

## ANNEXURE IV

### **Syllabus for NEB Examination (Medical) Standard 5 (for transfer to MBBS Year 5)**

#### **SYSTEMIC PATHOLOGY**

##### **BLOOD VESSELS AND HEART**

- Differentiation between atherosclerosis, Monckeberg's medial calcific sclerosis and arteriosclerosis.
- Etiology, pathogenesis & complications of atherosclerosis.
- Types of primary and secondary hypertension and vascular changes in hypertension.
- Common pathogenic mechanisms of vasculitis.
- Aneurysms, classification, and aetiology and pathogenesis of atherosclerotic aneurysm
- Pathology of varicose veins
- Benign and malignant tumors of blood vessels.
- Pathogenesis of ischemic heart disease including etiological factors, pathogenesis, diagnosis and complications of Myocardial infarction.
- Causes of sudden cardiac death
- Cor-pulmonale and list the predisposing disorders
- Rheumatic fever with respect to aetiology, pathogenesis, morphological and clinical features. The sequelae of Rheumatic Fever.
- Infective endocarditis with respect to aetiology, pathogenesis, morphological and clinical features, and its sequelae
- Myocarditis: causes and its morphological and clinical features
- Cardiomyopathy: clinico-pathological groups and diagnosis
- Causes of pericarditis and its clinical and morphological features
- Primary and secondary cardiac tumors
- Main features of Fallot's tetralogy and coarctation of aorta, Valvular heart disease and mitral valve prolapse
- The concept of cardiac transplantation

##### **HAEMATOPOIETIC AND LYMPHOID SYSTEMS**

- Stages in the formation of red blood cells (RBCs), white blood cells (WBCs), platelets and correlate hematopoiesis with various hematopoietic growth factors including morphology of a normal bone marrow.
- Normal values of red cell count, hemoglobin level, packed cell volume, MCH, MCV, MCHC, WBC count and platelet count.
- Anemias, classification on the basis of morphology and underline pathogenesis of RBC production.
- Causes and clinical features, clinical presentation, and diagnosis of hypochromic anemia, Megaloblastic Anemia, Anemia of chronic disease, Hereditary spherocytosis, Aplastic anemia and Hemolytic Anemias.

- Aetiology, pathogenesis, clinical types, diagnosis of thalassemia with emphasis on incidence, common mutations, associated psychosocial problems and prevention.
- Inheritance, clinical features, lab diagnosis of von Willebrand's disease, Hemophilia A & B and Polycythemia.
- Mechanisms which can cause neutropenia/agranulocytosis.
- Differentiation between infective and malignant causes of leucocytosis with special reference to infectious mononucleosis, acute and chronic non-specific lymphadenitis.
- Non-Hodgkin's lymphoma, classification and diagnosis.
- Classification, aetiology, pathogenesis and clinical stages of Hodgkin's disease
- Aetiology, clinical features, laboratory diagnosis and prognostic factors of acute and chronic lymphoblastic and myeloblastic leukemia.
- Multiple myeloma with respect to aetiology, pathogenesis, morphology, clinical features and diagnosis.
- Disseminated intravascular coagulation with respect to aetiology, pathogenesis, clinical features and laboratory diagnosis
- Causes of decreased production and decreased survival of Platelets with special reference to the pathogenesis of idiopathic & thrombotic thrombocytopenic purpura
- The value of coagulation profile in the assessment of bleeding disorders
- ABO and Rhesus blood groups, their clinical importance and method of group typing.
- Common indications of blood products (red cells, platelets and plasma) and hazards of blood transfusion and methods of their prevention.

### RESPIRATORY SYSTEM

- Differentiate between pleural effusion, hemothorax, hydrothorax, pleuritis, pneumothorax and chylothorax.
- Classification of atelectasis on the basis of underlying mechanisms.
- Etiology, pathogenesis, morphology and clinical features and diagnosis of asthma.
- Disorders associated with airflow obstruction disease with reference to their aetiology, Pathogenesis, morphology and diagnosis
- Restrictive lung diseases including sarcoidosis, pulmonary eosinophilia, with reference to their aetiology, Pathogenesis, morphology and clinical diagnosis
- Pathogenesis, morphology and clinical features of adult respiratory distress syndrome.
- Clinical features of Goodpasture's syndrome based on the pathology.
- Morphology & clinical features of pulmonary infarction.
- Causes of pulmonary hypertension and vascular sclerosis.
- Etiology, pathogenesis, morphology and clinical Features, complications and clinical diagnosis of acute and chronic pneumonias including atypical pneumonia.
- Etiology, pathogenesis and clinical features, clinical diagnosis of tuberculosis of the lung.
- Classification, aetiology, pathogenesis and clinical features of different lung tumors.

