	1	OSPE	
91		Monitoring	Maintain All Assessment, Interventions, And Patient Responses			A4				
TOPIC: AIR EMBOLISM										
92	Week-12	Introduction	Define air embolism during dialysis	C1			CBL/SDG	2	MCQs/SEQs	04
93		Etiology	Discuss mechanical causes of air embolism during dialysis	C2						
94		Prevention	Describe prevention of air embolism during dialysis	C3						
95		Treatment	Discuss differential treatment option of air embolism in dialysis patients	C3						
96		Practical	Demonstrate management of air embolism during dialysis		P4				OSPE	

97		SOPs	Comply SOPs for observation of air embolism during dialysis			A4				
TOPIC: AIR EMBOLISM (clotting)										
98	Week-13	Introduction	Define extracorporeal circuit	C1			CBL /SDG	2	MCQs/SEQs	03
99		Indications	Explain Indications of blood clotting in circuit	C2						
100		Etiology	Discuss causes of blood clotting during dialysis	C2						
101		Procedure	Illustrate How to terminate Procedure	C3						
103		PRACTICAL	Demonstration to terminate procedure after clotting the circuit		P4					
104		SOPs	Comply to SOPs for observation of blood clotting during dialysis			A4				
TOPIC: HEMOLYSIS (blood leak)										
105	Week-14	Introduction	Identify blood leak during procedure of dialysis	C1			CBL/SDG	2	MCQs/SEQs	03
106		Indications	Enlist The Indications of blood leak in early Dialysis procedure	C2						
107		Prevention	Discuss how to prevent blood leak in dialysis procedure	C3						
108		Management	Describe management of dialysis patient ongoing after blood leak during dialysis procedure	C3						
110		Practical	Demonstrate Dialysis Machine preparation by Checking All Settings and Ensuring Its Functioning Properly		P4		Demo	2	OSPE	
111		Comply to SOPs	Consideration for Patient health status after blood leak in dialysis			A4	Role Play			
TOPIC: DIALYZER REACTION (pyrogenic reaction)										
112	Week-15	Introduction	Define pyrogenic reaction during dialysis	C1			CBL/SDG	2	MCQs/SEQs	05
113		Indications	Enlist The Indications of pyrogenic reaction during dialysis	C2						
114		Prevention	Explain how to prevent pyrogenic reaction in dialysis procedure	C2						
115		Management	Discuss Management of pyrogenic reaction, occur in dialysis patient during dialysis	C3						
117		Practical	Demonstrate vitals of dialysis patient after pyrogenic reaction		P4		Demo		OSPE	
		Follow-up	Encourage the patient to follow dialysis prescribed schedule							
118		**TOPIC: DIALYZER REACTION (itching)**								
119		Introduction	Identify itching during dialysis	C1			CBL/SDG			

120		Causes	Discuss differential causes of itching during dialysis	C3						
123		Management	Explain Management of Acute itching during dialysis	C3						
124		Practical	Demonstrate management of itching during dialysis		P4		Demo			
		SOPs	Comply to sops for observation of itching during dialysis			A4				

Recommended Books:
1.

ASSESSMENT BREAKDOWN				
S.NO	**TOPICS**	**NO OF MCQS**	**OSPE/OSCE STATION**	**STATIC OR INTERACTIVE**
1	INTRADIALYTIC HYPOTENSION	06	1	Static
2	MUSCLE CRAMPS	05	1	Static
3	NAUSEA AND VOMITING	05	1	Static
4	HEADACH	04	1	Static
5	CHEST AND BACKACH PAIN	05	1	Static
6	DISEQUILIBRIUM SYNDROME	06	1	Static
7	DIALYZER REACTION	03	1	Static
8	SEIZURES	03	Nil	Nil
9	HEMOLYSIS	04	1	Static
10	FEVER AND CHILLS	05	1	Static
11	ARRHYTHMIA	04	1	Static
12	AIR EMBILISM	04	1	Static
13	AIR EMBOLISM (clotting)	03	1	Static
14	HEMOLYSIS (blood leak)	03	1	Static
15	DIALYZER REACTION (pyrogenic reaction)	05	1	Static
16	DIALYZER REACTION (itching)	05	Nil	Nil
Total	**16**	**70**	**14**	**14**

CHRONIC COMPLICATION OF HEMODIALYSIS I, RDT- 607 3(2+1)

Course Description:

Acute complication of hemodialysis Provides an In-Depth Exploration of Dialysis Complication and Considerations in Unique Clinical Scenarios It Aims to Equip Healthcare Professionals (Students) With the Knowledge and Skills Necessary to Manage Patients Requiring Dialysis Under acute complication such as Those with intradialytic hypotension, muscle cramps, disequilibrium syndrome, dialyzer reaction.

Learning Objectives:

Cognitive domain:

By the end of study students will able to learn

1. Understanding the problems and complications encountered during dialysis
2. Identifying potential complications occurring in dialysis session and special attention to disequilibrium syndrome, hypotension and air embolism
3. Learning about dietary restrictions and fluid management to optimize intradialytic complication
4. Understanding the importance of analgesic drugs in renal residual function
5. Learning about the significance of monitoring vital signs and laboratory values during and after dialysis session.

Psychomotor domain:

By the end of study students will able to learn

1. Manage intradialytic complications
2. Video demonstration on dialysis procedure along with technical complication
3. Demonstrate on the patient hemodialysis treatment sheet, progress notes or electronic medical record
4. Interpretation of different complication during dialysis and how its prevention
5. Continuous monitoring and early detection can reduce and may even prevent problems and complication

Affective domain:

By the end of this course, students should be able to

1. Demonstrate punctuality
2. Follow the specified norms of the CBL, SGD teaching & learning effectively.
3. Demonstrate humbleness and use socially acceptable language during academic and social interactions with

human models, colleagues, and teachers.

4. Demonstrate ethically competent decisions when confronted with an ethical, social, or moral problem in

professional or personal life

5. Comply with SOPs of practical & procedure effectively

Table of Specification

SUBJECT: CHRONIC COMPLICATION OF HEMODIALYSIS I, RDT- 607 3(2+1)

S.No	Weeks	Contents	Learning Outcome	Domain			MIT's	Time/Hours	Assessment	No of Items
				C	P	A				
TOPIC: PSYCHOSOCIAL ISSUES IN END STAGE RENAL DISEASE										
1	Week-1	Introduction	Define psychosocial issues	C 1			CBL/SGD	2	MCQs	05
2		Depression	Identify depression in dialysis dependent patients	C 1						
3		Clinical features	Explain symptoms of depression in dialysis unit	C 2						
4		Treatment option	Discuss differential treatment option of depression in dialysis patients	C 3						
6		Practical	Assess psychosocial issues in dialysis unit		P4		Demo	1	OSPE	
7		Counselling	Console the depressed dialysis dependent patient			A 4	Role Play		OSPE	
TOPIC: HYPERTENSION										
8	Week-2	Introduction	Define hypertension	C 1			CBL/SGD	2	MCQs	04
9		Etiology	Discuss causes of hypertension	C 2						
10		BP measurement	Explain achieving target BP in patient on hemodialysis	C 3						
11		Management	Describe BP control in patient on hemodialysis and peritoneal dialysis	C 2						
14		Practical	Demonstrate BP measurement in hypertensive dialysis patient		P4		Demo	1	OSPE	
15		Patient assessment	Assessment of BP in patient on hemodialysis			A 4			OSCE	.
TOPIC: HEMATOLOGICAL ABNORMALITIES										
16		Introduction	Define Anemia in dialysis patients	C 1			CBL/SDG	2	MCQs	05
17		Etiology	Explain causes of anemia in renal failure	C 2						
18		Clinical features	Discuss symptoms of anemia in dialysis dependent patients	C 2						
19	Week-3	Diagnosis	Explain differential diagnosis of anemia in ESRD patients	C 3						

