JINNAH SINDH MEDICAL UNIVERSITY

STUDY GUIDE	
PROGRAM	**MBBS**
MODULE TITLE	**URINARY SYSTEM 2**
ACADEMIC YEAR	**4th Year -2026**
INTRODUCTION	The students of 4th year MBBS are already familiar with basic knowledge of the urinary system they studied in year 2 of MBBS. While Urinary System 1 focused on the normal structure and functions, this module revolves around pathophysiology, pharmacology and clinical correlation of the urinary system. The information obtained here will help the students in the final year during their Medicine and Surgery rotations
RATIONALE	Diseases related to the Urinary System are highly prevalent in our community and constitute a significant burden on our healthcare system. This module will provide the learners, with the necessary knowledge and skills to be better able to understand the relevant management processes in the final year.
OUTCOMES	The students will be able to justify management plans for diseases-related to the urinary system based on their basic knowledge and clinical skills.
DEPARTMENTS INVOLVED	1. Community Medicine 2. Medicine 3. Pathology 4. Pharmacology 5. Urology

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MODULE OBJECTIVES	By the end of the module, students will be able to:
LECTURES **COMMUNITY MEDICINE**	**1. Renal diseases and prevention** • Describe common renal diseases • Discuss the epidemiology of Renal diseases • Identify environmental risk factors of renal diseases • Explain preventive measures for renal diseases **2. Chronic kidney disease & Kidney failure** • Describe Chronic Kidney Diseases & its associated risk factors • Discuss the Global Burden of Chronic Kidney Diseases • Describe the diagnostic tests used to assess kidney function. • Identify strategies for preventing kidney failure and promoting kidney health **3. Bacterial Zoonotic diseases & prevention** • Identify common bacterial pathogens that cause zoonotic diseases • Describe the various modes of transmission for bacterial zoonotic • diseases • Recognize the potential public health significance of zoonotic • diseases. • Discuss prevention and control strategies for zoonotic diseases • Explain the role of antimicrobial resistance in the context of zoonotic • diseases. • Discuss ethical considerations related to zoonotic disease research and control efforts. **4. Parasitic Zoonotic diseases & prevention**

	• Describe the major groups of parasitic organisms that cause • zoonotic diseases • Explain the transmission routes of parasitic zoonotic diseases • Identify key factors contributing to their emergence and spread • Explain the importance of the One Health approach in addressing parasitic zoonotic diseases • Describe the prevention and control strategies for parasitic zoonotic diseases **5. Health Management Information System** • Describe HMIS & its essential elements • Explain the Intelligence Hierarchy Pyramid • Identify components of HMIS • List the various sources of health information • Discuss the importance of HMIS
MEDICINE	**1. Urinary tract infections** • Describe the etiology, pathophysiology, risk factors and clinical features of UTIs • Discuss the differential diagnosis • Discuss related radiological and laboratory investigations • Explain the principles of treatment

PATHOLOGY	**1. Cysts: Congenital and acquired cystic conditions of the kidney** • Classify cystic diseases of the kidneys • Discuss genetics, pathogenesis, morphology and clinical features of autosomal dominant, autosomal recessive polycystic kidney disease. • Discuss cystic diseases of the renal medulla and acquired (Dialysis associated) cystic disease **2. Obstructive Uropathy I: Urinary outflow Obstruction (Urolithiasis, Hydronephrosis)** • Discuss the causes, pathogenesis, morphology and clinical features of Hydronephrosis • Explain the types, pathogenesis and clinical presentation of renal stones • Explain the major causes of Ureteral obstruction **3. Obstructive Uropathy II: Urinary outflow Obstruction (Prostate)** • Discuss acute and chronic Prostatitis • Explain the etiology, pathogenesis, morphological and clinical features of Benign Prostatic Hyperplasia **4. Obstructive Uropathy III: Carcinoma of Prostate** • Discuss the etiology, genetic alterations, pathogenesis, morphology and clinical features of Prostatic Adenocarcinoma • Explain the grading, staging and laboratory diagnostics of carcinoma of Prostate **5. Urinary Tract Infections** • Describe the etiological factors and pathophysiology of upper and lower urinary infections

	6. Pathogenesis of glomerular disorders • Classify Glomerular Diseases • Name the Glomerular syndromes • Explain various pathological responses to glomerular injury • Discuss the pathogenesis of glomerular injury and mediators of glomerular injury • Explain the underlying immune mechanism in the development of various glomerular diseases **7. Nephritic syndrome** • Define nephritic syndrome • Summarize major primary Glomerulonephritis • Discuss the etiology, pathogenesis and clinical features of Acute proliferative, Glomerulonephritis, & Rapidly Progressive Glomerulonephritis. **8. Nephrotic syndrome** • Define nephrotic syndrome • List the common causes of Nephrotic syndrome • Discuss etiology, pathogenesis, microscopic morphology of Membranous Nephropathy, Minimal-Change Disease, Focal Segmental Glomerulosclerosis (FSGS), HIV-Associated Nephropathy, Membranoproliferative Glomerulonephritis (MPGN)] **9. Acute tubular necrosis** • Define tubulointerstitial diseases • Classify tubulointerstitial diseases • Discuss etiology, pathogenesis, morphology and clinical features of Acute Tubular Injury/Necrosis & Tubulointerstitial Nephritis