## GASTROINTESTINAL TRACT AND LIVER

- Risk factors, clinical and morphological features and diagnosis of oral Cancer with special reference to early lesions like leucoplakia.
- Benign and malignant tumors of salivary glands.
- Different types of esophagitis and its relation with carcinoma of the esophagus.
- Predisposing factors, pathogenesis, morphological and clinical features of acute and chronic gastritis and peptic ulcer disease.
- Gastric carcinoma with respect to risk factors, pathogenesis, clinical and morphological features and prognosis; and differentiate from Gastric Lymphoma and Gastrointestinal Stromal Tumor (GIST).
- Clinical and morphological features of Hirschsprung's disease.
- Pathogenesis, morphological and clinical features of malabsorption diseases.
- Predisposing conditions, clinical and morphological features of ischemic bowel disease.
- Crohn's disease and ulcerative colitis including major causes of intestinal obstruction.
- Clinico-pathological features, clinical presentation and diagnosis of bacterial and parasitic diseases of intestines.
- Benign and malignant tumors of intestines with reference to etiological factors, pathogenesis, diagnosis and prognosis.
- Types of jaundice with respect to the causes, clinical features and laboratory diagnosis
- Causes, morphological and clinical features and complications of hepatic failure
- Causes, pathogenesis, complications of cirrhosis
- Route of transmission, Incubation period, Clinical features and complications of acute and chronic viral hepatic infection.
- Liver abscess: causes, clinical features, diagnosis
- Pathogenesis, clinical features and diagnosis of alcohol liver disease.
- Clinico-morphological features and diagnosis of deposition diseases of liver.
- Neonatal hepatitis.
- Epidemiology, pathogenesis, morphological and clinical features of hepatocellular carcinoma.
- Pathogenesis and risk factors of Cholelithiasis and acute and chronic cholecystitis.
- Features of gall bladder cancer.
- Acute and chronic pancreatitis with respect to aetiology, pathogenesis, clinical and morphological features.
- Clinical and morphological features of carcinoma of pancreas.

## RENAL AND MALE REPRODUCTIVE SYSTEM

- Etiology, pathogenesis, clinical features and complications of; Azotemia, Uremia, Acute renal failure, Chronic renal failure
- Polycystic kidney disease (and its Classification)
- Glomerulonephritis and (its Classification)
- Nephrotic and nephritic syndrome
- Acute and chronic pyelonephritis.

- Hydronephrosis
- Pathogenesis and clinical course of acute tubular necrosis.
- Benign and malignant nephrosclerosis
- Characteristics of various types of renal stones
- Pathogenesis, clinical features and lab diagnosis of nephrolithiasis
- Epidemiology, morphology, clinical features and prognosis of Wilm's tumor
- Classification, Epidemiology, morphology, clinical features and prognosis of renal cell carcinoma
- Etiology, morphology & clinical features of cystitis.
- Clinical features, etiology and morphology of transitional cell carcinoma of the urinary bladder.
- Etiology, route of infection, pathogenesis and methods of diagnosing Gonococcal and non-gonococcal urethritis
- Etiology, pathogenesis, diagnosis of prostatitis, prostatic hyperplasia and prostatic carcinoma
- Inflammatory disease and tumors of testis and epididymis
- Causes, pathogenesis and investigations of male infertility.

#### FEMALE GENITAL SYSTEM AND BREAST

- Causes, routes of infection and methods of diagnosis of Sexually transmitted diseases: micro-organisms involved, route of infection, pathogenesis and methods of diagnosis
- Vulvar and vaginal squamous intraepithelial lesions
- Neoplasms of Cervix with reference to cervical intraepithelial neoplasia.
- Causes, pathogenesis and clinical features of dysfunctional uterine bleeding and its relation with endometrial hyperplasia, endometrial polyp and carcinoma.
- Clinical features and pathogenesis of adenomyosis and endometriosis.
- Tumors of endometrial stroma and myometrium.
- Tumors of the ovary: classification, etiological factors, pathogenesis, diagnosis and prognosis.
- Etiology, clinical features and pathogenesis of ectopic pregnancy and toxemia of pregnancy.
- Gestational trophoblastic tumors
- Causes of nipple discharge and lump breast and its differentiation on the basis of aetiology, pathogenesis, morphology, clinical features, diagnosis and complications
- Benign breast diseases proliferative and non- proliferative
- Carcinomas of the breast: Epidemiology, classification, aetiology and pathogenesis, diagnosis and prognosis
- Gynecomastia and list its causes.

