JINNAH SINDH MEDICAL UNIVERSITY

STUDY GUIDE	
PROGRAM	**MBBS**
MODULE TITLE	**Nervous system 2 &Psychiatry**
ACADEMIC YEAR	**4th Year-2026**
INTRODUCTION	The module is directly linked with the Nervous system-1 year-2, where there was emphasis on normal structure and functions with clinical relevance. This module comprises of a strong clinical input related to common neurological, neurosurgical, and psychiatric conditions related to adults and children, so that the students get to understand issues from the patient's perspective. It is hoped that this will help them understand many of the covered diseases when they read about them again in Medicine, Surgery and/ or Pediatrics.
RATIONALE	Since many neurological and psychiatric conditions are common in the Pakistani community, it is imperative that attention of the learners is focused to these issues. Conditions like Epilepsy, Hydrocephalus, Meningitis, Depression, Schizophrenia are not unheard of. This module helps the students link the relevant basic sciences with signs and symptoms so that the principles of management can be better understood and applied to improved patient care.
OUTCOMES	By the end of the module, all the students will be able to justify the diagnosis and management plans of various neurologic & psychiatric diseases based on their knowledge of relevant basic sciences.
DEPARTMENTS INVOLVED	1. Community Medicine 2. Neurology

	3. Neurosurgery 4. Paediatrics 5. Pathology 6. Pharmacology 7. Psychiatry 8. Radiology
MODULE OBJECTIVES	By the end of the module, the students should be able to:
LECTURES COMMUNITY MEDICINE	**1. Poliomyelitis & Prevention** • Describe poliomyelitis and its epidemiology • Classify different types of poliomyelitis • Discuss its control & prevention • Explain Global Polio Eradication Initiative **2. Tetanus & Prevention** • Describe Tetanus & its Epidemiology • Classify its types • Explain its control & prevention **3. Leprosy & Prevention** • Describe Leprosy & its Epidemiology • Classify the different types of Leprosy • Discuss its control & prevention • Explain the national Leprosy Control Program **4. Stroke & Prevention** • Describe Stroke & its epidemiology • Explain the risk factors of Stroke • Discuss its control & prevention **5. Rabies & Prevention** • Describe Rabies & its epidemiology

	• Discuss its control & prevention **6. Snake bite & prevention** • Classify Snakes • Identify the clinical features associated with different types of Snake Venom • Discuss epidemiology of snake bite • Explain the management of snake bite • Discuss the preventive measures of snake bite **7. Introduction to mental health** • Describe Mental Health • List mental health problems • Discuss recommendations by World Health Report 2001 for Mental Health. • Explain prevention and control of mental health problems **8. Substance Abuse** • Describe Substance abuse & its epidemiology • Identify the criteria of drug addiction • Classify psycho-active drugs • Describe the phases of Drug addiction • Explain the control & Prevention of substance abuse **9. Global burden of Neurological disorder** • Describe the global, regional and national burden of neurological disorders, with emphasis on disability-adjusted life years (DALYs) and mortality rates along with their prevalence and incidence rates • Explain the economic burden of neurological disorders on healthcare systems and societies globally

	• Explain the role of global organizations (e.g., WHO, Global Burden of Disease Study) in addressing neurological disorders. • Discuss: ✓ the healthcare infrastructure challenges and opportunities in Pakistan for addressing neurological disease burden. ✓ the impact of aging populations and demographic changes on the burden of neurological conditions
PHARMACOLOGY	**1. Sedatives & hypnotics: Benzodiazepines I&II** • Classify the drugs used as Sedatives & Hypnotics • Discuss the basic & clinical pharmacology of those Sedatives & Hypnotics drugs **2. Drug used in migraine** • List the drugs used in migraine • Discuss the basic & clinical pharmacology of those drugs **3. Drugs of General anesthetics I&II** • List the drugs used as pre anesthetic medications • Classify the drugs used as General anesthetics • Discuss the basic & clinical pharmacology of those Drugs **4. Local anesthetics** • List the drugs used in local anesthetics • Classify the drugs used as local anesthetics • Discuss the basic & clinical pharmacology of those Drugs and their differences **5. Anti-epileptic drugs I & II** • Classify the drugs used in epilepsy • Discuss the basic & clinical pharmacology of those drugs **6. Anti-psychotic drugs I &II**