	10. Glomerular conditions associated with systemic disorders & Isolated Glomerular Abnormalities • Discuss the pathophysiology, morphology and clinical features of glomerular conditions associated with systemic diseases • Explain isolated glomerular abnormalities including IgA Nephropathy (Berger's Disease), Hereditary Nephritis and Alport Syndrome **11. Pyelonephritis** • Define Pyelonephritis • List the causes and organisms of urinary tract infections • Discuss the mechanism of ascending infection involving the upper urinary tract and kidneys • Discuss pathogenesis, morphological & clinical features of Acute & Chronic Pyelonephritis and Reflux Nephropathy • Describe morphological features and complications of pyelonephritis **12. Tumors of renal system I** • Classify renal neoplasms • Discuss benign neoplasms of the kidney • Explain the risk factors, pathogenesis, molecular alterations, morphology & clinical features of malignant renal neoplasms **13. Tumors of renal system II** • Classify Urothelial tumors • Discuss the etiology, pathogenesis, morphology, clinical features and diagnosis of urothelial tumors & non-neoplastic lesions of the urinary bladder **14. Renal Vascular Diseases** • Classify renal vascular diseases

	Discuss the etiology, pathogenesis, morphology and clinical features of Nephrosclerosis, Malignant Nephrosclerosis, Renal Artery stenosis, Thrombotic Microangiopathies and other vascular disorders
PHARMACOLOGY	**1. Diuretics I & II** • Classify Diuretics • Discuss the basic & clinical pharmacology of those classes with their clinical uses, side effects & contraindications
UROLOGY	**1. UTI and ureteric trauma** • Describe the embryology, surgical anatomy, and congenital anomalies of kidneys and ureters • Discuss the risk factors, etiology, clinical features, investigations, prevention and management plan for urinary tract infections • discuss the etiology, grades, investigations and treatment plans for renal and ureteric trauma **2. Renal Calculi** • Discuss the risk factors, etiology, clinical features, investigations, prevention and management plan for common kidney stones **3. Benign renal Tumors**

	• Diagnose renal calculi based on risk factors, clinical features and investigation findings • Formulate a management plan for renal calculi based on the patient's presentation and imaging findings. • Diagnose benign renal tumors based on histopathological features • Describe outlines of management of benign renal tumors **4. The urinary bladder** • Describe the surgical anatomy of the urinary bladder. • Explain the etiology, investigations, treatment plan and complications for: I. bladder trauma II. congenital defects of the bladder, including neurogenic bladder and bladder exstrophy • Discuss the etiology, risk factors, preventive measures, clinical features, investigations and urological management of: I. Acute and Chronic retention of urine II. Benign & malignant tumors of the urinary bladder III. Urinary bladder calculi IV. Urinary bladder fistulae V. Urinary incontinence
TUTORIALS **PATHOLOGY**	**1. Urinary Analysis, Culture & Sensitivity** • Interpret urine detailed report • Discuss the Lab/Dipsticks method of urine analysis • Discuss the procedure of performing urine C/S • Identify the culture media and growth of different organisms of UTI on culture plates

	2. Histopathology of Glomerular Diseases • Discuss morphology (light microscopic, electron microscopic and immunofluorescent microscopic features) of important diseases related to Nephritic and nephrotic syndromes **3. Histopathology of kidney, urinary bladder and Prostatic tumors** • Briefly discuss the morphology of renal, urinary bladder and prostatic tumors
TUTORIAL PHARMACOLOGY	**1. Role of Diuretics** • Justify management of clinical conditions with different classes of diuretics along with the pharmacokinetics and dynamics of those classes of drugs
SKILLS LAB	• Pass a Foley's catheter in male and female mannequins according to the given protocols
INTERNAL ASSESSMENT	• Internal assessment will be according to JSMU policy. The respective institutions will determine the details of the internal evaluation. • Internal assessment carries 20% weightage in the final, end-of-year examination
ANNUAL EXAMINATION	• MCQs and OSCE/OSPE (observed + unobserved)
MODULE EVALUATION	• Course evaluation will be obtained through a feedback form which will be posted on the JSMU website
REFERENCE BOOKS	• Robbins & Citron, Pathologic Basis of Diseases, 9th Edition • Public Health and Community Medicine 8th Edition. Author: Ilyas, Ansari • K Park's Textbook of Preventive and Social Medicine 23rd Edition • Basic & Clinical Pharmacology, 15th Ed. Bertram G. Katzung

	• Davidson's Principles and Practice of Medicine, 24th ed. • Bailey & Love's Short Practice of Surgery - 28th Edition