#### MUSCULOSKELETAL SYSTEM

- Pathogenesis, clinical features and diagnosis of genetic and metabolic bone diseases.
- Causes of osteoporosis, its pathogenesis, morphological and clinical features.

- Acute and chronic Osteomyelitis with respect to causative organisms, routes of spread, and complications.
- Benign and malignant bone forming tumors
- Benign and malignant cartilaginous tumors
- Pathogenesis, morphological and clinical features of Degenerative Arthritis
- Pathogenesis, morphological and clinical features of immune mediated arthritis
- Pathogenesis, morphological and clinical features of crystal deposition diseases.
- Pathogenesis, morphological and clinical features and diagnosis of muscular dystrophies
- Pathogenesis, morphological and clinical features and diagnosis of inflammatory myopathies
- Clinico-pathological features of Myasthenia Gravis
- Classification and important distinguishing points of soft tissue tumors

### ENDOCRINE SYSTEM

- Causes, Pathogenesis, and diagnosis of anterior and posterior Pituitary hormone defects.
- Adrenal Cortex and Medulla
- Causes, aetiology, pathogenesis and lab. Diagnosis of adrenal cortical medullary hyper and hypo-function.
- List the aetiology and clinical features, types, diagnosis of different thyroid diseases
- Causes of solitary thyroid nodule and outline of clinical diagnostic approach.
- Etiology, pathogenesis, morphology and diagnosis of Thyroid tumors
- Types of MEN syndromes.
- Investigation, clinical features, aetiology of Parathyroid dysfunction
- Diabetes Mellitus: Type 1 and 2, pathogenesis, morphology, clinical features, laboratory diagnosis and complications.

### SKIN

- Morphological and clinical features of different types of dermatitis
- Pathogenesis, morphological and clinical features of Bullous disease of the skin
- Types of warts and their most frequent locations.
- Predisposing factors for squamous cell carcinoma of skin.
- Etiology, pathogenesis, morphology, diagnosis and prognosis of squamous cell carcinoma and its differentiation from basal cell carcinoma.
- Different types of Nevi, with reference to clinical and morphological features, and diagnosis of malignant melanoma

### NERVOUS SYSTEM

- Clinical and morphological features of intra-cranial hemorrhage.
- Acute and chronic meningitis including Tuberculous meningitis
- Brain abscesses, its clinical and morphological features and diagnosis
- Clinico-pathological features of Guillain-Barre syndrome.

- Types of intracranial tumors including common metastatic tumors to the brain

## CHEMICAL PATHOLOGY

- Biochemical markers of ischemic heart disease
- Renal function tests.
- Causes of proteinuria and its laboratory diagnosis.
- Lab diagnosis of acid base disorders.
- Lab diagnosis of Diabetes mellitus.
- Liver function tests.
- Laboratory diagnosis of hyperlipidemia and its clinical interpretation.
- Role of enzymes in diagnosis of pancreatitis.
- Laboratory diagnosis/investigations of endocrine disorders: -
- Role of hormone estimation in diagnosis of infertility & growth disorders

## **COMMUNITY MEDICINE**

### **Concept of Health and Disease**

- Concept of health, Definition of health. Dimensions, physical, mental, social and spiritual. Spectrum of health, Determinants of health.
- Responsibility for health. Indicators of health. Health promotion.
- Concept of disease, concept of causation (all theories including ecological triad, agent, host and environmental factors), spectrum of disease. Natural history of disease. Levels of prevention. Disease elimination and eradication. Disease surveillance and disease prevention.

### **Introduction to Public Health**

- Historical background
- Evolution of Public health
- Definition of Public health
- Branches of Public health
- Preventive medicine
- Social medicine
- Population medicine
- Community medicine
- International Health
- Health for all.

