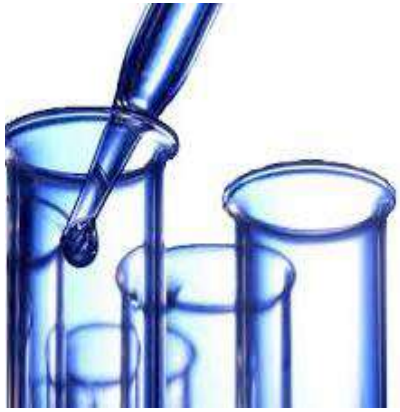
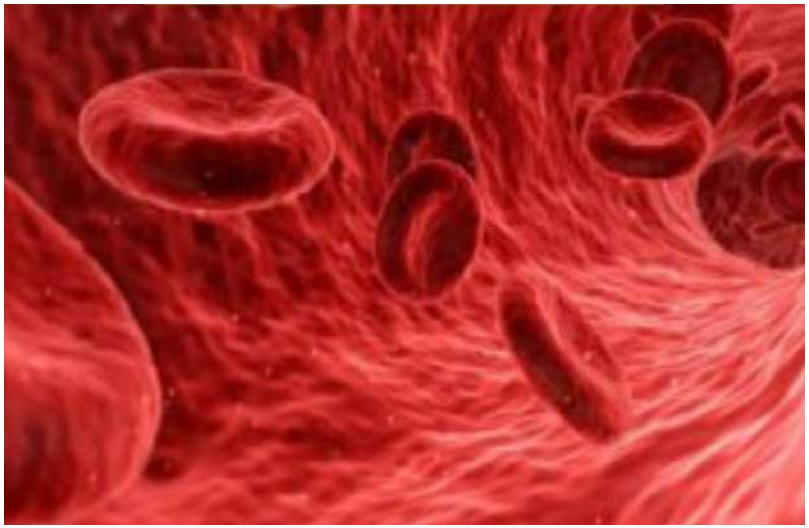




INFECTION AND INFLAMMATION MODULE
3RD YEAR
STUDY GUIDE

Vision and Mission of KGMC

Khyber Medical University: Vision

Khyber Medical University will be the global leader in health sciences academics and research for efficient and compassionate health care.

Khyber Girls Medical College: Vision

Khyber Girls Medical College will promote health care leaders that are critical thinker, ethical, research oriented, culturally and professionally competent

Khyber Girls Medical College: Mission

To develop competent health care leaders by ensuring appropriate policies, procedures which reflect ethical, cultural, community orientated and evidence based practices to achieve best possible health outcomes for society at large.

Curriculum Committee KGMC

Chair:

Professor Dr.Zahid Aman , Dean KGMC.

Co-Chair:

Professor Dr Amin ul HAQ, Associate Dean KGMC.

Clinical Sciences:

- Dr. Mohammad Noor Wazir ,Department of Medicine KGMCHMC
- Dr. Bushra Rauf Department of Gynae KGMCHMC.
- Dr. Sofia Iqbal, Department of Ophthalmology KGMCHMC.
- Dr. Said Amin Department of Medicine KGMCHMC.
- Dr. Ghareeb Nawaz Department of ENT KGMCHMC.
- Dr. Jamshed Alam Department of Surgery KGMCHMC.
- Dr. Ambreen Ahmad, Department of Pediatrics KGMCHMC.
- Dr. Ain-ul-Hadi Department of Surgery KGMCHMC.
- Dr. Fawad Rahim Department of Medicine KGMCHMC.

Behavioral Sciences:

- Dr. Ameer Abbas Department of Psychiatry KGMCHMC.

Medical Education

- Dr. Naheed Mahsood, Department of Medical Education, KGMC.
- Dr. Naveed Afzal Khan, Department of Medical Education, KGMC.
- Dr Onaiza Nasim , Department of Medical Education, KGMC

Basic Sciences:

- Dr. Amin-ul-Haq Department of Biochemistry, KGMC.
- Dr. Khalid Javed Department of Pathology, KGMC.
- Dr. Raheela Amin Department of Community Medicine, KGMC.
- Dr. Zubia Shah Department of Physiology, KGMC.
- Dr. Naheed Siddique Department of Forensic Medicine, KGMC.
- Dr. Shams Suleman Department of Pharmacology, KGMC.
- Dr. Shahab-ud-Din, Department of Anatomy, KGMC.

Infectious Diseases

- Prof. Dr. Bushra Rauf Department of Gynae…….Member
- Prof. Dr. Samia Tabassum Department of Gynae…….Member
- Dr. Saeed-ur-Rehman Professor Department of Pathology…… Member
- Dr. Shams Suleman Associate Professor Department of Pharmacology…….Member
- Dr. Ayesha Jamil Associate Professor Department of Pharmacology…….Member
- Dr. Anwar-ul-Haq Associate Professor Department of Forensic Medicine…….Member
- Dr. Fawad Rahim Assistant Professor Department of Medicine…….Member
- Dr. Amjad Assistant Professor Department of Surgery B…….Member
- Dr. Ghazala Zarin Afridi Lecturer Department of Pathology…… Member
- Dr. Noreen Shah Senior Lecturer Department of Community…… Member

Integrated curriculum:

An integrated curriculum is all about making connections, whether to real life or across the disciplines, about skills or about knowledge. An integrated curriculum fuses subject areas, experiences, and real-life knowledge together to make a more fulfilling and tangible learning environment for students. 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 are characteristics of integrated teaching program.

