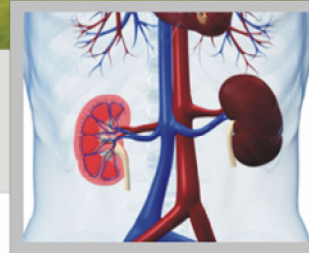




Azad Jammu Kashmir Medical College, Muzaffarabad (AJK)



**AJKMC Study Guide Spiral 02: Ren 02
The Renal Module:02;2016**



Duration: 2 weeks

DEPARTMENT OF MEDICAL EDUCATION

1. MODULE TEAM

Dr. Mohsin Shakil	Plannar
Dr. Imtiaz Ahmed	Co-coordinator
Dr. Saroosh Majid	Member
Dr. Muhammad Arif	Member
Dr. Mateen	Member
Dr. Adnan Mahraj	Member
Dr. Bashir Trumbo	Member
Dr. Noshina Shabir	Member
Dr. Zayad Kiani	Medical Education

1. RATIONALE

The Renal System is concerned with the maintenance of homeostasis through formation and excretion of urine. Hazardous waste products, drugs, toxins and excess amounts of water and electrolytes are excreted by kidneys and carried to the exterior through a system of tubular passages and reservoir. The conductive pathway of urinary system is non-absorptive & non- secretory and urine passes through it to be stored in the reservoir (urinary bladder) without any further change in its composition. Thus a willful & timed voiding is made possible, giving a sense of hygiene and social dignity. This module includes prostate gland also, which strictly speaking is a part of the urinary sphincter mechanism and more concerned with the production of semen.

The kidneys and rest of urinary system are important in maintaining overall health and wellbeing. The effects produced by renal failure are not compatible with life.

1. MODULE OUTCOMES

On completion of the Renal Module, students should have learned the necessary knowledge of Pathologies, clinical presentations and management of different diseases affecting the urinary system. Furthermore, the learners should be able to correlate the anatomic, physiological and biochemical basis of urinary signs & symptoms. They should be able to suggest and interpret the specific laboratory and radiological investigations. They should also have the skills of relevant history taking, physical examination and simple urological procedures.

At the end of the module, the students should have the knowledge of urinary system and relevant skills to help Nephro-Urological patients.

2. ORGANIZATION OF THE MODULE

The Renal Module is based upon and continuation of the study of the renal system completed in first spiral. It is consisting of four themes, each based on real life situation. Different modes of instructions will be applied during this module, major emphasis will be on the discussions, analysis and deductions; all by the learners, who will be facilitated and guided by the faculty.

3. CONTENT DELIVERY

Entire Curriculum will be delivered by the clinical case scenarios, each related to a theme. Read the cases and learning objectives of the themes, which you are expect to discuss next day. Try to understand and explain the cases to yourself and collect the relevant information.

Following learning/teaching strategies will be employed to discuss the cases;

SMALL GROUP DISCUSSIONS

Main bulk of the course content will be delivered in the small group sessions. Each theme has an associated case and the case will be the center, around which learning will take place. Depending upon the case, you might be required to deduce objectives or learning issues. Every group will have a facilitator. Small group discussions will be followed by a collective wrap up session.

LARGE GROUP INTERACTIVE SESSION

Large group interaction will be employed at time. Attend large group sessions to resolve queries, conceptual learning and to standardize learning of all groups. Read the cases and learning objectives of the theme, which you are supposed to encounter next day. Understand and explain the cases to yourself and get the relevant information from learning resources.

VIDEOS

Urethrocystoscopy

HANDS ON ACTIVITIES/PRACTICAL

Practical activities, linked with cases, will take place.

LABORATORY

Attend your schedule Pathology Lab and take advantage of the open times to continue study. Use your Labs to correlate text structures to actual specimen in Lab practice.

DIRECTED SELF LEARNING (DSL)

Few DSL sessions have been added in between to create an environment for you to search literature as well as to deduce and synthesize information from different sources to meet the learning objectives.

4. ENTRUSTABLE PROFESSIONAL ACTIVITIES (EPA)

Achievement of necessary skills for performing different clinical activities is suggested for competency based outcome of renal module & hence named "Professional Activities".

- 1- *Digital Rectal Examination (DRE)*
- 2- *Urethral Catheterization.*
- 3- *Suprapubic Puncture.*
- 4- *Lower Urinary Tract Symptoms (LUTS) & international prostate symptoms Score.*
- 5- *Venous Access and care of vascular access line.*
- 6- *Interpretation of ABG.*

Trustable level of competencies is required from student before exit exam duly entered in logbook and endorsed by supervisor. Different levels of EPA are required for different level of competencies starting from level 1 to level 5 as follow

4.1. Levels of EPA

At Level 1: The learner has insufficient knowledge and skills to perform the task.