24		Practical	Interpretation of Blood Samples to investigate anemia in dialysis patient		P4		Demo	1	OSPE	
25		Informed consent	Take Informed Consent from Patients Before Taking Blood Sample			A 4			OSCE	
TOPIC: ERYTHROPOIETIN THERAPY (ESA)										
26		Introduction	Define erythropoietin	C 1			CBL/SDG	2	MCQs	05
27		Erythropoietin administration	Explain rout of administration of erythropoietin	C 2						
28	Week-4	Erythropoietin initiating	Discuss initiating therapy of erythropoietin in dialysis dependent patient	C 3						
29		Maintenance	Describe erythropoietin maintenance therapy in dialysis dependent patient	C 3						
30		Side effect	Discuss side effect of erythropoietin in dialysis	C 2						
34		Practical	Demonstrate administration of erythropoietin in dialysis patient		P4		Demo	1	OSPE	
35		SOPs	Comply SOPs for observation of side effect of erythropoietin			A 4				
TOPIC: BLOOD TRANSFUSION REACTION										
36	Week-5	Introduction	Define blood transfusion reactions are rare but life threatening	C 1			CBL/SDG	2	MCQs/SEQs	04
37		Indication	Explain recommendation of blood transfusion	C 2						
38		Clinical features of blood reaction	Discuss symptoms of blood transfusion reaction	C 3						
39		Etiology	Describe causes of blood transfusion reaction	C 3						
40		Complication	Explain possible complication of a transfusion reaction	C 3						
41				C 3						
42		Prevention	Discuss lowering risk for a transfusion reaction	C 3						
43		Treatment	Describe management of transfusion reaction	C 2						
44		Practical	Demonstrate administration of blood in dialysis patient during dialysis		P4		Video Demonstration	1	OSPE	
45		SOPs	Comply SOPs for observation of blood transfusion reaction			A 4	Role Play			
TOPIC: HEMOLYSIS										
46		Introduction	Define hemolysis	C 1			CBL/SDG	2	MCQs	05

47		Incidence	Explain incidence of hemolysis in dialysis patients	C 2						
48		Etiology	Discuss causes of hemolysis during dialysis	C 3						
49		Prevention	Discuss how to prevent hemolysis during dialysis	C 3						
50	week 6	Treatment goal	Explain acute management of hemolysis	C 2						
52		Practical	Demonstrate management of hemolysis in dialysis unit		P4		Demo	1	OSPE	
53		SOPs	Comply SOPs for observation of hemolysis symptoms during dialysis			A 4				
TOPIC: COAGULATION PROBLEM IN DIALYSIS PATIENTS										
53		Introduction	Define coagulation in dialysis	C 1			CBL/SDG	2	MCQs	05
54		Coagulation disorders	Discuss coagulation hemostasis	C 3						
55	Week-7	Etiology	Explain causes of coagulation during dialysis	C 2						
58		Practical	Assess coagulation problem in dialysis dependent patients		P2			1	OSPE	
59		Patient counselling	Comply SOPs for terminating dialysis procedure in coagulation disorder			A 4				
TOPIC: IMMUNE DYSFUNCTION IN HEMODIALYSIS										
60	Week-8	Introduction	Define immune system	C 1			CBL/SDG	2	MCQs	04
61		Etiology	Explain causes of immune dysfunction in dialysis patient	C 2						
62		Clinical complication	Discuss different complication of immune dysfunction in dialysis patients	C 2						
63		Role of hemodialysis membrane	Discuss effect of dialyzer membrane in immune dysfunction	C 2						
64		Management	Describe management of immune dysfunction in dialysis dependent patients	C 3						
66										
67		Practical	Assessment of different complication in dialysis patients related immune dysfunction		P4		Demo	1	OSPE	
		SOPs	Comply SOPs for observation of effect of dialyzer during dialysis							
TOPIC: INFECTIOUS PROBLEM IN HEMODIALYSIS										
68	Week-9	Introduction	Define infection	C 1			CBL/SDG	2	MCQs/SEQs	04
70		Causes	Explain causes of infectious problems in dialysis	C 2						
71		Risk in dialysis patients	Discuss risk factors of infection in dialysis patients	C 3						

75		Practical	Assess different infection in dialysis unit		P4		Demo	2	OSPE	
76		SOPS	Comply to SOPs for observation of risk factor of infection in dialysis patients			A 4				
TOPIC: BACTERIAL INFECTION										
77	Week-10	Introduction	Define bacterial infection	C 1			CBL/SDG	2	MCQs/SEQs	04
78		Bacterial infection in dialysis patients	Explain bacterial infection related to access site in dialysis patients	C 3						
79		Etiology	Discuss causes of infection related to access site	C 3						
80		Bacteremia	Identify bacteremia sign and symptoms in dialysis patients	C 2						
81		Infection unrelated access site	Enlist infection unrelated access site	C 1						
82		Infection control	Describe infection control methods in hemodialysis patients	C 3						
83		Therapeutic treatment	Describe differential therapeutic treatment goal of bacterial infection in dialysis patients	C 3						
84		Practical	Interpret prescription of antibiotic related to access site infection		P4		Demo	2	OSPE	
TOPIC: VIRAL INFECTION										
85	Week-11	Introduction	Define viral infection	C 1			CBL/SDG	2	MCQs/SEQs	04
86		Types	Explain differential types of viral infection in dialysis unit	C 2						
87		Hepatitis B	Discuss hepatitis B incubation period and mode of transmission	C 3						
88		Hepatitis C	Discuss hepatitis C incubation period and mode of transmission	C 3						
89		Etiology	Explain causes of viral infection	C 2						
90		Vaccination	Explain differential vaccine about viral infection	C 2						
91		investigation	Describe diagnostic investigation of viral infection	C 2						
93		Practical	Demonstration administration of viral vaccine in hemodialysis patients		P4		Demo	1	OSPE	
		SOPs	Comply SOPs for observation of infectious precaution		A4					
TOPIC: BONE DISEASE										
94	Week-12	Introduction	Identify bone diseases in chronic kidney failure patients	C 1			CBL/SDG	2	MCQs/SEQs	04
95		Pathophysiology	Discuss pathogenesis of bone disease in dialysis patients	C 3						
96		Osteitis Fibrosa	Explain osteitis fibrosa in chronic kidney failure patients	C 2						

97		Osteoporosis	Discuss osteoporosis in chronic kidney failure patients	C 3						
98		Osteomalasia	Discuss osteomalaisa in dialysis patients	C 3						
99		Adynamic bone	Explain adynamic bone in dialysis dependent patients	C 3						
100		Treatment	Describe differential management of different bone diseases	C 3						
101		Practical	Assess diagnostic investigation of bone diseases in dialysis patients		P4				OSPE	
102		Comply to SOPs	Comply to SOPS for observation of differential bone diseases		A 4					
TOPIC: DERMATOLOGICAL PROBLEM										
103	Week-13	Introduction	Identify dermatological problem in chronic kidney patients	C 1			CBL/SDG	2	MCQs/SEQs	05
104		Pruritus	Explain causes od pruritus	C 2						
105		Pathophysiology	Discuss pathogenesis of itching in dialysis dependent patients	C 3						
106		Prevention	Discuss prevention of itching during dialysis	C 2						
107		Treatment	Describe first line and second line management of dermatological problem	C 2						
112		Practical	Assess itching during dialysis session		P4					
113		Ethical Norms	Maintain ethical norms of dialysis dependent		A 4					
TOPIC: ENDOCRINE DISTURBANCE										
114	Week-14	Introduction	Identify major endocrine gland disturbance in dialysis patients	C 1			CBL/SDG	2	MCQs/SEQs	04
115		Clinical manifestation	Explain how to assess dialysis patients related with differential endocrine disturbance	C 3						
116		Pathophysiology	Describe pathophysiology of endocrine disturbance	C 3						
117		Etiology	Discuss causes of endocrine disturbance in dialysis patients	C 3						
118		Management	Discuss treatment of differential hormonal disturbance in chronic kidney failure patients	C 3						
120		Practical	Assess symptoms of hormonal disturbance		P4		Demo	2	OSPE	
121		SOPs	Comply SOPs for hormonal therapy		A 4		Role Play			
TOPIC: ACID BASE BALANCE										
122	Week-15	Introduction	Define acidosis and alkalosis	C 1			Interactive Lecture/SDG	2	MCQs/SEQs	05

123		Types of acidosis	Explain respiratory acidosis and metabolic acidosis	C 3						
124		Types of alkalosis	Explain respiratory alkalosis and metabolic alkalosis	C 3						
125		Acidosis during dialysis	Discuss causes of acidosis during dialysis	C 3						
126		Alkalosis during dialysis	Discuss causes of alkalosis during dialysis	C 3						
127		Clinical features	Describe clinical presentation of acidosis and alkalosis	C 3						
128		Treatment goal	Discuss management of acid base problem	C 3						
129		Practical	Demonstrate diagnostic investigation of acid base problem in dialysis patients		P4		Demo		OSPE	
130		SOPS	Comply SOPS for observation of acidosis and alkalosis during dialysis session		A 4					
131			**TOPIC: FUNGAL INFECTION**							
132		Assessment of fungal infection	Identify important causes of fungal infection	C 2			CBL/SDG			
133		Management	Discuss treatment of fungal infection	C 2						
134	Week-16	Sites	Explain differential sites of fungal infection	C 2				2	MCQs/SEQs	03
135										
136										
137		Practical	Demonstrat application of fungal topical medicine in dialysis patients		P4		Demo			
		SOPs	Comply SOPs for observation of fungal infection in dialysis patients		A4					