Outcomes of the curriculum:

The outcomes of the curriculum of MBBS According to the PMDC are as follows

- Knowledgeable
- Skilful
- Community Heath Promoter
- Problem-solver
- Professional
- Researcher
- Leader
- Rolemodel

KNOWLEDGE

By the end of five year MBBS program the KGMC student should be able to;

1. Acquire a high level of clinical proficiency in history taking, physical examination, differential diagnosis, and the effective use of medicine's evolving diagnostic and procedural capabilities including therapeutic and palliative modalities
2. Manage the common prevalent diseases in community
3. Identify the common medical emergencies
4. Develop plan for prevention of common community diseases
5. Formulate a referral plan
6. Compose a prescription plan

PSYCHOMOTOR

By the end of five year MBBS program the KGMC student should be able to;

1. Demonstrate the ability to perform the disease specific relevant examination
2. Respond to common medical emergencies
3. Master the skill of first aid
4. Perform BLS
5. Apply the best evidenced practices for local health problems

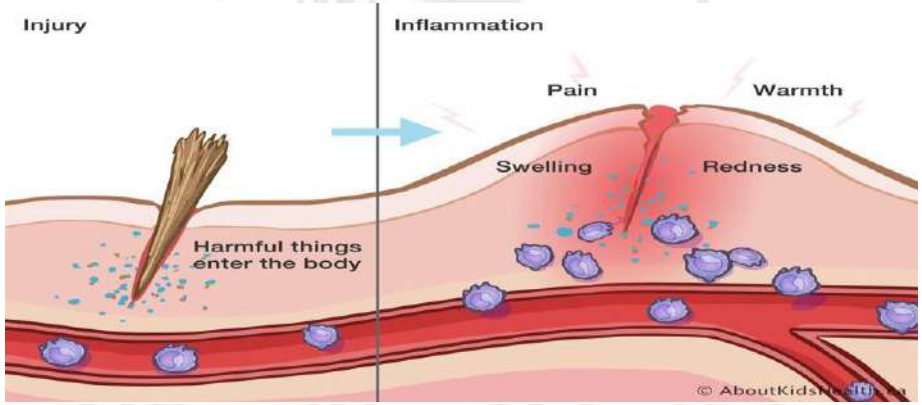
AFFECTIVE

By the end of five year MBBS program the KGMC student should be able to

1. Relate to patient and careers vulnerability
2. Demonstrate ethical self-management
3. Counsel and educate patients and their families to empower them to participate in their care and enable shared decision-making.
4. Display compassion with patient and colleagues
5. Demonstrate in clinical care an understanding of the impact of psychological, social, and economic factors on human health and disease

Introduction to the Infection and Inflammation

Infection refers to the invasion and multiplication of a pathogen within the body, while **inflammation** is the body's protective response against **infection**. **Inflammation** is a complex process involving various types of immune cells, clotting proteins and signaling molecules, all of which change over time.



Learning Objectives

At the end of this module, the 3rd year students would be able to:

1. Describe the process of acute & chronic inflammation with their outcomes
2. Relate different aspects of healing and repair
3. Differentiate common pathogenic bacteria based on morphology, pathogenesis & lab diagnosis.
4. Relate bacterial pathogenic factors to clinical manifestations of common infectious diseases.
5. Describe the pharmacological details of anti-inflammatory drugs
6. Apply/relate the pharmacokinetics & pharmacodynamics of chemotherapeutic agents to their use in infectious diseases
7. Construct / Write prescriptions for various inflammatory and infectious diseases
8. Describe medico legal aspects of HIV patient
9. Describe mechanism of wound causation
10. Describe medico legal aspects of poisoning in general
11. Describe medico legal aspects of parameters used for personal identification in real life situation
12. Apply parameters of a person's identification in a simulated environment
13. Describe the epidemiology of common infectious diseases.
14. Explain the preventive and control measures for infectious diseases.
15. Explain the control & preventive measures for nosocomial infections.
16. Describe the risks associated with hospital waste and its management.