At Level 2: The learner may perform the activity under full proactive supervision, the supervisor deciding the level of supervision.

At level 3: The learner can be trusted to know when to ask for help (reactive supervision).

At Level 4: The learner may perform an activity with back stage, mainly formal supervision.

At Level 5: The learner has learnt enough skills, knowledge and appropriate attitude that they would be suitable to supervise others.

5. ASSESSMENT

In this module, you will self-assess yourself frequently and will have a formative assessment. An Assessment will also hold at completion of the module: Knowledge, Skills and attitude will be assessed by 'Integrated Practical Assessment (IPA)' and 'Objective Structured Clinical Examination (OSCE)', which will be held at end of the block. Marks obtained will contribute 30% towards the end of year professional examination (the summative assessment).

6. TABLE OF SPECIFICATIONS (TOS)

S. No.	Themes	Percentage
1	Puffiness & Edema	25%
2	Hematuria	30%
3	Obstructive Uropathy	25%
4	End Stage Renal Disease	20%
	Total	100%

7. THEMES & CORE CONTENTS

Puffiness & Edema

At the end of this theme learner should to be able to:

1. Identify the causes, epidemiology and pathophysiology of nephrotic syndrome
2. Clinical presentation and management of nephrotic syndrome
3. Identify the causes, epidemiology and pathophysiology of nephritic syndrome
4. Define; Puffiness/Edema, Polyuria, Oxaluria, Hematuria, Oliguria, Anuria, Glycosuria, Proteinuria and Bacteriuria.
5. Describe & explain the procedures of Hemo/peritoneal dialysis

Hematuria

At the end of this theme learner should to be able to:

1. Describe the four main types of renal stones and their pathogenesis. (revisit)
2. Enlist important predisposing factors leading to the development of renal stones (Biochemical basis of renal stones) (revisit)
3. Interpret salient features of the symptoms (Renal Pain and Ureteric colic)with relevant history of illness & examination of patient to identify tenderness and positive renal punch (revisit)
4. Interpret imaging modalities use in the diagnosis of Renal Pathologies. (X-Ray KUB, IVU, Urethrogram, Ultrasonography KUB, Post Void Urine. CT Scan) (revisit)
5. Define hematuria and describe its various types and associated clinical symptoms.
6. Enumerate different types of kidney tumors and describe epidemiology, risk factors, genetics & pathogenesis of urinary tract malignancies
7. Enumerate different types of Bladder tumors and describe epidemiology, risk factors, genetics & pathogenesis of Bladder Tumour.
8. Describe causes, pathogenesis, clinical presentation, management and prevention of UTI.

Obstructive Uropathy

At the end of this theme, learner should to be able to:

1. Enumerate causes, pathogenesis and effects of obstructive uropathy.
2. Enlist causes and describe pathogenesis of prostatic enlargement, its clinical features and management.
3. Define stricture urethra, enlist its causes, clinical presentation and management.
4. Describe causes, pathogenesis, clinical presentation, management and prevention of STD.

End Stage Renal Disease

At the end of this theme, learner should to be able to:

1. Describe Urea Cycle, its regulation and disposal of Ammonia from body. (revisit)
2. Describe the formation of Creatinine and its relevance (Creatinine Clearance). (revisit)
3. Describe factors responsible for Hyperkalemia, Hypokalemia and Potassium distribution/excretion in body fluid. (revisit)
4. Define acidosis and explain the mechanism of correction of metabolic acidosis and alkalosis. (revisit)
5. Interpret URE and Renal Function Tests (RFT). (revisit)
6. Define Acute Kidney Disease (Acute Renal Failure), Chronic Kidney Disease/CKD (Chronic Renal Failure/CRF) & Renal Replace Therapy. (revisit)
7. Enumerate causes of Chronic Kidney Disease/CKD (Chronic Renal Failure/CRF).
8. Describe pathogenesis and clinical feature of diabetic nephropathy
9. Describe pathogenesis and clinical feature of hypertension nephropathy
10. Describe pathogenesis and clinical feature of chemical nephropathy
11. Counsel the patient about prevention of nephropathy.
12. Describe work up and management (history, clinical examination, investigations & treatment) of Chronic

- Kidney Disease/CKD (Chronic Renal Failure/CRF).
13. Counsel the patient with “end stage renal disease”.
 14. Discuss the Ethics of Renal Transplantation. (revisit)
 15. Discuss ethics of the terminal care & end of life issues. (revisit)

Field Visit (Community Medicine)

A: Dialysis Center

At the end of the field visit, learner should to be able to:

1. Write report on operations and efficacy, and identify the gaps in the dialysis center at Abbas Institute of Medical Sciences(AIMS), Muzaffarabad.