	• Classify antipsychotic drugs according to different aspect • Discuss the basic & clinical pharmacology of those drugs **7. Antidepressant drugs** • Classify the Antidepressant Drugs • Discuss the basic & clinical pharmacology of those drugs **8. CNS Stimulants and Hallucinogens** • List different classes of CNS stimulants and hallucinogens • Discuss the basic & clinical pharmacology of those drugs **9. Anti-Parkinson drugs I & II** • Classify the Anti-Parkinson Drugs • Discuss the basic & clinical pharmacology of those drugs **10. Drugs of Abuse & Alcohols** • List the drugs of Abuse • Discuss the basic and clinical pharmacology of those drugs and Alcohols **11. Serotonin agonist and antagonist** • List the serotonin agonist and antagonist drugs • Discuss the basic and clinical pharmacology of those drugs
PATHOLOGY AND MICROBIOLOGY	**1. Patterns of nerve injury, Cerebral Edema & Raised ICP** • Define cerebral edema • List different types of brain herniation • Discuss: ✓ Types and etiological factors of cerebral edema ✓ The pathophysiology of reactions of Neurons, Glial tissue, Astrocytes, and Microglia to injury ✓ The pathogenesis, morphology and clinical presentation of cerebral edema, hydrocephalus and raised intracranial pressure

	✓ The pathogenesis and morphology of different types of brain herniation **2. Traumatic injuries to CNS** • Define: ✓ Traumatic vascular injury ✓ Epidural and subdural hematoma • Discuss: ✓ The patterns of vascular injury in the CNS ✓ The etiology, pathogenesis, and clinical presentation of epidural and subdural hematoma **3. Cerebrovascular Diseases: (Hypoxia, Ischemia, Infarction)** • Define cerebrovascular diseases • Classify types of ischemic and vascular injury to brain • Discuss: ✓ The risk factors, pathogenesis, localization, morphology and clinical course of global and focal cerebral ischemia ✓ The pathogenesis and morphology of various infarcts in the brain and spinal cord **4. Hypertensive Cerebrovascular disease (CVD), intracranial hemorrhage and malformations** • Classify CVD associated with hypertension • Discuss the effects of hypertension on CNS • Discuss the etiology, pathogenesis and clinical features of: ✓ Hypertensive intra-parenchymal hemorrhage ✓ Intracranial hemorrhages (Cerebral amyloid angiopathy, Subarachnoid Hemorrhage and Ruptured Saccular Aneurysms)

	✓ Vascular malformations (AV malformations, Cavernous malformations and Capillary telangiectasia) ✓ Hypertensive cerebrovascular disease & ✓ Hypertensive encephalopathy **5. Meningitis & Brain Abscess** • Define meningitis and brain abscess. • List pathogens of meningitis and brain abscess • Discuss: ✓ Clinical features of Common Central Nervous System infections including acute (pyogenic) bacterial infections, acute aseptic viral infections, chronic bacterial meningitis, and fungal meningitis ✓ The transmission, pathogenesis, clinical features & laboratory diagnosis of Neisseria meningitides, Mycobacterium tuberculosis, Toxoplasma, Naegleria, Listeria & Cryptococcus **6. Encephalitis** • Define encephalitis • List pathogens of encephalitis • Discuss in detail the transmission, pathogenesis, clinical features & laboratory diagnosis of Herpes, Varicella, Rabies & Polio virus **7. Neurodegenerative Diseases** • Define neurodegenerative diseases • List the important neurodegenerative diseases • Discuss: ✓ Relationship between proteins and neurodegenerative diseases

	✓ The molecular genetics and pathogenesis of Alzheimer disease ✓ Important morphologic features, clinical presentation and diagnostic criteria of Alzheimer disease ✓ The molecular genetics and pathogenesis of Parkinson disease ✓ Important morphologic features and clinical presentation and diagnostic criteria of Parkinson disease **8. Brain tumors I & II** • Classify CNS tumors according to WHO classification • Discuss genetic mutations, pathogenesis, morphology and clinical features of brain tumors including all types of Glioma, Ependymoma, Medulloblastoma, Meningioma and metastatic tumors of brain **9. Diseases of skeletal Muscles-I** • Define Skeletal Muscle Atrophy • Discuss: ✓ Pathophysiology and clinical features of Myasthenia gravis, Lambert-Eaton Myasthenic Syndrome & Botulism ✓ Features of Type I & II muscle fiber types ✓ The pathogenesis and diagnostic profile of inflammatory neuropathies (dermatomyositis and Polymyositis) and inherited diseases of skeletal muscle (X- linked muscular dystrophy with dystrophic mutation/ Duchenne and Becker Muscular Dystrophy) **10. Diseases of skeletal muscles-II**