Themes

Pain and Fatigue…….2 weeks
Fever and Trauma …… 1 week
Fever and Infection……3 week

Theme 1: Pain and Fatigue			
TOPICS	**LEARNING OBJECTIVES**	**Teaching strategy**	**Assessment**
Pharmacology			
Overview to anti-inflammatory drugs	Classify anti-inflammatory drugs -Describe the role of DMARDs and glucocorticoids as anti-inflammatory agents	LGF/SGD	MCQ
NSAIDs (Non-selective cox inhibitors: Aspirin & other commonly used NSAIDs)	-Classify NSAIDS -Differentiate between non-selective COX inhibitors and selective COX-2 inhibitors based on mechanism of action. -Name the prototype non-selective COX inhibitor. -Describe the pharmacokinetics of Aspirin -Describe the mechanism of action of aspirin as anti-platelet, analgesic, antipyretic and anti- inflammatory agent.	LGF/SGD	MCQ

	-Give the dose of Aspirin as anti-platelet, analgesic/antipyretic and as anti-inflammatory drug. -Describe clinical uses of NSAIDs. -Describe the adverse effects of NSAIDs. -Describe the drug treatment of Aspirin poisoning -Describe the pharmacokinetics with emphasis on dosage, duration of action and elimination of Diclofenac, Ibuprofen, Indomethacin, Mefanamic acid and Piroxicam in contrast to Aspirin -Relate pharmacokinetics and pharmacodynamics of NSAIDs to their clinical applications		
Selective COX-2 inhibitors	Describe the mechanism of action of selective COX-2 inhibitors. -Describe the clinical uses of selective	LGF/SGD	MCQ

	COX-2 inhibitors -Describe the adverse effects of selective COX-2 inhibitors -Describe the merits and demerits of selective COX-2 inhibitors and non-selective COX inhibitors.		
Paracetamol (Acetaminophen)	Describe the pharmacokinetics of Paracetamol -Describe the mechanism of action of Paracetamol. -describe the clinical uses of Paracetamol. -Describe the adverse effects of Paracetamol. -Give therapeutic and fatal doses of Paracetamol. -Describe the drug treatment of Paracetamol poisoning	LGF/SGD	MCQ
Cells of Inflammation	Describe different cells of inflammation -Describe the functions of various	LGF/SGD	MCQ

	cells of inflammation Enumerate different causes of leukopenia and leucocytosis(each neutrophil, lymphocyte, monocyte, eosinophil, basophil seperately)		
Overview to Acute Inflammation and vascular phase	-Define acute inflammation -Describe causes of acute inflammation -Describe the vascular events of acute inflammation	LGF/SGD	MCQ
Pathology			
Recognition of microbes	Describe various molecular patterns and appropriate receptors used by the inflammatory cells to identify microbes -Relate the recognition of microbes to the initiation of inflammation	LGF/SGD	MCQ
Cellular phase of acute inflammation	-Describe the sequence of events and cellular changes involved in cellular phase of acute inflammation	LGF/SGD	MCQ

Plasma Derived Mediators	-Enumerate plasma derived mediators -Enlist the functions of each mediator -Describe the different cascades involved in the generation of mediators.	LGF/SGD	MCQ
Cell Derived Mediators	-Enumerate cell derived mediators -Enlist the functions of each mediator.	LGF/SGD	MCQ
Poison & related laws	Define poison Describe laws related to poisoning		
Forensic Medicine			
Fate of Poison Diagnosis of poisoning in living and dead	Describe the protocols of diagnosing poisoning in living and dead Describe the protocols of diagnosing poisoning in living and dead	LGF/SGD	MCQ

Community Medicine			
Hospital and Biomedical waste management	Define biomedical waste • Describe various types of biomedical waste • Describe the color coding scheme for various types of waste • Describe the hazards of hospital waste • Explain the waste management plan and strategies of the hospital	LGF/SGD	MCQ
Visit to hospital to see disposal of hospital waste			

Theme 2:

Pain and Fatigue

TOPICS	LEARNING OBJECTIVES	Teaching strategy	Assessment
	Pharmacology		
Anti-histamines	-Classify anti-histamines -Differentiate between first and second generation anti-histamines -Describe the pharmacologic effects of H1-receptor antagonists. – Describe the clinical uses of H1-receptor antagonists. -Enlist the adverse effects of H1-receptor antagonists. -Describe the drug interactions of H1-receptor antagonists.	LGF/SGD	MCQ
Serotonin agonist and antagonist	Enlist serotonin agonists – Classify serotonin antagonists - Describe the mechanism of action of serotonin Describe the organ system effects of serotonin. - Describe the clinical uses of serotonin agonists and antagonists –	LGF/SGD	MCQ

	Describe the pharmacological basis of ondansetron in chemotherapy induced vomiting		
Pathology			
Morphological patterns, outcomes, defects of inflammation Overview to chronic inflammation	-Enumerate the different morphological patterns of inflammation -Describe the histological changes in each pattern - Enlist the outcomes of inflammation -Enumerate the various defects of inflammation -Describe the consequences of the defects of inflammation -Differentiate chronic from acute inflammation -Describe the causes and morphological features of chronic inflammation	LGF/SGD	MCQ
Granulomatous inflammation	Define granulomatous inflammation -Describe the morphological features and mediators involved in granulomatous inflammation	LGF/SGD	MCQ
Cells and mediators of chronic inflammation	-Enlist the cells of chronic inflammation - Enumerate the mediators of chronic inflammation -Describe the function of the mediators -Relate the functions of mediators to the morphological changes seen in chronic inflammation	LGF/SGD	MCQ
Systemic effects of inflammation	-Enumerate the systemic effects of inflammation -Describe the pathophysiology of the systemic		

	effects of inflammation.	LGF/SGD	MCQ
Forensic Medicine			
Antidotes	Define and classify antidotes Describe the mechanism of action of different antidotes	LGF/SGD	MCQ
Steps of management in a case of poisoning	Describe general steps of management in a case of poisoning	LGF/SGD	MCQ
Community Medicine			
Infection control	Define the basic definition related to infectious disease epidemiology • Review the role of susceptible host for successful parasitism, modes of transmission and the host defense system • List and explain the various classifications of communicable diseases with special reference to the scope and purpose of the International classification of Disease (ICD -10).	LGF/SGD	MCQ