Recommended Books:
1. Handbook of dialysis, John T. Daugaard's, Peter G. Black, Todd, 5th edition
2. Oxford Handbook of dialysis, Jeremy Levy, Edwina Brown, Christin Daley and Anastasia Lawrence,
3. Complication of dialysis, Norbert lame ire, Ravindra L. Metha
4. Oxford Desk Reference Nephrology, Jonatan Barratt, Kevin Harris, Peter Topham

Assessment Breakdown				
S.NO	**TOPICS**	**NO OF MCQs**	**OSPE/OSCE STATIONS**	**INTERACTIVE OR STATIC**
1	PSYCHOSOCIO ISSES	05	1	Static
2	HYPERTENSION	04	1	Static
3	HEMATOLOGICAL ABNORMALITIES	05	2	Static
4	ESA THERAPY	05	1	Static
5	BLOOD TRANSFUSION REACTION	04	1	Static
6	HEMOLYSIS	05	1	Static
7	COAGULATION PROBLEM	05	Nil	Nil
8	IMMUNE DYSFUNCTION	04	1	Static
9	INFECTIOUS PROBLEM	04	1	Static
10	BACTERIAL INFECTION	04	1	Static
11	VIRAL INFECTION	04	1	Static
12	BONE DISEASES	04	2	Static
13	ENDOCRINE DISTURBANCE	05	1	Static
14	DEMATOLOGICAL PROBLEM	04	1	Static
15	ACID BASE BALAMCE	05	1	Static
16	FUNGAL INFECTION	03	Nil	Nil
Total	16	70	14	

PERITONEAL DIALYSIS, RDT- 608 3(2+1)

Course Description:

Chronic Complication of Hemodialysis Is a Critical subject in nephrology that focuses on evaluating chronic complication and its management in dialysis dependent patients This Course Is Essential For (Students) Healthcare Professionals Involved in Renal Care as It Equips Them with Knowledge and Skills to Optimize Chronic complication in dialysis dependent patients and Improve Patient life.

Learning Objectives:

Cognitive domain:

By the end of this course, students should be able to

1. Evaluate chronic complication of hemodialysis.
2. Demonstrate therapy of chronic complication of dialysis patient.
3. Assess individual patient comorbidities, and residual renal function, that may influence improve the life.

Psychomotor domain:

By the end of this course, students should be able to

1. Describe chronic complication of hemodialysis
2. Interpretation of basic diagnostic method in hematology
3. Assessment of dialysis session

Affective domain:

By the end of this course, students should be able to

1. Follow the specified norms of the CBL and SGD teaching and learning
2. Demonstrate the humbleness and use the socially acceptable langue during academic and social interaction with patients
3. Demonstrate ethically competent decisions when confronted with an ethical social or moral problem in professional or person alive.

Table of Specification

SUBJECT: PERITONEAL DIALYSIS, RDT- 608 3(2+1)

S.No	Weeks	Contents	Learning Outcome	Domain C	Domain P	Domain A	MIT's	Time/Hours	Assessment	No of Items
TOPIC: Peritoneal Dialysis										
1	Week-1	Introduction to peritoneal membrane	Introduce to peritoneal dialysis.	C 1			Interactive Lecture/SGD	2	MCQs	5
2		Anatomy of peritoneum membrane	Describe the anatomy of peritoneum membrane	C 2						
3		Function of peritoneum membrane	Describe the function of peritoneum membrane	C 3						
4		Physiology of peritoneal transport	Explain the physiology of peritoneal transport	C 4						
6		Practical performance	observe the patients insertion site		P 2		Demo	1	OSPE	
7		informed consent	communicate the procedure to the patient effectively			A 4	Role Play		OSPE	
TOPIC: Factors affecting on the efficacy of peritoneal dialysis										
9	Week-2	Introduction	Define factors affecting on the efficacy of peritoneal dialysis	C 1			Interactive Lecture/SGD	2	MCQs	4
10		Residual renal function	Describe the residual renal function	C 2						
11		PD membrane function and solution characteristics	Illustrate pd membrane function and solution characteristics.	C 3						
12		PD regimen and prescription	Explain pd regimen and prescription	C 3						
14		Practical performance	Examine the ultrafiltration and fluid status		P 4		Demo	1	OSPE	
		informed consent	communicate the procedure to the patient effectively			A 4	Role Play		OSCE	
TOPIC: Effect of dwell time of salute and fluid transfer										
16	Week-3	Introduction	Define Effect of dwell time of salute and fluid transfer	C 1			Interactive Lecture/SDG	2	MCQs	6
17		Mechanism of salute transfer	Describe the mechanism of salute transfer	C 2						
21		mechanism of fluid transfer	Explain the mechanism of fluids transfer	C 4						
22		Optimal dwell time	Discuss the Optimal dwell time	C 3						
23		Factors influencing on dwell time	Discuss factors influencing on dwell time	C 4						
24		Practical performance	Examine residual renal function of patients independently		P 4		Demo	1	OSPE	

		Comply to SOPs	comply to SOPs for the collection of urine			A 4	Role Play		OSCE	
TOPIC: Apparatus for peritoneal dialysis										
26		Introduction to apparatus for pd	Define apparatus for peritoneal dialysis	C 1			Interactive Lecture/SDG	2	MCQs	5
27		Peritoneal dialysis catheter	Describe the Peritoneal dialysis catheter	C 2						
28		PD solution containers and connecters	Illustrate the PD solution containers and connecters	C 3						
29		ultrafiltration and drainage system	Discuss the ultrafiltration and drainage system	C 2						
30		Sterilization of equipment	Discuss the Sterilization of different pd equipment's	C 2						
31	Week-4	Disinfections	Discuss the disinfection of drainage system	C 2						
36		Practical performance	Examine alarm and safety features during the procedurs independently		P 4		Demo	1	OSPE	
		Comply to SOPs	comply to SOPs for the procedure of peritoneal dialysis			A 4	Role Play			
TOPIC: Hybrid ragmen's										
37		Introduction to hybrid ragmen	Define to hybrid ragmen	C 1			Interactive Lecture/SDG	2	MCQs/SEQs	7
38		Tidal peritoneal dialysis	Explain tidal peritoneal dialysis	C 3						
39		Combination of CAPD and APD	Discuss the combination of CAPD and APD	C 2						
40	Week-5	Continues flow pd	Explain The continues flow pd	C 3						
41		Benefits of hybrid ragmen	Discuss the benefits of hybrid ragmen	C 4						
42		Practical performance	Perform the laboratory monitoring and adjusting hybrid ragmen independently		P 4		Video Demonstration	1	OSPE	
		Comply to SOPs	comply to SOPs for the procedures			A 4	Role Play			
TOPIC: CAPD and APD										
43		Introduction	Define CAPD and APD	C 1			Interactive Lecture/SDG	2	MCQs	6
44		CAPD and APD procedures	Discuss CAPD and APD procedures	C 2						
45		CAPD and APD equipment's	Discuss CAPD and APD equipment's	C 2						
46		CAPD and APD Complications	Explain the CAPD and APD Complications	C 4						
47		Risk Factor	Discuss risk factor of CAPD and APD	C 4						
48		Dietary consideration of CAPD and APD	Explain the Dietary consideration of CAPD and APD	C 4						

