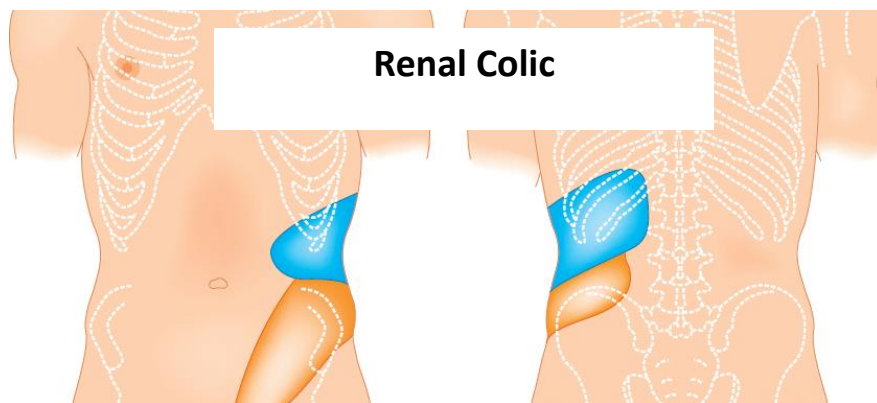
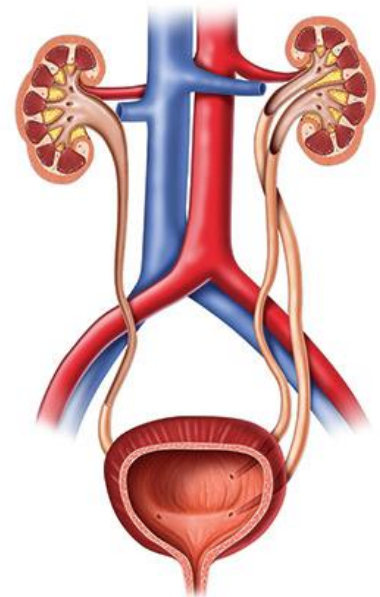
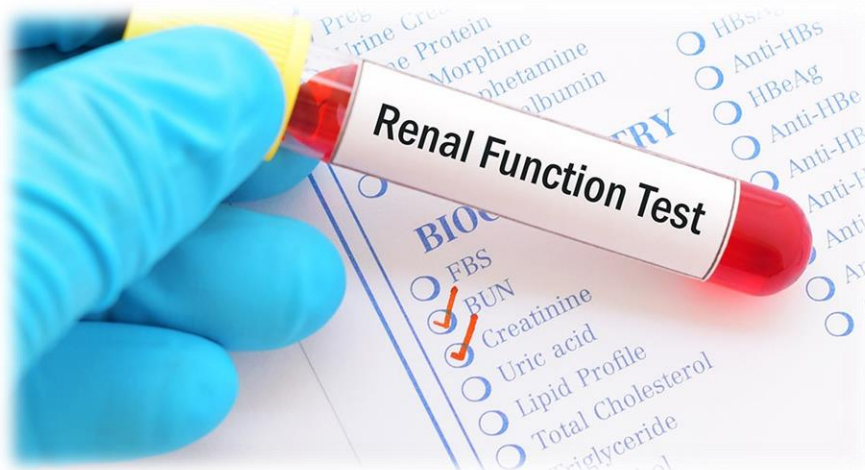


STUDY GUIDE

RENAL & EXCRETORY SYSTEM-I MODULE

SECOND YEAR MBBS

16th July – 6th August 2020



STUDY GUIDE FOR RENAL AND EXCRETORY SYSTEM-I MODULE

S.No	CONTENTS	Page No
1	Overview	3
2	Introduction to Study Guide	4
3	Learning Methodologies	5
4	Module: Renal and Excretory System-I	7
4.1	Importance of Renal and Excretory System	7
4.2	Objectives and Learning strategies	8
5	Learning Resources	12
6	Assessment Methods	14
7	LNMC Examination Rules and Regulations	15
8	Schedule	16

Module name: Renal & Excretory System-I Year: Two Duration: 4 weeks (July – Aug 2020)