	• Enlist the common infectious diseases affecting the population of Pakistan as per National institute of Health Pakistan. • Explain the effect of climate change and seasonal variation on specific diseases globally and in Pakistan. • Explain the role of personal hygiene & PPE in infection control		

Theme 3: Trauma and Repair			
TOPICS	**LEARNING OBJECTIVES**	**Teaching strategy**	**Assessment**
Pathology			
Prostaglandins	- Enlist various prostaglandins- - Describe the mechanism of action of Prostaglandins. - Describe the organ system effects of Prostaglandins. - Describe the clinical uses of Prostaglandins	LGF/SGD	MCQ
Overview to tissue healing and repair	-Differentiate between regeneration and repair -Describe various steps involved in the process of tissue healing and repair	LGF/SGD	MCQ
Tissue regeneration	-Define regeneration -Enlist organs capable of regeneration -Describe the process and mediators involved in regeneration	LGF/SGD	MCQ

Cell Cycle and its role in repair	-Describe the initiation, various phases and proteins involved in the cell cycle -Discuss cells capable of entering the cell cycle -Describe proliferative capabilities of various cells	LGF/SGD	MCQ
Repair by scarring	-Describe the various steps involved in process of repair by scarring – Describe the various mediators involved in the steps of scarring	LGF/SGD	MCQ
Growth factors and receptors	enumerate various growth factors and their receptors -Describe the most common pathways by which growth factors affect tissue repair and regeneration	LGF/SGD	MCQ
ECM	Classify various components of ECM – Describe the role and importance of ECM in tissue repair	LGF/SGD	MCQ
Factors affecting wound healing/abnormal	-Enlist the various factors that influence wound healing -Describe the mechanism by which these factors affect wound healing – Describe the abnormalities of repair and	LGF/SGD	MCQ

scarring	their consequences		
Forensic Medicine			
Overview to medico-legal aspects of trauma	Describe mechanism of wound causation	LGF/SGD	MCQ
Toxicity by analgesics	Describe the medico legal aspects of toxicity by aspirin and paracetamol	LGF/SGD	MCQ
Community Medicine			
Nosocomial infection & its control	• Describe the prevalence of the nosocomial infections globally and Specifically in Pakistan. • Identify the cause of nosocomial infections in Pakistan. • Enlist common nosocomial infections. • Describe the importance of different modes of transmission for causation of the nosocomial infections. • Explain the control & preventive measures for nosocomial infections	LGF/SGD	MCQ

Theme 4:

Fever and Infection

TOPICS	LEARNING OBJECTIVES	Teaching strategy	Assessment
	Pharmacology		
Introduction to Chemotherapy	1. Define basic terms like chemotherapy, antibiotic, antimicrobial, MIC, MBC, chemoprophylaxis, empirical therapy and post-antibiotic effect, bacteriostatic and bactericidal antimicrobials. 2. Explain advantages of drug combinations. 3. Describe various mechanisms of bacterial resistance against antibiotics. 4. Differentiate between concentration and time dependent killing with examples. 5. Classify antimicrobials on the basis of	LGF/SGD	MCQ

	mechanism of action (MOA)		
Penicillins	. Classify beta-lactam antibiotics 2. Enlist narrow and broad spectrum Penicillins. 3. Enlist anti-pseudomonal, antistaphylococcal/ beta lactamase resistant Penicillin. 4. Enlist long- and short-acting Penicillins 5. Describe anti-bacterial spectrum of Penicillins. 6. Describe pharmacokinetics in respect of emphasis on route of administration and excretion of Penicillins7. Describe mechanism of action of Penicillins 8. Describe clinical uses of Penecillins 9. Describe adverse effects of Penicillins, 10. Describe contraindications of Penicillins. 11. Describe principal mechanism of bacterial resistance to Penicillins 12. Describe drug interactions of Penicillins 13. Apply formula for interconversion of milligrams and units of Penicillin G. 14. Relate pharmacokinetics and pharmacodynamics of Penicillin with their clinical applications / uses	LGF/SGD	MCQ
Cephalosporins	Classify Cephalosporins 2. Describe anti-		