49	Week-6		Discuss the Quality of life in CAPD and APD	C 2						
		Quality of life in CAPD and APD								
50		Types of APD	Elaborate different types of APD	C 4						
51		Practical performance	Observe the CAPD and APD solution composition		P 4		Demo	1	OSPE	
52		infromed consent	communicate the procedure to the patients effectively			A 4	Role Play			
TOPIC: Peritoneal dialysis catheters										
53		Introduction	Define Pd catheters	C 1			Interactive Lecture/SDG	2	MCQs	4
54										
		Types of pd catheters	Explain different types of pd catheters	C 3						
55		Insertion techniques for pd catchers	Explain the insertion techniques for pd catheters	C 3						
56		Complication of pd catheters	Discuss the complications for pd catheters	C 2						
57		Maintaining of pd catheters	Discuss the maintaining for pd catheters	C 2						
58	Week-7	Material used for pd catheters	Discuss the material used for pd catheters	C 2						
59		Practical performance	Observe the infection site in catheter related area		P 2			1		
60		informed consent	comply to SOPs for the procedures			A 4	Role Play			
TOPIC: Hypertension and hypotension										
61	Week-8	Introduction	Define Hypertension and hypotension	C 1			Interactive Lecture/SDG	2	MCQs	4
62		Classification	categorize hypertension and hypotension	C 2						
63		Causes	Discuss different causes of hypertension and hypotension	C 3						
64		Risk Factor	Discuss risk factors for hypertension and hypotension	C 3						
65		Clinical Features	Describe clinical features for hypertension and hypotension	C 2						
66		Laboratory diagnosis	Interpret various investigations for the diagnosis for Hypertension and v	C 5						
67		Practical performance	Calculate glomerular filtration rate independently		P 4		Demo	1	OSPE	
68		Comply to SOPs	comply to SOPS for the GFR			A 4	Role Play			
TOPIC: Acute peritoneal dialysis prescription										

70	Week-9	Introduction	Define acute pd dialysis prescription	C 1			Interactive Lecture/SDG	2	MCQs/SEQs	5
71		Prescription components	Classify the prescription components	C 2						
72		Initial assessment of the patients	Discuss the initial assessment of the patients	C 2						
		Consideration for specific patients population	Explain the consideration for specific patients population	C 3						
73		Monitoring and adjustment	Discuss the monitoring and adjustment	C 2						
74		Complication of acute pd dialysis prescription	Explain the complication of acute pd dialysis prescription	C 3						
75		Practical performance	Examine the patient and their assessment independently		P 4		Demo	2	OSPE	
		Comply to SOPs	comply to SOPs of the procedure			A 4	Role Play			
TOPIC: Monitoring clearness of peritoneal dialysis										
77	Week-10	Introduction	introduction to monitoring clearness of pd	C 1						6
78		Stages	Categorize stages of monitoring clearness of pd	C 3						
79		indicator of adequate clearness	Discuss the indicator of adequate clearness	C 2						
		Method for measuring clearness	Discuss method for measuring clearness	C 3						
		Frequency of	Explain Frequency of monitoring	C						
		monitoring		4						
		Adjustment based monitoring	Explain adjustment based monitoring	C 4						
		KT/V measurement	Explain KT/V measurement	C 6						
80		Monitoring residual renal function	Discuss monitoring residual renal function	C 3						
82		Practical performance	Perform the procedure of peritoneal equilibrium test.		P 4		Demo	2	OSPE	
		Comply to SOPs	Comply to SOPs urine analysis for the procedure of peritoneal equilibrium test.			A 4	Role Play			
TOPIC: Pyelonphrities										
84	Week-11	Introduction	Define Pyelonephritis	C 1			Interactive Lecture/SDG	2	MCQs/SEQs	4

85		Etiology	Discuss causative agent of Pyelonephritis	C 3						
86		Pathology	Describe pathology of Pyelonephritis	C 3						
87		Syptome	Explain symptom for Pyelonephritis	C 2						
		Prevention	Describe the prevention for Pyelonephritis	C 3						
		Clinical Presentation	Describe clinical consequences of different causes of Pyelonephritis	C 3						
88		Practical performance	Perform the procedure of ultrasonography for Pyelonphrities		P 4		Demo	1	OSPE	
TOPIC:Choice for PD modility										
90	Week-12	Definition	Define pd modality	C 1			Interactive Lecture/SDG	2	MCQs/SEQs	4
91		Types	Discuss types of pd modality	C 2						
		Factors	Discuss factors influencing pd modality choice	C 3						
		clinical consideration	Briefly discuss clinical consideration for pd modality choice	C 2						
		Management	Discuss management for pd	C 6						
		Practical performance	observe the life flexibility of patients .		P 4				OSPE	
		Comply to SOPs	comply to SOPs urine analysis for the procedure			A 4	Role Play			
TOPIC: Nutritional issues in peritoneal dialysis patients										
95	Week-13	Introduction	Define nutritional issues in pd	C 1			Interactive Lecture/SDG	2	MCQs/SEQs	3
96		Protein energy malnutrition	Explain protein energy malnutrition in pd	C 2						
97		Nutritional deficiency	Discuss the nutritional difference in pd patients.	C 3						
		Nutritional supplement for pd	Briefly discuss the nutritional supplement for pd patients	C 2						

		Dietary management	Explain the dietary management for pd patients	C 3						
98		Laboratory investigation	Interpret different screening test for malnutrition for the patients	C 3						
99		Prevention	Explain the preventive measurements for the patients from malnutrition.	C 4						
TOPIC: Volume status and fluid overload										
102	Week-14	Definition	Definition of volume statues and fluid over load	C 1			Interactive Lecture/SDG	2	MCQs/SEQs	3
103		Assessment of volume statues and fluid overload	Discuss the assessment of volume status and fluid overload	C 2						
104		Mechanism	Explain the mechanism of volume status and fluid overload	C 3						
105		Management	Discuss the management of volume status and fluid overload	C 4						
106		Treatment	Explain the treatment for fluid overload	C 4						
107		Practical performance	perform the procedure of monitoring of fluid status		P 4		Demo	2	OSPE	
108		SOPs compliance	comply to SOPs for procedure in an effective way			A 4	Role Play			
TOPIC: Glucose sparing strategies										
109	Week-15	Introduction	Define glucose sparing strategies	C 1			Interactive Lecture/SDG	2	MCQs/SEQs	2
110		Alternative osmotic agent strategies	Discuss the alternative osmotic agent strategies	C 2						
111		Dietary intervention	Explain the dietary intervention	C 3						
		PD prescription adjustment	explain pd prescription adjustment	C 4						
		Clinical consideration	Discuss the clinical consideration	C 3						
		Management	Discuss management of glucose sparing strategies	C 3						
		Laboratory investigation	interpret different screening test for glucose	C 3			Demo	1	OSPE	
		Practical performance	perform the metabolic profile independently		P 4		Roll play			
		SOPs compliance	comply to SOPs for the procedure of metabolic profile			A 4				
TOPIC: ultrafiltration in peritoneal dialysis										
114	Week-16	Introduction	Define ultrafiltration in pd	C 1			Interactive Lecture/SDG	2	MCQs/SEQs	2
115		principles	Discusses the principles of ultrafiltration	C 2						

116		assessments of ultrafiltration goal	Discuss the assessments of uf goal	C 3						
		Factors influencing	Explain the factors influencing uf	C 4						
		Management	Explain the management for uf	C 4						

Objective for cognitive domain

Discuss the etiology of peritoneal dialysis

explain the risk factors associated with PD

Describe the mechanism of different pd solution

interpreted the laboratory investigation for the diagnosis different pd tests

Psychomotor domain

observe the complicate procedures for the PD

perform the laboratory test for the diagnosis of kidney diseases independently

identify the ultrasonic pathology related to peritoneum membrane

interpreted the lab investigation for the differentiation of PD complication

Effective domain

follow the specified norms of the Interactive lectures and SGD teaching and learning
Demonstrate the humbleness and use the socially acceptable langue during academic and social interaction with patients

make ethical decisions during examination of patients

perform the procedures in professional way

Recommended Books

Robbins Basic Pathology by Kumar, Abbas and Aster; 9th edition
Fundamental of Renal Pathology, Arthur H. Cohen, Robert B. Calvin, J. Charles, Jeannette, Chartes E. Alphers, 2nd Edition
Medical diagnosis and management, Inasm Danish

S. No	Topics	No of MCQS	No of OSPE/OSCE Station	Static or interactive

1.	Peritoneal Dialysis	5		
2.	Factors affecting on the efficacy of PD	4	1	Static
3.	Effect of dwell time of salute and fluid transfer	6	1	Static
4.	Apparatus for peritoneal dialysis	5	1	Static
5.	Hybrid ragmen's	7	1	Static
6.	CAPD and APD	6	1	Static
7.	Peritoneal dialysis catheters	4		
8.	Hypertension and hypotension	4	1	Static
9.	Acute peritoneal dialysis prescription	5	2	Static
10.	Monitoring clearness of PD	6	1	Static
11.	Pyelonephritis	4	1	Static
12.	Choice for PD modality	4	1	Static
13.	Nutritional issues in PD	3	1	Static
14.	Volume status and fluid overload	3		
15.	Glucose sparing strategies	2	1	Static
16.	ultrafiltration in peritoneal dialysis	2	1	Static
Total	16	70	14	14