Timetable hours: Interactive Lectures, Case-Based Learning (CBL), Self-Study, Practicals, Skills, Demonstrations, Visit to Wards & Laboratory

MODULE INTEGRATED COMMITTEE

MODULE COORDINATOR:	<ul style="list-style-type: none"> Dr. Saima Zainab (Community Medicine)
CO-COORDINATORS:	<ul style="list-style-type: none"> Dr. Syed Asad Abbas Jafri (Pathology)

DEPARTMENTS' & RESOURCE PERSONS' FACILITATING LEARNING

BASIC HEALTH SCIENCES	
ANATOMY	
<ul style="list-style-type: none"> Professor Zia-ul-Islam 	
BIOCHEMISTRY	
<ul style="list-style-type: none"> Dr. Kashif Nisar 	
COMMUNITY MEDICINE	
<ul style="list-style-type: none"> Dr. Saima Zainab 	
PHYSIOLOGY	
<ul style="list-style-type: none"> Professor Syed Hafeezul Hassan 	
DEPARTMENT of HEALTH PROFESSION EDUCATION	
<ul style="list-style-type: none"> Professor Nighat Huda Dr. Mehnaz Umair 	<ul style="list-style-type: none"> Dr. Sobia Ali Dr. Muhammad Suleman Dr. Afifa Tabassum
LNH&MC MANAGEMENT	
<ul style="list-style-type: none"> Professor Karimullah Makki, Principal LNH&MC Dr. Shaheena Akbani, Director A.A & R.T LNH&MC 	
STUDY GUIDE COMPILED BY:	Department of Health Professions Education

INTRODUCTION

WHAT IS A STUDY GUIDE?

It is an aid to:

- Inform students how student learning program of the semester-wise module has been organized
- Help students organize and manage their studies throughout the module
- Guide students on assessment methods, rules and regulations

THE STUDY GUIDE:

- Communicates information on organization and management of the module.
This will help the student to contact the right person in case of any difficulty.
- Defines the objectives which are expected to be achieved at the end of the module.
- Identifies the learning strategies such as Interactive Lectures, small group teachings, clinical skills, demonstration, tutorial and case based learning that will be implemented to achieve the module objectives.
- Provides a list of learning resources such as books, computer assisted learning programs, web- links, journals, for students to consult in order to maximize their learning.
- Highlights information on the contribution of continuous and semester examinations on the student's overall performance.
- Includes information on the assessment methods that will be held to determine every student's achievement of objectives.
- Focuses on information pertaining to examination policy, rules and regulations.

CURRICULUM FRAMEWORK

Students will experience *integrated curriculum* in the modules at LNMC in accordance with the JSMU guidelines and most recent developments that have an impact on individual health.

INTEGRATED CURRICULUM comprises of system-based modules such as GIT and Liver-I, Renal and Excretory System-I and Reproductive System-I which links basic science knowledge to clinical problems. Integrated teaching means that subjects are presented as a meaningful whole. Students will be able to have better understanding of basic sciences when they repeatedly learn in relation to clinical examples.

Case-based discussions, computer-based assignments, early exposure to clinics, wards, and skills acquisition in skills lab and physiotherapy department are characteristics of integrated teaching program.

INTEGRATING DISCIPLINES OF RENAL & EXCRETORY MODULE-I



LEARNING METHODOLOGIES

The following teaching / learning methods are used to promote better understanding:

- Interactive Lectures
- Hospital / Clinic visits
- Small Group Discussion
- Case- Based Learning
- Practicals
- Skills session
- E-Learning
- Self-Directed Learning
- TBL

INTERACTIVE LECTURES

In large group, the Interactive Lecturer introduces a topic or common clinical conditions and explains the underlying phenomena through questions, pictures, videos of patients' interviews, exercises, etc. Students are actively involved in the learning process.

HOSPITAL VISITS: In small groups, students observe patients with signs and symptoms in hospital or clinical settings. This helps students to relate knowledge of basic and clinical sciences of the relevant module.

SMALL GROUP DISCUSSION (SGD): This format helps students to clarify concepts acquire skills or attitudes. Sessions are structured with the help of specific exercises such as patient case, interviews or discussion topics. Students exchange opinions and apply knowledge gained from Interactive Lectures, tutorials and self study. The facilitator role is to ask probing questions, summarize, or rephrase to help clarify concepts.