	• Discuss pathophysiology and clinical features of Inflammatory Neuropathy i.e. Guillain-Barré Syndrome (Acute Inflammatory Demyelinating Polyneuropathy), Poliomyelitis and Prion diseases.
NEUROLOGY	**1. Lesion localization** • List the differential diagnosis based on detailed history, clinical presentation and complete examination findings. • Identify the likely site/s of a lesion in the nervous system based on patient's symptoms and signs **2. Lesions of cranial nerve** • List the causes of cranial nerve Pathologies • Describe the clinical features, etiology, pathophysiology, investigations and outline of management plan of common cranial nerve lesions (esp. Optic, Oculomotor, Trigeminal, Facial and Glossopharyngeal nerves.) **3. Cerebro-Vascular Accident (CVA)** • Define CVA and its types • Discuss the risk factors, etiology, pathophysiology, clinical features • Explain the outline of management plan for CVA **4. Epilepsy and status epilepticus** • Define Epilepsy & Status Epileptics • Classify types of seizures clinically • List most common causes of seizures

	• Discuss: ✓ Pathophysiology of seizures ✓ Pharmacological treatment of epilepsy and the management of status epilepticus **5. Meningitis** • Classify Meningitis • List the causative organisms • Discuss the possible complications of Meningitis • Interpret the CSF studies in patients with various types of meningitis • Differentiate among the various types of meningitis based on their clinical features, investigation findings and treatment options **6. Encephalitis** • Define Encephalitis • List the causative organisms • Differentiate among the various types based on their clinical features, investigation findings and treatment options • Discuss the possible complications of Encephalitis **7. Parkinson's Disease** • Discuss the clinical features, pathogenesis & differential diagnosis of Parkinson's disease (PD) • Explain the investigations and management plan for PD

	8. Multiple sclerosis (MS) and other demyelinating diseases • List the common CNS and PNS demyelinating diseases • Discuss the epidemiology, pathogenesis, clinical presentation, investigations, differential diagnosis and management of MS. **9. Myasthenia Gravis** • Describe the pathophysiology of Myasthenia Gravis • Explain its clinical features & investigations • Discuss the management of Myasthenia Gravis and its complications **10. Rabies, Tetanus and Botulism** • Discuss the etiology, clinical features, investigations, prophylaxis and treatment of each of the conditions **11. Higher Mental Functions** • Discuss level of consciousness, behavior, speech & memory • Identify their abnormalities and impairment.
NEUROSURGEY	**1. Hydrocephalus** • Define Hydrocephalus, communicating and non-communicating hydrocephalus • List common symptoms & signs of acute hydrocephalus in children and normal pressure hydrocephalus in adults • Describe the difference in the treatments of these conditions **2. Raised Intracranial Pressure (ICP)**

	• Identify the symptoms and signs of raised ICP • Describe the evaluation of a patient with raised ICP with reference to Space Occupying Lesion (SOL) **3. Headaches** • Classify Headaches • Discuss the differential diagnosis of headaches • Discuss the clinical features, diagnostic criteria and outlines of treatment for each type. **4. Back Pain, Sciatica, Neck pain, Brachialgia** • Discuss the etiology, clinical features, investigation findings and outlines of treatment plans for Back pain, Sciatica, Neck pain and Brachialgia **5. Brain Trauma and Management (ATLS)** • Classify head injuries (severity/morphology) and describe specific lesions (EDH, SDH, Contusion). • Apply the ATLS Primary and Secondary Surveys to brain trauma patients. • Formulate initial management for mild, moderate, and severe Head Injury. **6. Spinal Trauma and Management (ATLS)** • Describe the common patterns of cervical, thoracic, and lumbar spine fractures. • Determine the indications for and interpret findings from X-rays and CT scans for spinal trauma. • Apply principles of general management, including Spinal Motion Restriction and safe transfer.
RADIOLOGY	**1. CT Scan Brain**

	• Describe the role of radiographic imaging studies in diagnosis and management of stroke patients • Identify the following on a CT film: i. Normal cranial and neurological anatomy ii. Skull fracture iii. Extra-cerebral blood iv. Intracranial blood v. Appearance of both hemorrhagic and ischemic strokes **2. MRI Brain** • List the indications and contraindications of MRI Brain • Discuss the radiological features of normal and diseased MRI Brain
PSYCHIATRY	**1. Introduction to Mental Health and Biopsychosocial method and Non-pharmacological intervention** • Define: ✓ The concept of health and mental health ✓ The role of biological, psychological and social factors in custom continuation and healing of illness • Describe: ✓ Positive mental health ✓ The role of personality, attitudes, attributes, impact of family society, social factors and cultures on the etiology, presentation and the management of illness • Discuss the management of illness