RENAL DIALYSIS TECHNOLOGY – RDT-606 SPECIALIZED DIALYSIS 3(2+1)

COURSE DESCRIPTION

The objective of specialized dialysis subject is to provide students a comprehensive understanding of major CRRT (continuous renal replacement) modalities encompassing both theoretical knowledge and practical skills.
Through proper demonstration students will know the exact performance pf plasmapheresis and hemoperfusion procedure as well as continues modalities.
This course will cover the latest advancements in field of dialysis preparing students to excel in dialysis units

LEARNING OBJECTIVES

Cognitive Domain

By the end of this course, students should be able to:

1. Describe different types of dialysis therapies including HD (hemodialysis), PD (peritoneal dialysis) & CRRT (continuous renal replacement therapies)
2. Explain principles of dialysis including convection, ultrafiltration, diffusion and osmosis
3. Interpret laboratory values related to dialysis monitoring, including BUN, Cr, Hct and electrolytes
4. Identify and explain potential complication of continuous renal replacement therapy
5. Develop a plan for managing dialysis patients with co-morbidities

Psychomotor Domain

By the end of this course, students should be able to:

1. Demonstrate proper aseptic practices according to established protocols
2. Perform accurate and timely blood sampling for dialysis monitoring
3. Demonstration on vascular access procedure and cannulation
4. Demonstration on parameters adjustment in CRRT machine

Affective Domain

By the end of this course, students should be able to:

1. Follow the specified norms of the Interactive lectures and SGD teaching and learning
2. Demonstrate the humbleness and use the socially acceptable langue during academic and social interaction with patient
3. Demonstrate ethically competent decisions when confronted with an ethical social or moral problems in professional or personal life

TABE OF SPECIFICATION

SPECIALIZED DIALYSIS

S: No	Weeks	Content	Learning Outcome	Domain			MIT's	Time / Hours	Assessment	No of Items
				C	P	A				
TOPIC: CONTINEAOUS RENAL REPLACMENT THERAPY										
1	**Week-1**	Introduction	Define continuous renal replacement therapy	C1			Interactive Lecture/SGD	2	MCQs	3
2		Continuous renal replacement therapy	Discuss different types of continuous renal replacement therapy	C2						
3		CRRT Indication	Enlist renal replacement therapy indications	C2						
4		CRRT Procedure	Explain how to perform Continuous renal replacement therapy procedure	C3						
5		CRRT Advantages	Describe potienal advantages of Continuous renal replacement therapy	C3						
6		Hemodialysis versus CRRT	Enlist the differences between Intermittent hemodialysis and CRRT procedure	C2						
7		Practical performance	Video demonstration on proper Setup of extra corporeal circuit in CRRT modalities		P4		Demo	1	OSPE	-
8		Ethical considerations	Addressing ethical dilemmas related to CRRT such as end-of-lifecare and resource allocation			A4	Demo			-
TOPIC: CONTINEAOUS HEMODIALYSIS										
9		Introduction	Define continuous hemodialysis	C1						
10		C-HD equipment	Enlist equipment used for Continuous hemodialysis	C2						

11	Week-2	Patient assessment	Evaluate patient before initiating Continuous hemodialysis procedure	C3			Interactive Lecture/SGD	2	MCQs	4
12		C-HD Procedure	Elaborate performance of Continuous hemodialysis Procedure	C4						
13		C-HD Complication	Explain complication occurrence in continuous hemodialysis as a result of UF (ultrafiltration) and solute removal during dialysis	C3						
14		Practical performance	Video demonstration on understanding principles of C-HD and how it differs from IHD (intermittent hemodialysis)		P4		Demo	1	OSPE	
15		Informed consent	Ensure informed consent and patient autonomy when performing continuous hemodialysis			A4	Demo			1
TOPIC: CONTINEAOUS HEMOFILTRATION										
16	Week-3	Introduction	Define continuous hemofiltration	C1			Interactive Lecture/SGD	2	MCQs	5
17		C-HF equipment	Enlist equipment used for continuous hemofiltration	C2						
18		patient assessment	Evaluate patient before initiating continuous hemofiltration procedure	C2						
19		C-HF procedure	Illustrate the procedure of continuous hemofiltration	C4						
20		CHF complication	Explain complication occurrence in continuous hemodialysis as a result of UF (ultrafiltration) and solute removal during dialysis	C3						
21		C-HF & CHD Differentiation	Differentiate continuous hemofiltration and continuous hemodialysis	C2						
22		Practical performance	Assessing patients' hemodynamic stability, fluid overload via video demonstration		P4		Demo	1	OSPE	1
23		Ethical dilemmas	Maintenance of ethical dilemmas while performing			A4	Demo			

			Continuous hemofiltration procedure							
TOPIC: CONTINEAOUS HEMODIFILTRATION										
24	**Week-4**	Introduction	Define continuous Hemodiafiltration	C1			Interactive Lecture/SDG	2	MCQs	5
25		C-HDF equipment	Enlist Equipment used for continuous hemodiafiltration	C2						
26		Patient assessment	Evaluate patient before initiating procedure	C2						
27		C-HDF procedure	Explain continuous hemodiafiltration procedure	C4						
28		CHDF complication	Describe the complication that affect clearance and inadequate ultrafiltration during C-HDF procedure	C3						
29		C-HF, CHD & CHDF Differentiation	Enlist the difference between Intermittent hemodialysis, C-HF&CHDF	C3						
30		Practical performance	Video demonstration on setting up and operating CHDF equipment's including filter changes and priming		P4		Demo	1	OSPE	
31		Comply to SOPs	comply to SOPs for continuous hemodiafiltration procedure			A4	Demo			1
TOPIC: SLOW CONTINEAOUS ULTRAFILTRATION										
32		Introduction	Define Slow continuous ultrafiltration	C1						
33		SCUF Equipment	Enlist Equipment used for slow continuous ultrafiltration	C2						
34		Patient assessment	Evaluate patient before initiating slow continuous ultrafiltration procedure	C3						

35	Week-5	SCUF Procedure	Explain the procedure of slow continuous ultrafiltration	C3			Interactive Lecture/SDG	2	MCQs	3
36		SCUF complication	Discuss the complication that affect clearance and inadequate ultrafiltration during C-HDF procedure	C2						
37		SCUF & other dialysis modalities differentiation	Differentiate SCUF from other Dialysis modalities	C3						
38		Practical performance	Addressing nutritional needs and metabolic complications in patients receiving SCUF via video demonstration		P4		Video Demonstration	1	OSPE	1
39		Informed consent	Discussing the benefit and risks of SCUF with patients and their families ensuring informed consent			A4	Demo			
TOPIC: SUSTAINED LOW EFFICENCY DIALYSIS(SLED)										
40	Week-6	Introduction	Define sustained low efficiency dialysis	C1			Interactive Lecture/SDG	2	MCQs/SEQs	4
41		SLED Equipment	Enlist Equipment used for sustained low efficiency dialysis	C2						
42		Patient assessment	Evaluate patient before initiating procedure	C3						
43		SLED Procedure	Illustrate sustained low efficiency dialysis procedure	C3						
44		SLED complication	Discuss the complication that affect clearance and inadequate ultrafiltration during SLED procedure	C2						
45		SLED &other modalities differentiation	Differentiate SLED with other Continuous renal replacement modalities	C3						
46		Technical Complication in CRRT modality	Explain technical complication in CRRT modalities	C4						

47		Practical performance	Video demonstration on proper setup and operation of SLED equipment, including pumps, filters and monitors		P4		Demo	1	OSPE	1
48		Ethical dilemma	Addressing ethical dilemmas related to SCUF in end-of-life situation including withdrawal of treatment			A4	Demo			
TOPIC: DIFFRENCE AMOND CHD, CHF, CHDF IN CLEARNCE OF SMALL AND LARGE MOLECULAER WEIGHT OF SOLUTES										
49	**Week-7**	Introduction	Define continuous renal replacement therapies	C1			Interactive Lecture/SDG	2	MCQs	5
50		Small solute removal	Explain small solute removal in CRRT modalities	C3						
51		Small And Middle Molecular Weight Solutes Clearance	Describe clearance of small and middle molecular weight solute among CRRT modalities	C3						
52		Large molecular weight solute removal	Explain removal of Removal of Large molecular weight solute in CRRT modalities	C2						
53		Filtration Fraction	Describe Filtration Fraction in Continuous Hemofiltration Modality	C3						
54		Clearance in CHDF	Discuss efficacy of solute clearance in continuous hemofiltration	C3						
55		Pre & Post Dilution Mode	Elaborate replacement fluid infusion in pre & post dilution Mode	C4						
56		Practical performance	Video demonstration on filtration rates and replacement fluid composition differs across modalities		P2		Demo	1	OSPE	
57		Comply to SOPs	comply to sops while performing different CRRT modalities			A4	Demo			
TOPIC: ANTICOGULATION										