CASE- BASED LEARNING: A small group discussion format where learning is focused around a series of questions based on a clinical scenario. Students' discuss and answer the questions applying relevant knowledge gained in clinical and basic health sciences during the module.

PRACTICAL: Basic science practicals related to anatomy, biochemistry, pathology, pharmacology and physiology are scheduled for student learning.

SKILLS SESSION: Skills relevant to respective module are observed and practiced where applicable in skills laboratory or Department of Physiotherapy.

SELF DIRECTED LEARNING: Students' assume responsibilities of their own learning through individual study, sharing and discussing with peers, seeking information from Learning Resource Center, teachers and resource persons within and outside the college. Students can utilize the time within the college scheduled hours of self-study.

TEAM BASED LEARNING: Team-based learning (TBL) is a structured form of small-group learning that emphasizes student preparation out of class and application of knowledge in class. Students are organized strategically into diverse teams of 5-7 students that work together throughout the class. Before each session/class, students prepare by reading prior to class. In class students are given different tasks or test where they work as team.

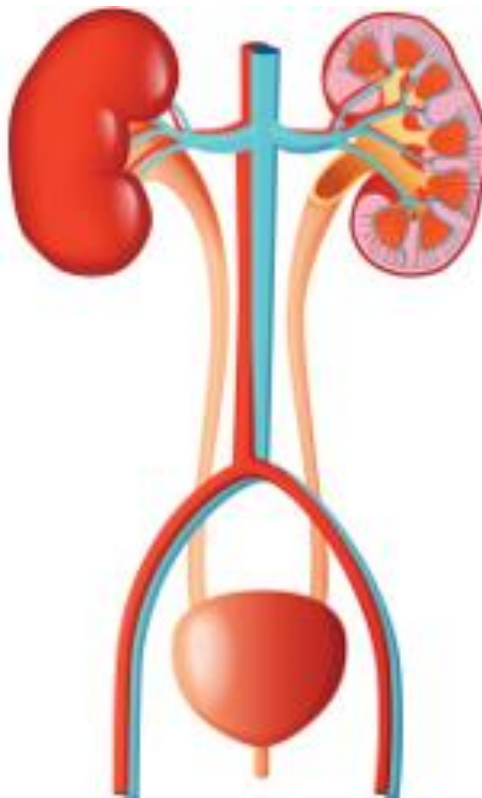


Apart from attending daily scheduled sessions, students too should engage in self-study to ensure that all the objectives are covered.

MODULE: RENAL & EXCRETORY SYSTEM-I**Rationale:**

Renal system and excretory system is responsible for the body to get rid of waste and toxic substances. In this module the renal and excretory system will be examined in detail with emphasis on how the renal system develops and functions on a cellular level as well as the mechanisms that underlie renal diseases such as electrolyte imbalance, dehydration, renal hypertension, renal failure, polycystic kidney, nephrotic and nephritic syndrome.

This module will enable the students of second year to recognize the clinical presentations of common renal diseases and relate clinical manifestations to basic sciences. It will be further revisited in the following years.



COURSE TOPICS, OBJECTIVES AND STRATEGIES

At the end of the module the students will be able to:

ANATOMY

TOPICS & OBJECTIVES	LEARNING STRATEGY
Gross Anatomy Of Kidney	
1. Describe the gross structure of kidney, its location and shape	Interactive Lecture
2. Discuss coverings of kidney	
3. Describe the Cortex and medulla of kidney	
4. Discuss the Relations of kidney	
5. Describe Functions of kidney	
6. Discuss the clinical conditions related to kidney	
Blood Supply, Nerve Supply And Lymphatic Drainage Of Kidney	
7. Describe the structure passing through the hilum of kidney with their sequence	Interactive Lectures
8. Discuss the blood supply of kidney in detail, with clinical segmentation of kidney according to its blood supply	
9. Discuss the nerve supply of kidney	
10. Discuss the lymphatic drainage of kidney	
11. Discuss the clinical conditions related to kidney and ureter	
Gross Anatomical Features of Ureter and Urinary Bladder	
12. List the parts of urinary system (ureter, urinary bladder and urethra)	Interactive Lectures
13. Describe the structure, course, anatomical constrictions, and relations of ureter	
14. Explain the location, apex, base, surfaces and relation of urinary bladder	
15. Describe the trigone of the urinary bladder	
16. Explain the support to the urinary bladder	
17. Describe the blood supply, nerve supply and lymphatic drainage of ureter, urinary bladder and urethra	
Surface Anatomy Of Urinary System	
18. Mark the following structures on the surface of a human body/mannequin:	Interactive Lectures/Demonstration
i. Kidney	
ii. Ureter	
iii. Urinary bladder	
Histological Features of Kidney	
19. Describe the histological features of kidney (cortex & medulla)	Interactive Lectures
20. Discuss the parts of a nephron and their types	
21. Describe the filtration barrier and its significance	
22. Describe juxtaglomerular apparatus, its location and significance	
Histological Features Of Ureter, Urinary Bladder And Urethra	
23. Describe the arrangement of layers in ureter and their microscopic appearance	Interactive Lecture
24. Describe the arrangement of layers in urinary bladder and urethra and their microscopic appearance	

Development Of Kidney and Urinary Bladder	
25. Describe the role of intermediate mesoderm in the formation of kidney	Interactive Lectures
26. Describe the development and the fate of the three progenitors of urinary system: pronephros, mesonephros and metanephros	
27. Discuss development of the following:	
i. Nephron and its steps	
ii. Collecting system of kidney and ureter	
iii. Urinary bladder	
Anomalies Of Kidney and Urinary Bladder	
28. Describe the congenital anomalies of kidney (polycystic kidney, pelvic kidney, horseshoe kidney) & ureter (Bifid ureter)	Interactive Lecture
Renal Stone	
29. Discuss causes and clinical anatomy of renal stones	Case-Based Discussion
Histological Features Of Kidney	
30. Identify renal corpuscle	Practicals
31. Differentiate proximal and distal convoluted tubules	
32. Identify medullary rays, collecting tubules and collecting duct	
33. Describe the histological features of kidney	
Histological features of Ureter and Urinary Bladder	
34. Identify the microscopic appearance and structure of the ureter and urinary bladder	

BIOCHEMISTRY

TOPICS & OBJECTIVES	LEARNING STRATEGY
Water Distribution, Regulation & Disturbances	
1. Discuss the Hormonal regulation, dehydration, over hydration and their biochemical consequences	Interactive Lecture
PH disturbances	
2. Describe the maintenance of normal pH, pH disturbances	Interactive Lecture
3. Discuss the biochemical consequences of respiratory and metabolic acidosis and alkalosis.	
Na and Cl Metabolism	
4. Explain the metabolism of Na, Cl and their disturbances	Interactive Lecture
K and PO₄ Metabolism	
5. Describe the metabolism of K , PO ₄ and their disturbances	Interactive Lecture
Renal Disorders	
6. Discuss the importance of renal function tests for the diagnosis of renal disorders	Interactive Lecture
Nucleotide Metabolism (3 Lectures)	
7. Discuss the process of Purine synthesis and its biochemical abnormalities	Interactive Lecture
8. Explain the process of Purine degradation and its biochemical abnormalities	
9. Explain Pyrimidine metabolism and its and its biochemical abnormalities	

Normal And Abnormal Constituents Of Urine	Practicals
10. Detect the normal and abnormal constituents of urine and its biochemical significance	
Urea & Creatinine	
11. Estimate the urea & Creatinine in the given samples	
Uric Acid	
12. Estimate the Uric acid in the given sample	