8. CLINICAL SCENARIO & CRITICAL QUESTIONS

8.1. Case-1: Puffy.

A 23-year-old man Raja Rahmat Ali felt puffy, weak, and tired for several months. He suddenly noticed his urine had a red to brown discoloration and the volume was minimal. He went to the Nephrology OPD of AIMS hospital and the following data was obtained upon examination and investigations:

Hematology:

Serum sodium	125 mEq/L
Serum potassium	6 mEq/L
Serum Creatinine	2.6 mg/dL
BUN	24.0 mg/dL
pH (arterial)	7.32
Hematocrit	25%

Urinalysis:

Appearance	Red to brown
Specific Gravity	1.025
Blood	Positive
Glucose	Negative
Protein	Mild

Renal Function Tests:

GFR	40 mL/min
Renal Blood Flow (RBF)	280 mL/min

- 1- a. What is the disorder in this individual?
b. What situation(s) predispose an individual to this disorder?
2. Define hyponatremia and hyperkalemia.
3. What is the cause of the hyponatremia and hyperkalemia?
4. Why is there blood in the urine?
5. How do the renal function tests for this individual compare to normal?
6. What caused the puffy feeling?
7. What type of treatment does this person need?
8. Is this person a candidate for kidney dialysis? Explain your answer.

Case-2: Renal Pain

A 45-year-old man, Choudary Khani Zaman was referred to Urology OPD of AIMS hospital complaining of severe intermittent pain in right lumbar area, radiating to lower abdomen and into the genital area. He also had chills, fever and nausea. He also noticed increased frequency of urination and hematuria.

USG and X-ray findings indicated a 10 mm stones in the renal pelvis. Stone was removed by lithotripsy and on chemical examination, it was found to be a Calcium Oxalate stone. 24-hour urine analysis for Calcium was 300 mg/day. Khani Zaman was encouraged to increase his water intake and slightly decrease his dietary calcium.

1. Khani Zaman is a calcium stone former and may have the hereditary condition known as idiopathic hypercalciuria.
2. How do stones, or calculi, form?
3. Are calculi formed from minerals or compounds other than calcium? If so, give examples.
4. List some ways renal calculi are removed.

Case-3: Renal failure

Thirty-five year old Khawaja Asif Habib, who is a known Hypertensive on irregular treatment for 13 years, developed Renal Failure. While waiting for a kidney transplant, he is on maintenance hemodialysis; five to eight hours, three times in each week. He is on a diet restricted in sodium (500 mg/day), potassium (2.6 g/day) and protein as well as his usual diabetic diet. He has a shunt (arterio-venous fistula) in his left wrist to allow for easy access to the dialysis machine.

Prior to hemodialysis, his representative blood values are the following:

Serum sodium	120 mEq/L
Serum potassium	6.4 mEq/L
Serum chloride	102 mEq/L
Serum Creatinine	16 mg/dl
Hematocrit	24%

The dialysis fluid in the kidney dialysis machine contains the following:

Sodium	134 mEq/L	Chloride	104 mEq/L
Potassium	2.6 mEq/L	Sodium Acetate	36.6 mEq/L
Calcium	2.5 mEq/L	Anhydrous dextrose	2 g/L
Magnesium	1.5 mEq/L		

1. What is Hemodialysis?
2. Following eight to ten hours of hemodialysis, do you think the following blood values would be changed?
Serum sodium
 Serum potassium
 Serum chloride:
 Serum creatinine
3. Why does anemia usually develop with maintenance dialysis?
4. Why is hemodialysis required every two to three days for eight to ten hours/day for individuals with complete renal failure? (Flow rate of blood through the dialyzer is 150-300 mL/min.)
5. Differentiate between hemodialysis and peritoneal dialysis

9. LIST OF PBLs

PBL-1: Complaining of Hematuria.

A 45 years old man reported in Urology OPD of the AIMS Hospital complaining of blood in urine without any pain or scalding on voiding. His physical examination showed no significant sing. URE showed RBCs packed field. USG showed polypoid growth on right lateral wall of urinary bladder and mild Hydronephrosis Hydroureter (right).