58	**Week-8**	Introduction	Define anticoagulation	C1			Interactive Lecture/SDG	2	MCQs	7
59		coagulation cascade	Explain coagulation cascade pathways	C3						
60		Heparin	Illustrate Use of Heparin in CRRT Modalities	C4						
61		Monitoring heparin	Describe heparin monitoring	C3						
62		Heparin administration	Elaborate heparin administration method	C3						
63		Heparin free dialysis	Discuss heparin free dialysis procedure	C2						
64		Heparin Alternatives	Describe Heparin Alternatives in Continuous Renal Replacement Therapy	C3						1
65		Practical performance	Demonstrate proper administration techniques for different anticoagulant		P4		Demo	1	OSPE	
66		Comply to SOPs	comply to sops while administering anticoagulant			A4	Demo			
TOPIC: VASCULAR ACCESS FOR CRRT										

67	**Week-9**	Introduction	Define vascular access	C1			Interactive Lecture/SDG	2	MCQs	6
68		Types	Enlist types of vascular access used in continuous renal replacement therapy	C2						
69		Indication	Discuss indications for vascular access	C2						
70		Temporary vascular access	Describe temporary vascular access its uses and placement	C2						
71		Permanent vascular access	Indicate possible sites for permanent vascular access formation	C2						
72		Access formation procedure	Explain vascular access formation procedure	C3						
73		Complications	Explain Vascular access complication in dialysis patient	C3						
74		Practical performance	Demonstrate proper techniques for cannulating different types of vascular access		P4		Demo	1	OSPE	2
75		Informed consent	Take informed consent before cannulation procedure			A4	Demo			
TOPIC: CRRT (continuous renal replacement therapy) FILTERS										
76		Introduction	Define continuous renal replacement therapy filters	C1			Interactive		MCQs/SEQs	4
77		Types	Enlist different types of CRRT filters	C2						
78		Dialyzer	Describe the use of dialyzer in continuous therapies	C2						
79		Hemofilter	Discuss role of hemofilter in terms of solute clearance	C2						

80		Filtration process	Explain the process of filtration through filters	C3			Lecture/SDG	2		
81		Pre & Post Dilution Mode	Illustrate pre & post dilution mode of replacement fluid	C3						
82		Filter duration	Discuss filters average usage time and process how to replace into new one	C2						
83	**Week-10**	Practical performance	Demonstration on understanding the characteristics of different membrane types (high-flux vs low-flux) and their suitability for different CRRT modalities		P4		Demo	1	OSPE	
84		Comply to SOPs	Comply to sops for installing CRRT Filters in machine			A4	Demo			1
TOPIC: DIALYSIS AND REPLACMENT SOLUTIONS										
85		Introduction	Define Dialysate and Replacement Solution	C1						
86		composition	Discuss Composition of dialysis solution fluids	C2						
87		Buffers	Explain use of buffer in dialysate Solution	C3						
88		Lactate Based Solution	Discuss Usage of lactate as a buffer in dialysate and replacement solution	C2			Interactive Lecture/SDG	2	MCQs/SEQs	5
89		Bicarbonate Based solution	Describe Bicarbonate usage and its advantage in Continuous therapies	C2						
90	**Week-11**	Citrate Buffer/Anticoagulation	Elaborate how citrate act as a buffer and anticoagulant in continuous renal replacement therapies	C3						
91		Electrolytes	Illustrate electrolytes composition and balancing in continuous renal replacement therapies	C4						
92		Practical performance	Demonstrate the process of preparing dialysate, highlighting key steps and quality control measures		P4		Demo	1	OSPE	1

93		Comply to SOPs	Sops should be consistently followed by all staff members involved in dialysate preparation			A4	Demo			
TOPIC: PLASMAPHERIASIS										
94	**Week-12**	Introduction	Define plasmapheresis procedure	C1			Interactive Lecture/SDG	2	MCQs/SEQs	6
95		Indications	Discuss indications for therapeutic plasma exchange (TPE)	C2						
96		Membrane Apheresis	Explain membrane apheresis method of TPE	C3						
97		Centrifugation	Describe TPE procedure by centrifugation method	C3						
98		Vascular Access	Describe vascular access used for plasmapheresis procedure	C3						
99		Anticoagulation	Discuss what kind of anticoagulation used in plasmapheresis	C2						
100		Complications	Illustrate Complication occurrence along with management in TPE	C4						
101		Practical performance	Video demonstration on setup of circuit and plasmapheresis procedure		P4		Demo	1	OSPE	1
102		Ethical considerations	Maintenance of ethical dilemmas while performing plasmapheresis procedure			A4	Demo			
TOPIC: HEMOPERFUSION										
103		Introduction	Define hemoperfusion	C1			Interactive			
104		Indications	Discuss indications for hemoperfusion	C2						
105		Procedure	Explain hemoperfusion procedure	C2						

							Lecture/SDG	2	MCQs/SEQs	4
106	**Week-13**	Complications	Elevate complications occurrence in hemoperfusion	C3						
107		Drugs Choice of therapy	Describe Drugs ingestion & Choice of therapy for their removal	C3						
108		Practical performance	Video demonstration on setting up and performing hemoperfusion procedure		P4		Demo	1	OSPE	
109		Informed consent	Communicate the procedure of Hemoperfusion to the patient effectively ensuring informed consent			A4	Demo			1
TOPIC: CONTINEAOUS RENAL REPLACMENT THERAPY COMPLICATIONS										
110		Introduction	Define CRRT complications	C1			Interactive Lecture/SDG	2	MCQs/SEQs	5
111	**Week-14**	Technical Complication in CRRT modality	Discuss technical complications in CRRT	C2						
112		Electrolytes imbalance	Describe electrolytes imbalances and their Consequences	C2						
113		Access related complications	Elaborate access related complication during continuous therapies	C3						
114		Anticoagulation complications	Explain anticoagulation related complications	C3						
115		UF Complications	Describe Ultrafiltration complications and its management	C3						
116		Practical performance	Video demonstration on assessing patient complications ongoing CRRT		P4		Demo	1	OSPE	
117		SOPs compliance	Comply to SOPS while assessing patient complications			A4	Demo			
TOPIC: PRESCRIBING AND DELIVRING CRRT										
118		Introduction	Define prescribe dose & Delivered dose of CRRT	C1						

119	Week-15	CRRT Dose & Outcome	Discuss when to prescribe CRRT and what are their Outcomes	C2			Interactive Lecture/SDG	2	MCQs/SEQs	4
120		Empiric dosing	Describe empiric dosing in continuous renal replacement therapies	C3						
121		Dosing for SLED&SLED-F	Explain Dosing of sustained low efficiency dialysis and diafiltration	C3						
122		Practical performance	Video demonstration on history taking procedure before delivering CRRT		P4		Demo	1	OSPE	1
123		Informed consent	Take informed consent before history taking procedure			A4	Demo			
TOPIC: CRRT EQUIPMENT AND ULTRAFILTRATION SETTING										
124	Week-16	Introduction	Define Ultrafiltration	C1			Interactive Lecture/SDG	2	MCQs/ SEQs	3
125		Equipment	Enlist equipment used in Continuous Renal Replacement Therapy	C3						
126		Preferred medical equipment's Companies	Explain which company equipment are mostly used for continuous therapies	C3						
127		Ultrafiltration process	Describe process of ultrafiltration	C2						
128		Ultrafiltration types	Enlist different types of ultrafiltration	C2						
129		UF Setting	Illustrate setup for ultrafiltration in Machine	C3						
130		Practical performance	Demonstrate ultrafiltration setting in CRRT machine		P4		Demo	1	OSPE	1
131		Comply to SOPs	Comply to sops before monitoring ultrafiltration rate			A4	Demo			

Recommended Books:
1. Oxford Handbook of dialysis, Jeremy Levy, Edwina Brown, Christin Daley and Anastasia Lawrence 2. Handbook of dialysis, John T. Daugerdaus, Peter G. Black, Todd, 5th edition 3. Oxford Handbook of Nephrology and hypertension, Simon Steddon, Neil Ashman, Alistair Chesser, John Cunnigham, 2nd edition