	bacterial spectrum of Cephalosporins. 3. Describe pharmacokinetics of Cephalosporins with special emphasis on route of administration and excretion. 4. Describe clinical uses of Cephalosporins 5. Describe the adverse effects of Cephalosporins. 6. Describe drug interactions of Cephalosporins with Ethanol. 7. Describe the principal bacterial mechanism of resistance to Cephalosporins. 8. Relate pharmacokinetics and pharmacodynamics of Cephalosporin with their clinical applications / uses.	LGF/SGD	MCQ
Beta lactamase inhibitors	1. Enlist beta-lactamase inhibitors 2. Explain the rationale for using beta lactamase inhibitors in combination with β-lactam antibiotics.	LGF/SGD	MCQ
Monobactams & Carbapanem,	. Describe the antibacterial spectrum of Monobactams and Carbapanem 2. Describe the clinical uses of Monobactams and Carbapanem	LGF/SGD	MCQ
Vancomycin	. Describe the MOA of Vancomycin. 2. Describe clinical uses of Vancomycin 3. Describe the use of vancomycin in MRSA (Methicillin-resistant Staph aureus). 4. Describe adverse effects of	LGF/SGD	MCQ

	Vancomycin Describe “Red man/Red neck” syndrome		
Fosfomycin Bacitracin & Cycloserine	Enlist clinical uses of Fosfomycin, Bacitracin & Cycloserine	LGF/SGD	MCQ
Protein synthesis inhibitors:	Classify bacterial protein synthesis inhibitors	LGF/SGD	MCQ
Tetracyclines	Classify Tetracyclines. 2. Describe anti-bacterial spectrum of Tetracyclines. 3. Describe the pharmacokinetics of Tetracycline with special emphasis on absorption of Tetracyclines. 4. Describe mechanism of action of Tetracyclines. 5. Describe the principal mechanism of resistance to Tetracyclines. 6. Describe clinical uses of Tetracyclines. 7. Describe adverse effects of Tetracyclines	LGF/SGD	MCQ

	8. Describe Black Bone disease. 9. Describe the teratogenic effects of Tetracyclines. 10. Describe drug interactions of Tetracyclines. 11. Describe the adverse effect related to the use of outdated (expired) Tetracycline products. 12. Relate pharmacokinetics and pharmacodynamics of Tetracycline with their clinical applications / uses.		
Bacteria: Pyrogenic Bacteria	-Define boil and furuncle -Enlist organisms responsible for pyrogenic infections -Describe important properties, pathophysiology, lab diagnosis of GPC & GNC	LGF/SGD	MCQ
Bacteria: Rickettsia	-Define Rickettsia -Describe the important properties, pathophysiology, lab diagnosis of diseases	LGF/SGD	MCQ

	caused by Rickettsia		
Spore forming GP rods	Enumerate spore forming GP rods - Describe the important properties, pathophysiology, clinical features and lab diagnosis of spore forming GP rods	LGF/SGD	MCQ
Non Spore forming GP rods	Enumerate non spore forming GP rods - Describe the important properties, pathophysiology, clinical features and lab diagnosis of non-spore forming GP rods	LGF/SGD	MCQ
Chlamydia	Describe the important properties, pathophysiology, clinical features and lab diagnosis of chlamydia.	LGF/SGD	MCQ
Miscellaneous: Sepsis and Septic Shock	-Define sepsis and septic shock -Enlist organisms capable of causing sepsis and inducing septic shock -Describe the pathophysiology and clinical features of septic shock	LGF/SGD	MCQ
Zoonotic Infections	-Enlist organisms causing zoonotic infections -Describe the important properties, pathophysiology, clinical features and lab diagnosis of different zoonotic diseases	LGF/SGD	MCQ
Forensic Medicine			

General outlines of identification	Describe methods and parameters of identification	LGF/SGD	MCQ
Fetal age determination	Write important physical developmental stages of fetus for age estimation	LGF/SGD	MCQ
Age determination by skeletal study	Write important skeletal points of age estimation	LGF/SGD	MCQ
Age estimation by dental study	Write important dental points for age estimation	LGF/SGD	MCQ
Ages of medico legal significanc	Enlist important ages of legal significance	LGF/SGD	MCQ

Theme 5 Fever and Infection			
TOPICS	**LEARNING OBJECTIVES**	**Teaching strategy**	**Assessment**
Pharmacology			
Aminoglycosides	1. Enlist Aminoglycosides. 2. Describe anti-bacterial spectrum of Aminoglycosides. 3. Describe the pharmacokinetics of Aminoglycosides with special emphasis on route of administration, concentration-dependent killing and post-antibiotic effect. 4. Describe mechanism of action of Aminoglycosides.	LGF/SGD	MCQ

	5. Describe the principal mechanism of resistance to Aminoglycosides. 6. Describe clinical uses of Aminoglycosides.		
	7. Describe adverse effects of Aminoglycosides. 8. Describe the drug interactions of Aminoglycosides. Relate pharmacokinetics and pharmacodynamics of Aminoglycosides with their clinical applications / uses.	LGF/SGD	MCQ
Macrolides & other related drugs	1. Enlist Macrolides. 2. Describe anti-microbial spectrum of Macrolides 3. Describe pharmacokinetics of Macrolides 4. Describe the mechanism of action of Macrolides	LGF/SGD	MCQ