### **Health Systems in Pakistan**

- Development of Public Health in Pakistan. Economics and Health.
- Health Policy and planning in Pakistan. “Health for all”, background, concepts and progress. “Primary Health Care”: Concepts and progress. The National Disease Control programmes; policies, strategies and operations.

- Health System in Pakistan: The role of Federal and Provincial Governments in Health Care. The District Health System, in the context of devolution. The Physician as a manager: Functions of manager, management of material, human and financial resources.
- Leadership and motivation.
- Partners in Health: The public and private sector. Non-governmental Organizations and International Agencies. Resources for health.
- Community Mobilization.

### **General Epidemiology and Research Methodology**

- Background and concepts, uses, basic measurements in epidemiology (morbidity, mortality, disability and fatality).
- Epidemiological methods (descriptive, analytic and experimental).
- Epidemiological transition. Association and causation. Investigation of an outbreak or an epidemic. Screening for disease. Community diagnosis. Research and survey methodology. Introduction to qualitative research methodology.

### **Biostatistics**

- Concepts and uses
- Data and its types
- Rates, ratios and proportions
- Crude, specific and standardized rates.
- Collection and registration of vital events in Pakistan
- Sources of health related statistics
- Measures of central tendency, (Mean, Median, Mode),
- Measures of dispersion (Range, Standard deviation, Standard error)
- Normal curve.
- Methods of data presentation (tables, graphs & diagrams)
- Interpretation of data (t-test and Chi-square test)
- Sampling and its various techniques.
- Health Management Information System

### **Demography and Population dynamics**

- Concept, demographic principles and demographic processes
- Census, definition, methodology, types
- Determinants of fertility, mortality
- Population Pyramid, and its interpretation
- Demographic Transition, Demographic Trap and its public health importance
- Demographic and social implication of high population growth
- Social Mobilization
- Urbanization

### **Nutrition and Health**

- Concepts (Nutrition, Nutrient, Food, Diet). Food groups and their functions. Role of fibre in diet. Balanced Diet

- Malnutrition at all stages of life, its types causes and prevention.
- Common nutritional problems of public health importance and their prevention and control
- Dietary requirements of normal human being at different stages of life
- Food hygiene, pasteurization, fortification, additives and adulteration and preservation
- Nutritional diseases and Programmes.
- Assessment of nutritional status of a Community

### **Reproductive and Child Health**

- Safe motherhood and its components. (Ante-natal, Post-natal, Family Planning and Emergency Obstetric Care)
- Maternal mortality and its causes and prevention
- Infant care: Growth and development. Breast feeding, common causes of morbidity and mortality, their prevention and control
- Child Care: Child health surveillance. Health promotion strategies.
- Common ailments, home accidents, child mortality prevention.
- Strategic approaches of Integrated Management of Childhood Illness (IMCI)
- Adolescent health
- Reproductive tract infections: guidelines for management of sexually transmitted diseases

### **Health of school age children**

- Role of teachers and role of doctor in the maintenance of health
- Procedures for determining the health status of school-age children
- Common health problems of school children

### **Environmental Health Sciences**

- Air: Composition of air. Causes of Air pollution. Purification of Air.
- Diseases caused by impurities in the air and their prevention (Acute Respiratory Illnesses)
- Water: Sources of Water. Daily water requirement. Water pollution
- its causes and prevention. Purification of Water. Water quality standards. Diseases due to polluted water
- Waste disposal: Contents, hazards and safety measures for solid
- and liquid; Domestic, Industrial and Hospital waste (Global and Marine problems)
- Climate: Climate and weather. Global environmental concerns (Greenhouse effect, depletion of Ozone layer, Acid rains). Effect of extremes of temperature, humidity, atmospheric pressure on human health and their prevention
- Radiation: Sources, types, causes, hazards and prevention
- Healthful housing. Urban and rural slums. Refugee camps and hostels
- Noise: Definition, causes, acceptance level, hazards and control

### **Occupational Health**

- Concepts, of occupational health, occupational medicine and



- occupational hygiene. Ergonomics and its importance
- Occupational hazards. Principles of control
- General principles of occupational disease prevention
- Organization of occupational health services
- Health Insurance and Social Security Schemes, Labour Laws