ASSESSMENT BREAKDOWN				
S. No	**Topics**	**No of MCQ**	**No of OSPE / OSCE Stations**	**Static / Interactive**
1	CONTINUOUS RENAL REPLACEMENT THERAPY	3	-	-
2	CONTINUOUS HEMODIALYSIS	4	1	Static
3	CONTINUOUS HEMOFILTRATION	5	1	Static
4	CONTINUOUS HEMODIAFILTRATION	5	1	Static
5	SLOW CONTINUOUS ULTRAFILTRATION	3	1	Static
6	SUSTAINED LOW EFFICIENCY DIALYSIS (SLED)	4	1	Static
7	DIFFERENCE AMONG CHD, CHF, CHDF IN CLEARANCE OF SMALL AND LARGE MOLECULAR WEIGHT OF SOLUTES	5	-	-
8	ANTICOAGULATION	7	1	Static
9	VASCULAR ACCESS FOR CRRT	6	2	Static
10	CRRT FILTERS	4	1	Static
11	DIALYSIS AND REPLACEMENT SOLUTIONS	5	1	Static
12	PLASMAPHERESIS	6	1	Static

13	HEMOPERFUSION	4	1	Static
14	CONTINUOUS RENAL REPLACEMENT THERAPY COMPLICATIONS	5	-	-
15	PRESCRIBING AND DELIVERING CRRT	4	1	Static
16	CRRT EQUIPMENT AND ULTRAFILTRATION SETTING	3	1	Static
Total	**16**	**70**	**14**	**14**

Special pathology of kidney ll RDT

S.No	Weeks	Contents	Learning Outcome	Domain C	Domain P	Domain A	MI T's	Time/Hours	Asses	No of Items
TOPIC: Acute interstitial nephritis										
1	Week-1	Introduction	Introduction to acute interstitial nephritis	C1			Interactive Lecture/ SGD	2	MCQs	5
2		classification	Classify acute interstitial nephritis	C2						
3		Clinical features	Describe clinical manifestations of acute interstitial nephritis	C3						
4		Laboratory diagnosis	interpret various investigations for the diagnosis of acute intestail nephritis	C4						
6		Practical performance	sonic demonstration of ney		P2		Demo	1	OSPE	
7		informed consent	communicate the process of kidney ultrasound to the patient effectively			A 4	Role Play		OSPE	
TOPIC: Ischemic tubular necrosis										
9	Week-2	Introduction	Define ischemic tubular necrosis	C1			Interactive Lecture/ SGD	2	MCQs	4
10		Causes and clinical features	Describe the causes and clinical feature of ischemic tubular necrosis	C2						
11		Pathophysiology	Illustrate the pathophysiology of ischemic tubular necrosis	C3						
12		Management	Explain the management of tubular necrosis	C3						
14		Practical performance	perform Ultrasound examination of kidney independently		P4		Demo	1	OSPE	
		informed consent	communicate the process of kidney ultrasound to the patient effectively			A 4	Role Play		OSCE	
TOPIC: Chronic interstitial nephritis										

16										
	Week-3	Introduction	Define chronic interstitial nephritis	C1			Interactive Lecture/ SDG	2	MCQs	6
17		causes	Describe the causes of chronic interstitial nephritis	C2						
21		Pathophysiology	Illustrate the pathophysiology of chronic interstitial nephritis	C4						
22		Clinical features	Discuss the clinical features of chronic interstitial nephritis	C3						
23		Laboratory diagnosis	Interpret various investigations for the diagnosis of chronic interstitial nephritis	C5						
24		Practical performance	Examine urine analysis of nephrology patients independently		P4		Demo	1	OSPE	
		Comply to SOPs	comply to SOPs for the collection of urine			A 4	Role Play		OSCE	
TOPIC: Acute tubular necrosis										
26	Week-4	Introduction to acute tubular necrosis	Define acute tubular necrosis	C1			Interactive Lecture/ SDG	2	MCQs	5
27		causes of acute tubular necrosis	Describe the causes of acute tubular necrosis	C2						
28		Pathophysiology acute tubular necrosis	Illustrate the Pathophysiology of acute tubular necrosis	C3						
29		Classification of acute tubular necrosis	Classify acute tubular necrosis	C2						
30		Clinical features of acute tubular necrosis	Discuss the clinical presentation of acute tubular necrosis	C2						
31		Laboratory diagnosis of acute tubular necrosis	Interpret various laboratory investigations for the diagnosis of acute tubular necrosis	C5						

36		Practical performance	perform the procedure for acute tubular necrosis patients determination independently		P4		Demo	1	OSPE	
		Comply to SOPs	comply to SOPs for the procedure of acute tubular necrosis			A4	Role Play			
TOPIC: Toxic acute tubular necrosis										
37	Week-5	Introduction to toxic acute tubular necrosis	Define toxic acute tubular necrosis	C1			Interactive Lecture/ SDG	2	MCQs/ SEQs	7
38		Causes of toxic acute tubular necrosis	Describe the causes of toxic acute tubular necrosis	C2						
39		Pathophysiology of toxic acute tubular necrosis	Illustrate the toxic acute tubular necrosis	C3						
40		Clinical Features	Explain Clinical presentation of toxic acute tubular necrosis	C3						
41		Laboratory Diagnosis	interpret Laboratory investigations for the Diagnosis of toxic acute tubular necrosis	C4						
42		Practical performance	Perform the ultrasound examination for toxic acute tubular necrosis independently		P4		Video Demonstration	1	OSPE	
		Comply to SOPs	comply to SOPs for the determination of haematuria			A4	Role Play			
TOPIC: Renal Tubular acidosis										
43		Introduction	Define renal Tubular acidosis	C1			Interact	2	MCQs	6
44		stages	categorize the stages of renal Tubular acidosis	C2						

45	Week-6	pathophysiology	Illustrate the pathophysiology of renal Tubular acidosis	C3			ive Lect ure/ SDG			
46		Causes	Explain the etiology of Renal Tubular acidosis	C4						
47		Risk Factor	Discuss risk factor of Renal Tubular acidosis	C4						
48		Prevention	Explain prevention for Renal Tubular acidosis	C4						
49		Clinical symptoms	Discuss the clinical features of Renal Tubular acidosis	C2						
50		Lab diagnosis	interpret the investigations for the diagnosis of renal tubular acidosis	C4						
51		Practical performance	Observe the ultrasonography examination of the kidney for renal tubular acidosis		P4		De mo	1	OSPE	
52		informed consent	communicate the procedure of kidney ultrasonography to the patient effectively			A 4	Rol e Play			
TOPIC: Renal Tuberculosis										
53	Week-7	Introduction	Define Renal Tuberculosis	C1			Inte ract ive Lect ure/ SDG	2	MCQs	4
54		Pathophysiology	Illustrate the pathophysiology of Renal Tuberculosis	C2						
55		Causes	Explain the etiology of Renal Tuberculosis	C3						
56		Risk Factor	Discuss risk factor which lead to Renal Tuberculosis	C3						
57		Clinical symptoms	Discuss the clinical features of Renal Tuberculosis	C2						
58		Lab diagnosis	Interpret various investigations for the diagnosis of Renal Tuberculosis	C5						
59		Practical performance	Perform the ultrasound examination for renal tuberculosis independently		P2			1		
60		informed consent	communicate the procedure of kidney ultrasonography to the patient effectively			A 4	Rol e Play			

TOPIC: Reno vascular Hypertension										
61	Week-8	Introduction	Define Reno vascular Hypertension	C1			Interactive Lecture/ SDG	2	MCQs	4
62		Classification	categorize Reno vascular hypertension	C2						
63		Causes	Discuss different causes of Reno vascular hypertension	C3						
64		Risk Factor	Discuss risk factors for Reno vascular hypertension	C3						
65		Clinical Features	Describe clinical features for Reno vascular hypertension	C2						
66		Laboratory diagnosis	Interpret various investigations for the diagnosis for Reno vascular Hypertension	C5						
67		Practical performance	Calculate glomerular filtration rate independently		P4		Demo	1	OSPE	
68		Comply to SOPs	comply to SOPS for the GFR			A4	Role Play			
TOPIC: Renal Osteodystrophy										
70	Week-9	Introduction	Define renal osteodystrophy	C1			Interactive Lecture/ SDG	2	MCQs/ SEQs	5
71		Classification	Classify renal osteodystrophy	C2						
72		Pathophysiology	Discuss pathophysiology of renal osteodystrophy	C2						
		Etiology	Explain the causes of renal osteodystrophy	C3						
73		Clinical Presentation	Describe clinical presentation of renal osteodystrophy	C2						
74		Laboratory Diagnosis	Interpret different route for diagnosis of renal osteodystrophy	C4						
75		Practical performance	interpreted the blood test result in laboratory to measure calcium,phosphorus ,PTH,and vitD level independently		P4		Demo	2	OSPE	
		Comply to SOPs	comply to SOPs for complete blood count			A	Rol			