	5. Describe the principal mechanism of resistance to Macrolides 6. Describe clinical uses of Macrolides 7. Describe adverse effects of Macrolides. 8. Describe drug interactions of Macrolides 9. Differentiate the salient features of Erythromycin, Clarithromycin and Azithromycin in respect of dosing and clinical use. 10. Relate pharmacokinetics and pharmacodynamics of Macrolides with their clinical applications / uses.		
Linezolid	1. Describe mechanism of action of Linezolid Describe clinical uses of Linezolid with special emphasis on methicillin-resistant staphylococci and vancomycin-resistant enterococci	LGF/SGD	MCQ

Clindamycin	1. Describe mechanism of action of Clindamycin. 2. Enumerate clinical uses of Clindamycin. 3. Describe antibiotic-associated (pseudomembranous) colitis.	LGF/SGD	MCQ
Streptogramins	1. Enumerate Streptogramins. 2. Describe clinical use of Quinupristin-Dalfopristin in VRE (Vancomycin-resistant enterococci).	LGF/SGD	MCQ
Chloramphenicol	1. Describe anti-microbial spectrum of Chloramphenicol 2. Describe mechanism of action of Chloramphenicol 3. Enlist clinical uses of Chloramphenicol 4. Describe the reason for obsoleting the systemic use of Chloramphenicol 5. Enlist adverse effects of Chloramphenicol	LGF/SGD	MCQ

	6. Describe Gray baby syndrome		
Quinolones	1. Classify Quinolones. 2. Describe the pharmacokinetics of Fluroquinolones with special emphasis on half-life of Moxifloxacin 3. Enlist respiratory Quinolones. 4. Describe anti-microbial spectrum of Fluoroquinolones. 5. Describe mechanism of action of Fluoroquinolones. 6. Describe the principal mechanism of resistance to Fluroquinolones,	LGF/SGD	MCQ

	7. Describe clinical uses of Fluroquinolones 8. Describe adverse effects of Fluroquinolones 9. Describe drug interactions of Fluroquinolones 10. Relate pharmacokinetics and pharmacodynamics of Fluoroquinolones with their clinical applications / use.		
Sulfonamides and Trimethoprim	2. Classify Sulfonamides 3. Describe anti-microbial spectrum of Sulfonamides 4. Describe mechanism of action of Sulfonamides and Trimethoprim 5. Describe mechanism of resistance to Sulfonamides 6. Describe clinical uses of Sulfonamides and Trimethoprim 7. Describe adverse effects of	LGF/SGD	MCQ

	Sulfonamides and Trimethoprim 8. Describe the advantages of combining sulfamethoxazole with trimethoprim (Co- Trimoxazole) 9. Describe the drug interaction of Sulphonamides with Phenytoin.		
Parasites: Hydatid Cyst	-Describe the life cycle and important properties of Echinococcus - Relate the pathogenesis to the clinical features and lab work up of Echinococcus -Identify cysts of Echinococcus in the lab	LGF/SGD	MCQ
	Pathology		
Leishmania	-Describe the life cycle, and important properties of Leishmania -Relate the pathogenesis to the clinical features and lab work up of Leishmania	LGF/SGD	MCQ

toxoplama	-Describe the life cycle and important properties of Toxoplasma -Relate the pathogenesis to the clinical features and lab work up of Toxoplasma	LGF/SGD	MCQ
Malaria	-Describe the life cycle and important properties of Malarial parasite -Relate the pathogenesis to the clinical features and lab work up of Malaria	LGF/SGD	MCQ
Tenia	Describe the life cycle, important properties, of Tenia saginata and solium -Relate pathogenesis to the clinical features and lab work up of Tenia saginata and solium	LGF/SGD	MCQ
Forensic Medicine			

Sex determination	Describe parameters of sex determination	LGF/SGD/SGD	MCQ
Race determination	Describe parameters of race determination	LGF/SGD/SGD	MCQ
Examination of hair	Describe medico legal aspects of hair	LGF/SGD/SGD	MCQ
Forensic odontology	Write the application of odontology in forensic medicine	LGF/SGD/SGD	MCQ
Forensic Anthropometry	Describe medico legal aspects of forensic anthropometry	LGF/SGD/SGD	MCQ
Community Medicine			
Epidemiology & control of Malaria	• Describe the epidemiological determinants, frequency and distribution of Malaria • Compare the prevalence/incidence of malaria in different provinces of Pakistan. • Explain the preventive and	LGF/SGD	MCQ

	control measures of Malaria • Describe the scope/function of Malaria control program.		
Epidemiology & control of Leishmaniasis	• Describe the epidemiological determinants, frequency and distribution of Leishmaniasis • Explain the preventive and control measures of Leishmaniasis	LGF/SGD	MCQ

Theme 6:
Fever and Infection

TOPICS	LEARNING OBJECTIVES	Teaching strategy	Assessment
	Pharmacology		
Antimalarials	1. Describe terms like chemoprophylaxis, causal prophylaxis, terminal prophylaxis and radical cure with examples of drugs. 2. Classify antimalarial drugs. 3. Enlist drugs used for chemoprophylaxis of malaria.	LGF/SGD	MCQ