PHYSIOLOGY

TOPICS & OBJECTIVES	LEARNING STRATEGY
General Functions of Kidneys And Excretory System	
1. List the general functions of kidneys	Interactive Lecture
2. Describe the structure, functions and types of typical nephron and its blood supply	
GFR And Factors Regulating (GFR)	
3. Define Glomerular Filtration Rate	Interactive Lecture
4. Explain the composition of glomerular filtrate	
5. Discuss the major factors regulating GFR	
Auto-regulation of GFR And Renal Blood Flow	
6. Define tubulo glomerular feedback	Interactive Lecture
7. Explain the functions of juxta glomerular apparatus and Macula densa	
8. Discuss myogenic auto-regulation	
Concentration And Dilution of Urine	
9. Define obligatory urine volume	Interactive Lecture
10. Explain counter current multiplier and counter current exchanger methods	
11. Discuss the role of urea in urine formation	
Physiological Function of Filtration membrane & JGA, Proximal convoluted tubule and Loope of Henle	
12. Describe the physiological functions and role of filtration membrane, JGA, Proximal convoluted tubules and Loope of Henle in Urine formnation	Interactive Lecture
Role of Kidney in Blood Pressure Regulation	
13. Discuss the role of kidney in Urine formation and arterial blood pressure regulation	Interactive Lecture
Acidification of Urine	
14. Discuss different buffer systems in the body (bicarbonate, phosphate, ammonia)	Interactive Lecture
15. Explain the role of kidney in acid base balance	
16. Discuss maximum/minimum level of urine PH (4.5 -8)	

Role of Kidney in Acid Base Balance	
17. Discuss the role of kidney in acid base balance	Case-Based Discussion
Process of Micturition And Micturition Reflex	
17. Describe innervation of the urinary bladder	Interactive Lecture
18. Explain the process of micturition reflex	
Hormones Acting on The Kidney	
19. Explain the how different hormones act on Kidneys (Erythropoietin, ADH, Angiotensin, Aldosterone)	Interactive Lecture
20. Discuss the Endocrine functions of the kidney	

COMMUNITY MEDICINE

TOPICS & OBJECTIVES	LEARNING STRATEGY
1. Discuss Measures of Association	Interactive Lecture

LEARNING RESOURCES

SUBJECT	RESOURCES
ANATOMY	<p>A. <u>GROSS ANATOMY</u></p> <ol style="list-style-type: none"> 1. K.L. Moore, Clinically Oriented Anatomy 2. Neuro Anatomy by Richard Snell <p>B. <u>HISTOLOGY</u></p> <ol style="list-style-type: none"> 1. B. Young J. W. Health Wheather's Functional Histology <p>C. <u>EMBRYOLOGY</u></p> <ol style="list-style-type: none"> 1. Keith L. Moore. The Developing Human 2. Langman's Medical Embryology
BIOCHEMISTRY	<p><u>TEXTBOOKS</u></p> <ol style="list-style-type: none"> 1. Harper's Illustrated Biochemistry 2. Lehninger Principle of Biochemistry 3. Biochemistry by Devlin
COMMUNITYMEDICINE	<p>A. <u>TEXTBOOKS</u></p> <ol style="list-style-type: none"> 1. Community Medicine by Parikh 2. Community Medicine by Milliyas 3. Basic <i>Statistics</i> for the Health Sciences by JanWKuzma
PHYSIOLOGY	<p>A. <u>TEXTBOOKS</u></p> <ol style="list-style-type: none"> 1. Textbook Of Medical Physiology by Guyton And Hall 2. Ganong ' S Review of Medical Physiology 3. Human Physiology by Lauralee Sherwood 4. Berne and Levy Physiology 5. Best and Taylor Physiological Basis of Medical Practice <p>B. <u>REFERENCE BOOKS</u></p> <ol style="list-style-type: none"> 1. Guyton and Hall Physiological Review 2. Essentials Of Medical Physiology by Jaypee 3. Textbook Of Medical Physiology by InduKhurana 4. Short Textbook Of Physiology by Mrthur 5. NMS Physiology

OTHER LEARNING RESOURCES

<u>Hands-on Activities/ Practical</u>	Students will be involved in Practical sessions and hands-on activities that link with the renal and excretory system module to enhance the learning.
<u>Labs</u>	<ul style="list-style-type: none"> Utilize the lab to relate the knowledge to the specimens and models available.
<u>Skill Lab</u>	<ul style="list-style-type: none"> A skills lab provides the simulators to learn the basic skills and procedures. This helps build the confidence to approach the patients.
<u>Videos</u>	Video familiarize the student with the procedures and protocols to assist patients.
<u>Computer Lab/CDs/DVDs/Internet Resources:</u>	To increase the knowledge students should utilize the available internet resources and CDs/DVDs. This will be an additional advantage to increase learning.
<u>Self Learning</u>	Self Learning is scheduled to search for information to solve cases, read through different resources and discuss among the peers and with the faculty to clarify the concepts.