						4	e Play			
TOPIC: Urinary Tract Infection										
77	Week-10	Introduction	Define urinary tract infection	C1			Interactive Lecture/ SDG	2	MCQs/ SEQs	6
78		Stages	Categorize stages of urinary tract infection	C3						
79		Etiology	Discuss causative agents of urinary tract infection	C2						
		Pathology	Describe pathology of urinary tract infection	C3						
		Symptom	Explain Sign and Symptom for urinary tract infection	C4						
		Prevention	Explain Prevention for urinary tract infection	C4						
		Management	discuss management of urinary tract infection	C6						
80		Clinical Presentation	Describe clinical consequences of different stages of urinary tract infection	C3						
82		Practical performance	perform the procedure of urine analysis test for the diagnosis of urinary tract infection		P4		De mo	2	OSPE	
		Comply to SOPs	comply to SOPs urine analysis for the diagnosis of urinary tract infection			A 4	Rol e Play			
TOPIC: Pyelonephritis										
84	Week-11	Introduction	Define Pyelonephritis	C1			Interactive Lecture/ SDG	2	MCQs/ SEQs	4
85		Etiology	Discuss causative agent of Pyelonephritis	C3						
86		Pathology	Describe pathology of Pyelonephritis	C3						
87		Symptom	Explain symptom for Pyelonephritis	C2						
		Prevention	Describe the prevention for Pyelonephritis	C3						
		Clinical Presentation	Describe clinical consequences of different causes of Pyelonephritis	C3						
88		Practical performance	Perform the procedure of ultrasonography for		P4		De	1	OSPE	

			Pyelonephritis				mo			
TOPIC:Sickel Cell Nephropathy										
90	Week-12	Definition	Define sickle cell Nephropathy	C1			Interactive Lecture/ SDG	2	MCQs/ SEQs	4
91		Causes	Explain Causes of sickle cell Nephropathy	C4						
92		Pathogenesis	Discuss pathogenesis of sickle cell Nephropathy	C3						
92 94		Symptoms	Briefly discuss sign and symptom sickle cell Nephropathy	C2						
95		Management	Discuss management for sickle cell Nephropathy	C6						
96		observation of malaria parasite	observe the various stages of sickel cell Nephropathy in lab		P4				OSPE	
99		handling microscope	Adopt how to care and handle microscope in an effective way			A 4	Role Play			
TOPIC: Electrolyte Disorders										
95	Week-13	Introduction	Define Electrolyte disorders.	C1			Interactive Lecture/ SDG	2	MCQs/ SEQs	3
96		Types	Explain the different types of Electrolyte disorders.	C2						
97		Pathophysiology	Discuss the pathophysiology of Electrolyte disorders.	C3						
		Syptome	Briefly discuss sign and symptom Electrolyte disorders .	C2						
		Prevention	Explain how to prevent kidney damage from Electrolyte disorders.	C3						
98		Laboratory investigation	Interpret different screening test for Electrolyte disorders.	C3						
99		Prevention	Explain the preventive measurements of Electrolyte disorders.	C4						

TOPIC: Kidney failure due to GI problem										
102	Week-14	Definition	Definition of Kidney failure due to GI problem	C1			Interactive Lecture/ SDG	2	MCQs/ SEQs	3
103		signs and symptoms	Discuss the sign and symptoms of Kidney failure due to GI problem	C2						
104		causes	Explain the causes of Kidney failure due to GI problem	C3						
105		complications	elaborate the complication of Kidney failure due to GI problem	C4						
106		Treatment	Explain the treatment for Kidney failur due to GI problem	C4						
107		Practical performance	perform the procedure of endoscopy to evaluate GI bleeding, and other mucosal abnormalities.		P4		Demo	2	OSPE	
108		SOPs compliance	comply to SOPs for endoscopy in an effective way			A4	Role Play			
TOPIC: Renal cell carcinoma										
109	Week-15	Introduction	Define renal cell carcinoma	C1			Interactive Lecture/ SDG	2	MCQs/ SEQs	2
110		Types	Discuss the types of renal cell carcinoma	C2						
111		Pathology	Explain the pathology of renal cell carcinoma	C3						
		Symptom	explain symptom for renal cell carcinoma	C4						
		Prevention	Discuss how to prevent renal cell carcinoma	C3						
		Management	Discuss management of renal cell carcinoma	C3						
		Laboratory investigation	interpret different screening test for renal cell carcinoma	C3			Demo	1	OSPE	
		Practical performance	perform IVP for renal cell carcinoma independently		P4		Roll play			

		SOPs compliance	comply to SOPs for the procedure of IVP			A 4				
TOPIC: Prostities										
114	Week-16	Introduction	Define prostities	C1			Interactive Lecture/ SDG	2	MCQs/ SEQs	2
115		sign and symptom	Discuss the sign and symptoms of prostities	C2						
116		pathology	discuses Pathology of prostities	C3						
		Pathophysiology	Explain pathophysiology of prostities	C4						
		Treatment	Explain the treatment for prostities.	C4						

Objective for cognitive Domain

Discuss the etiology of various tubular diseases

Explain the risk factors associated with tubular disease

Describe the pathophysiology of tubular diseases

Interpreted the laboratory investigation for the diagnosis of tubular diseases

Psychomotor domain

Observe the complicate procedures for the investigation of tubular diseases

Perform the laboratory test for the diagnosis of tubule diseases independently

Identify the ultrasonic pathology related to tubular diseases

Interpreted the lab investigation for the differentiation of tubular diseases

Effective domian

Follow the specified norms of the Interactive lectures and SGD teaching and learning

Demonstrate the humbleness and use the socially acceptable

langue during academic and social interaction with patients

Make ethical decisions during examination of patients

Perform the procedures in professional way

Introduction of Special Pathology of kidney II

The pathology of the kidney is organized into four anatomic categories: diseases of the glomeruli, tubules, interstitial, and vessels. Diseases that affect the glomeruli often have an immunologic etiology, whereas those that affect the tubules and interstitial usually have an infectious or toxic etiology. Early in the disease process, most disorders predominantly affect one of the anatomic structures listed above. Over time, however, the entire kidney usually becomes diseased. Because of the large physiologic reserve of the kidneys, many diseases do not become clinically apparent until the majority of the organ is affected, making subtle abnormalities in laboratory findings the only early indication of renal disease. Recognition of these patterns of abnormalities, pathologic findings, and clinical presentation is perhaps more important to renal pathology than in any other organ system. This describes acute and chronic renal failure, disorders of volume regulation, glomerular diseases, tubulointerstitial diseases, nephrolithiasis, cystic diseases of the kidney, renal tumors, pathology of the bladder, acid-base disorders, and electrolyte disorders.

Recommended Books

Robbins Basic Pathology by Kumar, Abbas and Aster;
9th edition

Fundamental of Renal Pathology, Arthur H. Cohen,
Robert B. Calvin, J. Charles, Jennette, Chartes E.
Alphers, 2nd Edition

Medical diagnosis and management, Inam Danish

S. No	Topics	No of MCQS	No of OSPE/OSCE Station	Static or interactive

1.	Acute interstitial nephritis	5		
2.	Chronic interstitial nephritis	4	1	Static
3.	Ischemic tubular necrosis	6	1	Static
4.	Ischemic tubular necrosis	5	1	Static
5.	Toxic acute tubular necrosis	7	1	Static
6.	Renal tubular acidosis	6	1	Static
7.	Renal tuberculosis	4		
8.	Reno vascular hypertension	4	1	Static
9.	Renal osteodestropy	5	2	Static
10.	UTI	6	1	Static
11.	Pyelonephritis	4	1	Static
12.	Sickle cell nephropathy	4	1	Static
13.	Electrolytes disorders	3	1	Static
14.	Kidney failure due to GI problem	3		
15.	Renal cell carcinoma	2	1	Static
16.	Prostities	2	1	Static
Total	16	70	14	14