## **Prevention and control of Infectious diseases**

### **Definitions to differentiate between**

- Infection, contamination, pollution, infestation
- Infectious disease, communicable disease, contagious disease
- Host, Immune and susceptible persons
- Sporadic, Endemic, Epidemic, Pandemic
- Epizootic, Exotic, Zoonotic
- Contact, fomites, Carriers, Insect Vectors, Reservoir of infection
- Incubation period, Infective period, Generation time
- Cross infection, Nosocomial infection, Opportunistic infections, Iatrogenic (Physician induced) disorders
- Surveillance control, Eradication, Elimination

### **Dynamics of infections, disease transmission:**

- Reservoir and source of infection
- Escape of organism
- Mode of transmission
- Entry into the body
- Susceptible host
- Immunity (different types of immunity and immunization).

### **Control of infection:**

- Controlling the reservoir-notification, early diagnosis treatment, isolation, quarantine, disinfections.
- Interruption of transmission.
- The susceptible host (active and passive immunization, Combined. Chemoprophylaxis, Non-specific measures).
- Health advice to travellers.
- National case management guidelines.

### **Epidemiology, control and prevention of infectious diseases of Public Health importance.**

- Diseases transmitted through inhalation.
- Diseases transmitted through faeco-oral route.
- Diseases of animals conveyed to man.
- Diseases due to direct contact.

### **Control and prevention of non-infectious diseases of Public Health importance**

- Hypertension.
- Coronary heart disease.
- Cancers.
- Injuries.
- Diabetes mellitus.
- Obesity.
- Acute Rheumatic fever and heart diseases.

### **Arthropods and their public health importance**

- Common arthropod-borne diseases
- Control of arthropods of medical importance
- Insecticides and their public health importance

### **Prevention and control of parasitic diseases of public health importance**

- Common parasitic infections of Public Health importance.

### **Snake Bites: Identification, personal protection and management**

### **Mental Health and Behavioural Sciences**

- Concept. Common mental health problems, their causes, prevention and control
- Juvenile delinquency
- Drug abuse, addiction, alcoholism and smoking
- Child abuse and child labour
- Self-medication

### **Information, Education and Communication (IEC)**

- Concept. Aims and objectives
- Approaches used in public health
- Contents, principles and stages of health education
- Communication methods, barriers and skills in health education
- Planning, organizing and evaluating a health education programme
- Social Marketing

### **Disaster and accidents**

- Definition, Classification (Natural disasters like earthquake, floods.
- Epidemic of communicable diseases, Man Made Disasters. Thermo-nuclear warfare.
- Magnitude and effects of disaster and Public Health consequences.
- Disaster: preparedness and management.
- Accidents: Definition, classification, prevention.

### **Health Planning and Management**

- Health Planning. Planning cycle,
- Management and administration.

- Management methods and techniques.
- Planning-programming-budgeting system

## ENT

- **Ear** (Deafness, Vertigo Acute Suppurative Otitis Media and Chronic Suppurative Otitis Media, Otomycosis, vertigo-causes, investigations and initial management)
- Complication of Otitis media Secretory Otitis Media
- Hearing Loss, Presbycusis, noise induced hearing loss
- **Nose** (Rhinitis Trauma Nose, Nasal polyps, Sinusitis acute and chronic, Epistaxis), deviated nasal septum
- **Facial Paralysis**, Bell's Palsy, Ramsay – Hunt syndrome (diagnosis)
- **Throat** (Dysphagia, Infections Larynx and Pharynx, Hoarseness, Obstructed airway, Foreign bodies/Air Food Passage, Goitre)
- **Head and Neck tumours** (Acoustic Neuroma, Nasopharyngeal Fibroma, Ca Larynx, Thyroid cancers)

## OPHTHALMOLOGY

- Cataract (Classification Senile cataract Congenital cataract, Complications of Cataract surgery)
- Glaucoma ( Classification, Primary Open Angle Glaucoma)
- Acute Angle Closure Glaucoma, Management and Glaucoma Drugs)
- Retina (Diabetic Retinopathy Retinal Detachment)
- Age related macular Degeneration
- Ocular Trauma (Classification Emergency Management)
- Squint (Classification & Management)
- Refractive Errors
- Red Eye (Corneal Ulcer, Uveitis)
- Trauma to eye (diagnosis and initial management)
- Blindness (Etiology, investigations)
- Tumors (Retinoblastoma)