ASSESSMENT METHODS:

- **Best Choice Questions(BCQs)** also known as MCQs (Multiple Choice Questions)
- **Objective Structured Practical/Clinical Examination (OSPE or OSCE)**

BCQs:

- A BCQ has a statement or clinical scenario of four options (likely answers).
- **Correct answer carries one mark, and incorrect 'zero mark'. There is NO negative marking.**
- Students mark their responses on specified computer-based sheet designed for LNHMC.

OSCE:

- All students rotate through the same series of stations in the same allocated time.
- At each station, a brief written statement includes the task. Student completes the given task at one given station in a specified time.
- Stations are observed, unobserved, interactive or rest stations.
- In unobserved stations, flowcharts, models, slide identification, lab reports, case scenarios may be used to cover knowledge component of the content.
- Observed station: Performance of skills /procedures is observed by assessor
- Interactive: Examiner/s ask questions related to the task within the time allocated.
- In Rest station, students in the given time not given any specific task but wait to move to the following station.

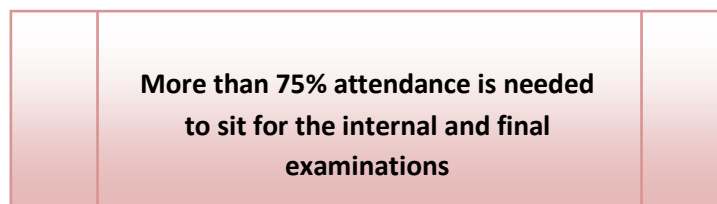
Internal Evaluation

- Students will be assessed comprehensively through multiple methods.
- 20% marks of internal evaluation will be added to JSMU final exam. That 20% may include class tests, assignment, practicals and the internal exam which will all have specific marks allocation.

Formative Assessment

Individual department may hold quiz or short answer questions to help students assess their own learning. The marks obtained are not included in the internal evaluation

For JSMU Examination Policy, please consult JSMU website!



LNH&MC EXAMINATION RULES & REGULATIONS

- Student must report to examination hall/venue, 30 minutes before the exam.
- **Exam will begin sharp at the given time.**
- No student will be allowed to enter the examination hall after 15 minutes of scheduled examination time.
- Students must sit according to their roll numbers mentioned on the seats.
- **Cell phones are strictly not allowed in examination hall.**
- If any student is found with cell phone in any mode (silent, switched off or on) he/she will be not be allowed to continue their exam.
- No students will be allowed to sit in exam without University Admit Card, LNMC College ID Card and Lab Coat
- Student must bring the following stationary items for the exam: Pen, Pencil, Eraser, and Sharpener.
- Indiscipline in the exam hall/venue is not acceptable. Students must not possess any written material or communicate with their fellow students.

SCHEDULE:

WEEKS	2nd YEAR	DATES
WEEK 1	HEAD & NECK MODULE	30 th Dec 2019
WEEK 2		
WEEK 3		
WEEK 4		
WEEK 5		31 st Jan 2020
WEEK 1	NEUROSCIENCES MODULE	3 rd Feb 2020
WEEK 2		
WEEK 3		
WEEK 4		
WEEK 5		
WEEK 6		28 th March 2020
WEEK 1	SPECIAL SENSES - I MODULE	30 th March 2020
WEEK 2		
WEEK 3		9 th May 2020
WEEK 1	ENDOCRINE-I MODULE	12 th May 2020
WEEK 2		
WEEK 3		
WEEK 4		13 th June 2020
WEEK 1	REPRODUCTIVE SYSTEM –I MODULE	16 th June 2020
WEEK 2		
WEEK 3		14 th July 2020
WEEK 1	RENAL & EXCRETORY MODULE-I	16 th July 2020
WEEK 2		
WEEK 3		
WEEK 4		6 th Aug 2020