	4. Enlist drugs used for radical cure of malaria. 5. Describe the pharmacokinetics of Chloroquine with special emphasis on volume of distribution and dosing 6. Describe mechanism of action of Chloroquine, Quinine, Mefloquine, Halofantrine, Primaquine, Pyrimethamine and Artemisinins. 7. Describe adverse effects of antimalarial drugs 8. Describe Cinchonism and Blackwater fever. 9. Enlist the antimalarial drugs relatively safe in pregnancy. 10. Describe the antimalarial drugs contraindicated in G6PD deficiency. Relate pharmacokinetics and pharmacodynamics of antimalarial drugs with their clinical applications / use.	LGF/SGD	MCQ

Antifungal drugs	1. Classify Antifungal drugs. 2. Describe the pharmacokinetics of Amphotericin B and Ketoconazole 3. Describe the advantages of liposomal preparation of Amphotericin B 4. Describe mechanism of action of Azoles, Amphotericin B, Griseofulvin, Turbinafine, and Nystatin. 5. Describe clinical uses of Azoles, Amphotericin B, Griseofulvin, Turbinafine, and Nystatin. 6. Describe adverse effects of Azoles, Amphotericin B, Griseofulvin, Turbinafine, and Nystatin. 7. Describe drug interactions of Ketoconazole and Amphotericin B	LGF/SGD	MCQ
Antivirals	1. Classify antiviral drugs		

Anti-herpes	1. Enlist anti- Herpes drugs 2. Describe the pharmacokinetics of Acyclovir 3. Describe mechanism of action of Acyclovir 4. Describe clinical uses of Acyclovir. 5. Describe adverse effects of Acyclovir Describe the role of Ganciclovir in CMV retinitis	LGF/SGD	MCQ
Anti-HIV drugs	1. Classify anti-HIV drugs. 2. Describe the role of entry inhibitors, integrase inhibitors, protease inhibitors, NRTIs and NNRTIs in HIV treatment 3. Describe adverse effects of Zidovudine and Indinavir 4. Describe the rationale of HAART therapy	LGF/SGD	MCQ
Pathology			
Viruses: Corona	Describe the structure, important properties, pathogenesis and clinical features along with lab work up of Corona Virus	LGF/SGD	MCQ

Viruses: HIV	- Describe the structure, important properties, pathogenesis and clinical features along with lab work up of HIV	LGF/SGD	MCQ
Viruses: Herpesviruses	Describe the structure, important properties, pathogenesis and clinical features along with lab work up of Herpesviruses	LGF/SGD	MCQ
Viruses: Tumor Viruses	- Describe the structure, important properties, pathogenesis and clinical features along with lab work up of Tumor viruses	LGF/SGD	MCQ
Viruses: MMR	- Describe the structure, important properties, pathogenesis and clinical features along with lab work up of MMR viruses	LGF/SGD	MCQ
Fungi: Aspergillus	Describe the structure, important properties, pathogenesis and clinical features along with lab work up of Aspergillus	LGF/SGD	MCQ
Fungi: Candida	Describe the structure, important properties, pathogenesis and clinical features along with lab work up of Candida	LGF/SGD	MCQ
Tenia	Describe the structure, important properties, pathogenesis and clinical features along with lab work up of Tenia	LGF/SGD	MCQ

Forensic Medicine			
Medico legal issues related to HIV patient	Describe legal issues related to HIV patient	LGF/SGD/SGD	MCQ
Dactylography	Describe medico legal aspects of dactylography	LGF/SGD/SGD	MCQ
DNA finger printing	Define DNA finger printing Write its application in forensic practice Write methods of collection of samples and dispatch to laboratory	LGF/SGD/SGD	MCQ
Tattoos, scar marks, Superimposition and facial reconstruction	Describe medico legal aspects of tattoo marks, Describe medico legal aspects of scar tissue, Describe medico legal aspects of superimposition Describe medico legal aspects of facial reconstruction	LGF/SGD/SGD	MCQ
Polygraph	Describe medico legal aspects of polygraph	LGF/SGD/SGD	MCQ
Narcoanalysis	Describe medico legal aspects of narcoanalysis	LGF/SGD/SGD	MCQ

Community Medicine			
Epidemiology & control of HIV/AIDs	Describe the epidemiological determinants, frequency and distribution of HIV/AIDS Explain the preventive and control measures of HIV/AIDS • Describe the scope of HIV/AIDS control program	LGF/SGD	MCQ
Epidemiology & control of MMR	Describe the epidemiological determinants, frequency and distribution of measles, mumps & rubella. • Explain the preventive and control measures of measles, mumps & rubella with reference to Pakistani context	LGF/SGD	MCQ
Mycology and its public health importance	• Enlist common fungal infections in Pakistan • Describe the epidemiological determinants of common fungal diseases in Pakistan • Explain the preventive measures and principles of management for common fungal infections	LGF/SGD	MCQ