REFERENCE BOOKS

- 1- Walsh Campbell Urology, 10th edition.
- 2- Smith & Tanagho'General Urology, 18th edition.

10.ONLINE RESOURCES

- 3- **American Urological Association (AUA) Guidelines**

<http://www.auanet.org/education/aua-guidelines.cfm>

(AUA Android Application for download at Google play) for installation at you mobile phone device.

https://play.google.com/store/apps/details?id=org.auanet.Guidelines&feature=search_result#?t=W251bGwsMSwyLDEsIm9yZy5hdWFuZXQuR3VpZGVsaW5lcyJd

- 4- **European Association of Urology (EAU) Pocket Guidelines.**

<http://uroweb.org/guidelines>

(Android Application for download at Google play) for installation at you mobile phone device.

<https://play.google.com/store/apps/details?id=nl.code.eaupocketguidelines.app>

AJK Medical College, Muzaffarabad (AJK)

Renal Module 4th Year Week-1

	Monday	Tuesday	Wednesday	Thursday	Friday
08- 09 AM	LGIS Ankylosing spondylitis Dr. Ali Arshad	LGIS Introduction to Renal-II Module & PBL-1A Dr. Mohsin / Team-3	LGIS Glomerulonephritis Prof. Anwar-ul-Haque	LGIS Renal tumors Prof. Anwar-ul-Haque	LGIS Urinary Tract Infection (UTI) Dr. Mumtaz
09-10 AM	LGIS Muscular dystrophies & Myopathies Prof. Anwar	LGIS Enlarged prostate Dr. Saroosh Majid	LGIS Urine Analysis Prof. Munir Ahmed	LGIS Clinical Features & management of Renal Tumors Dr. Farzana	LGIS Clinical Presentation and Management of UTI Dr. Mohsin
10:15AM to 01:15 PM	Clinical Rotation	Clinical Rotation	Clinical Rotation	Clinical Rotation	Skill Lab History & physical Examination of Renal failure Dr. Bashir Trambo, Dr. Robina, Dr. Munazz
					SDL
1:30 – 2:00 Lunch & Prayer Break					
2:00 – 3:00 PM	LGIS Myopathies and Rhabdomyosarcoma Prof. Anwar ul Haque	LGIS Clinical feature & management of Enlarged prostate Dr. Mohsin Shakil	LGIS Evaluation of puffiness & edema in Clinical practice Dr. Mateen	LGIS Urine Analysis-2 Prof. Munir Ahmed	DSL (Creatinine clearance)
3:00 - 4:00 PM	Practical Practical (Pathology) Prof. Saroosh/Prof. Munir & Team-3	LGIS Therapeutics of Hormonal Blockade for Ca Prostate Dr. Khurshed Lone	Skill Lab Videos Urethral catheterization/ Urethrocystoscopy (TURP) Prof. Nizam ud Din	LGIS Therapeutics of UTI Prof. Arif	

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Renal Module 4th Year

Week-2

	Monday	Tuesday	Wednesday	Thursday	Friday
08- 09 AM	<u>Written Assessment</u> <u>LMR-II module</u>	<u>IPA Block-3</u>	LGIS Clinical Feature & management of Bladder tumors Dr. Mohsin Shakil	<u>SGD</u> Pathogeneses and Biochemical basses of Urinary Calculi-1 Prof. Saroosh / Dr. Wafa Umer & Team-3	<u>LGIS</u> Imaging Modalities in Renal Pathologies Dr. Azeem
09-10 AM			LGIS Principals of Intravesical chemotherapy Dr. Khurshid Lone		LGIS Urinary Calculi Disease (Presentation & management) Dr. Mohsin Shakil
10AM to 01 PM	Clinical Rotation	<u>IPA Block-3</u>	Clinical Rotation	OSCE	<u>PBL-1 B</u> <u>Team-3</u>
01Pm to 1:45 PM					SDL
2:00 – 4 PM	LGIS Fluid electrolyte and Acid Base balance Maj. Saba Irum	<u>IPA Block-3</u>	<u>LGIS</u> Chronic renal failure Dr. Imtiaz Ahmed	OSCE	DSL Renal Trauma
	<u>LGIS</u> Bladder tumors Prof. Anwar ul Haque		LGIS Medical Ethics Dr. Mustafa Awan		



Inquires & trouble shooting

Department of Medical Education,
AJK Medical College, Muzaffarabad, AJK, Pakistan
Email: ayub@ajkmc.edu.pk, DME@ajkmc.edu.pk
Tel: +92-5822-920527-8/808, 816