	• Differentiate between Psychiatry and Psychology **2. Counseling & Psychotherapy** • Define counseling • Enumerate some basics dos and don'ts of counseling • Discuss: ✓ Attending and listening, verbal techniques and role of empathy in healing of illness ✓ The role of counseling, informational care and handling difficult patients and their families • Describe: ✓ The prerequisites of counseling/ psychotherapy ✓ The basic rules of counseling • Explain rules and boundaries setting of counseling • Differentiate among: ✓ Counseling, psychotherapy and active listening ✓ Various types of psychotherapies/counseling ✓ Boundary and barrier ✓ Empathy, sympathy and apathy **3. Breaking bad news** • List the application of biopsychosocial model in communicating with patient & his family • Discuss: ✓ The methods to address the concerns and emotional reactions of patients ✓ Disclosure models of breaking bad news and management of the related issues

	4. Anxiety disorders- I; Introduction, types & etiology • Define normal and abnormal anxiety • Describe the presentation of anxiety disorders • Discuss their etiological theories • Distinguish the essential features of: ✓ Generalized anxiety disorder (GAD) ✓ Panic attacks and panic disorder ✓ Phobias (Specific, Agoraphobia and Social Phobia) ✓ Obsessive compulsive disorder (OCD) ✓ Acute stress reaction and ✓ Post-traumatic stress disorder (PTSD) **5. Anxiety disorders- II; differentiating points, diagnosis & management** • Discuss the clinical features and etiology of PTSD and Acute stress reaction • Explain the causes of PTSD, Acute Stress Disorder and Obsessive Compulsive Disorder • Describe the management of these disorders **6. Depressive disorders** • List the common risk factors for mood and depressive disorders • Discuss their management • Describe the diagnostic criteria for mood disorders (Depressive disorder) **7. Self-harm, and Suicide** • Define self-harm and suicide • List: ✓ The risk factor of self-harm and suicide

	✓ The common causes of self-harm and suicide • Discuss suicide risk assessment, prevention and management plan **8. Bipolar Affective disorder** • List the common risk factors and co-morbids for bipolar affective disorder • Discuss the management of bipolar affective disorder • Describe the diagnostic criteria and types of bipolar affective disorder **9. Somatic and Medically Unexplained Symptoms** • Discuss: ✓ The assessment of medically unexplained symptoms according to their severity ✓ The management of these condition including a stepped approach • Describe the diagnostic approach for patients with fits/attack (Epilepsy vs Convulsion disorder) • Explain the approach for establishing an appropriate diagnosis **10. Schizophrenia and related disorders** • Explain the concept of Psychosis and its presentation, and prevalence of various psychotic disorders • Diagnose Acute Psychotic disorders, schizophrenia, and Delusional disorders based on given criteria • Discuss the principles of treatment of schizophrenia and other psychotic disorders • Describe their etiological factors and prevalence **11. Disorders of Addictive Behavior / Alcohol & Other Substance use**

	• Define Addiction • Classify drugs of addiction • Discuss: ✓ The behavioral issues related to addiction ✓ The effects of alcohol and other illicit drugs on the body (cannabis, opioids, cocaine, amphetamines and LSD) • Describe: ✓ The modes of action of alcohol and other illicit drugs ✓ Delirium tremens ✓ The impact of suddenly stopping the use of addictive drugs • Explain the psychological, emotional, physical and social insults of these drugs • Differentiate among: ✓ Harm minimization and drug eradication ✓ Tolerance, excessive use, abuse/misuse, dependence, withdrawal and intoxication **12. Psychosexual disorders** • Discuss different types of psychosexual disorders • Describe their characteristic features, etiology and prevalence • Explain principles of management of these conditions **13. Introduction to childhood psychiatric disorders** • Categorize mental health disorders (such as emotional disorders, behavior disorders) in children and adolescents • Discuss:

	✓ The presentation of various childhood psychiatric disorders, i.e. Attention deficit hyperactive disorder (ADHD), Autism Spectrum Disorder, Depressive disorder and Mental Retardation ✓ The factors impacting childhood mental and emotional health • Describe the use of multimodal treatment **14. Introduction to old age psychiatric disorders, Delirium and Dementia** • Name standardized assessment tools • Describe: ✓ The variations in presenting psychiatric symptoms in this age group ✓ The use of multimodal treatment in old age patients • Discuss: ✓ The use of assessment tool in measuring cognitive impairment ✓ The clinical assessment and differential diagnosis of an elderly patient with delirium ✓ The differential diagnosis of a patient presenting with cognitive impairment suggestive of dementia • Explain: ✓ The high likelihood of co-morbidity in old age group ✓ The salient features of delirium and dementia • Diagnose common psychiatric illnesses in the geriatric group

	• Compare features of dementia versus delirium
PAEDIATRICS	**1. Cerebral Palsy and mental retardation** • Define cerebral palsy • List causes of cerebral palsy • Classify cerebral palsy • Explain the management of cerebral palsy **2. Common CNS infections in children** • List the common pathogens of CNS infections in various ages • Discuss the common signs and symptoms, complications and management of CNS infections • Interpret the CSF reports of cases with CNS infections **3. Upper and lower motor neuron lesions with Acute Flaccid Paralysis (AFP)** • Define Upper and lower motor neuron lesions • Name the Differentiating features of upper and lower motor neuron lesions • List the common conditions associated with upper motor neuron lesions • Discuss: ✓ The common conditions associated with Acute flaccid paralysis (AFP) [Polio, GBS, transverse myelitis and traumatic neuritis] ✓ The importance of Polio eradication program in Pakistan

	4. Seizures in Children • Define seizures, Febrile seizures & childhood epilepsy • List causes of seizures in children • Classify seizures • Discuss the complications and management of seizures **5. Poliomyelitis** • Discuss the etiology, clinical features, investigations and management plan for Poliomyelitis
<u>TUTORIALS</u> **PATHOLOGY**	**1. Infection of Brain & Meninges & CSF interpretation** • List the most common organisms that cause CNS infection in different age groups • Discuss CSF findings of bacterial meningitis, tuberculous meningitis, viral and fungal meningoencephalitis **2. Brain Tumors** • Discuss morphological and molecular aspects of various brain tumors.
PHARMACOLOGY	**1.Sedatives & Hypnotics: Benzodiazepines** • Classify Sedatives & Hypnotics drugs. • Discuss basic & clinical pharmacology of Sedatives & Hypnotics drugs. **2. Drugs used for Migraine Treatment** • Discuss basic & clinical pharmacology of those drugs used in migraine. **3. Drugs of General anesthetics & Local anesthetics**

	• Discuss basic & clinical pharmacology of general and local anesthetic and their clinical role. **4. Drugs used in Epilepsy Treatment** • Classify anti-epileptics drugs • Discuss basic & clinical pharmacology of anti-epileptics drugs. **5. Drugs used in Psychosis Treatment** • Classify antipsychotic drugs. • Discuss the basic & clinical pharmacology of those drugs. **6. Drugs used in Depression Treatment** • Classify antidepressant drugs. • Discuss the basic & clinical pharmacology of those drugs.
CLINICAL SKILLS **(in skills lab and/or ward rotations)**	1. Perform lumbar puncture on mannequins. 2. Perform Cranial nerves examination 3. Perform examination of Nervous system 4. Take relevant history correctly, as per guidelines 5. Interpret investigation findings in order to develop provisional diagnoses 6. Justify diagnoses and outline of treatment plans based on patient data
PROFESSIONAL BEHAVIOR	• Communicate professionally with patients, their attendants, health care team members, senior physicians and peers • Demonstrate punctuality and regularity in all academic sessions • Follow institutional policies

INTERNAL ASSESSMENT	• Internal assessment will be according to JSMU policy. The details of internal assessment will be determined by the respective institutions. • Internal assessment carries 20% weightage in the final, end-of-year examination
ANNUAL EXAMINATION	MCQs and OSCE/OSPE (observed + un observed). Clinical Topics and skills taught in this module will be assessed in Final year MBBS professional examination as well.
MODULE EVALUATION	Course will be evaluated through a feedback form posted on the JSMU website
SUGGESTED RESOURCES	• Davidson's Principles and Practices of Medicine • Drugs used in Psychiatry, by Prof. Muhammad Iqbal Afridi • Handbook of Behavioural Sciences, by Mowadat H. Rana • Kaplan Series, Behavioural Sciences, Psychiatry • Shorter Oxford Textbook of Psychiatry