Epidemiology & control of Corona	• Describe the epidemiological determinants, frequency and distribution of corona • Compare the prevalence/incidence of corona in different parts of the world. • Describe the preventive and control measures of corona Describe the role of Pakistani government in corona control program.	LGF/SGD	MCQ

Practical Work				
Week 1 Practical				
Pathology	Cell of inflammation	Identify Cells of inflammation in the microscope	DEMO	MCQ
	Acute Appendicitis	Identify the histopathological changes in acute appendicitis	DEMO	MCQ
Forensic Medicine	Gastric Lavage	Demonstrate the steps of gastric lavage	DEMO	MCQ
Week 2 Practical				
Pathology	Chronic cholecystitis	-Identify the morphological changes occurring in chronic cholecystitis	DEMO	MCQ
	Granuloma	- Identify the various cells and their arrangement in a granuloma	DEMO	MCQ
Week 3 Practical				

Pathology	Granulation Tissue	-Identify the histological features of granulation tissue	DEMO	MCQ
Week 4 Practical				
Pathology	Catalase test	-Perform and interpret the result of catalase test by tube and slide method	DEMO	MCQ
10	Coagulase test	-Perform and interpret the result of coagulase test by tube method	DEMO	MCQ
	Oxidase test	-Perform and interpret the result of coagulase test	DEMO	MCQ
	Culture media	-Identify blood agar, Mannitol salt agar, Chocolate media, Cary Blair transport media in the lab -Identify different types of haemolysis on blood agar	DEMO	MCQ
Pharmacology		Prescription Writing	DEMO	MCQ
	Acute tonsillitis	Construct a prescription for a patient with acute tonsillitis	DEMO	MCQ

Forensic Medicine	Sex determination through bones	Identify human sex through bones	DEMO	MCQ
	Hair, Fibre	Identify human hair through microscopy Differentiate between hair and fibre	DEMO	MCQ
Week 5 Practical				
Pharmacology	Malaria	Construct a prescription for a patient with Malaria	DEMO	MCQ
Week 6 Practical				
Pathology	Hydatid Cyst	-Identify cysts and ova of Echinococcus in the lab	DEMO	MCQ
	Leishmania	-Identify leishmania in slides of bone marrow/ skin biopsies	DEMO	MCQ
	Malaria	Identify Malarial parasite trophozoites and gametocytes under microscope	DEMO	MCQ

	Taenia saginata/solium	Identify ova of Taenia in the lab	DEMO	MCQ

CLINICAL SUBJECTS						
MEDCINE	**SURGERY**	**PAEDS**	**Obs/Gyn**	**ENT**	**EYE**	**BS**
PUO	Surgical infections	PUO (better to teach either by Medicine or Paeds if majority content is same/ joint session can be taken)	Puerperal pyrexia	Acute & chronic Phyrangitis	Acute and chronic dacrocyst itis	Reaction to illness
	Anesthesia & pain relief	Child with Rash	Post-operative wound sepsis	Acute & chronic rhinitis	Episcleritis	
	Acute abdomen			Acute & chronic sinusitis	Infective conjunctiva Acute and Chronic Tonsillitis	

Teaching and learning strategies:

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

- Interactive Lectures
- Hospital Clinic visits
- Small Group Discussion
- Skills session
- Self-Directed Study

Interactive lectures:

An interactive lecture is an easy way for instructors to intellectually engage and involve students as active participants in a lecture-based class of any size. Interactive lectures are classes in which the instructor breaks the lecture at least once per class to have students participate in an activity that lets them work directly with the material.

- The instructor might begin the interactive segment with an engagement trigger that captures and maintains student attention.

- Then the instructor incorporates an activity that allows students to apply what they have learned or give them a context for upcoming lecture material.
- As the instructor feels more comfortable using interactive techniques he or she might begin to call upon a blend of various interactive techniques all in one class period.

Hospital/Clinic 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):

The shy and less articulate are more able to contribute. Students learn from each other. Everyone gets more practice at expressing their ideas. A two way discussion is almost always more creative than individual thoughts. Social skills are practiced in a 'safe' environment e.g. tolerance, cooperation. This format helps students to clarify concepts acquire skills or attitudes. Students exchange opinions and apply knowledge gained from lectures, tutorials and self-study. The facilitator role is to ask probing questions, summarize, or rephrase to help clarify concepts.

Skills/Practical session:

Skills relevant to respective module are observed and practiced where applicable in skills laboratory or Laboratories of various departments.

Self-Directed learning (SDL):

Self-directed learning, which involves studying without direct supervision in a classroomLibrary, is a valuable way to learn and is quickly growing in popularity among parents and students. Students' assume responsibilities of their own learning through individual study, sharing and discussing with peers, seeking information from Learning Resource Centre, teachers and resource persons within and outside the college. Students can utilize the time within the college scheduled hours of self-study.

Time tables:

The timetables for the module will be shared via Edmodo and the notice boards in advance.

Assessment tools:

Theoretical knowledge is tested by a written examination system constituted by multiple choice questions (MCQs). The assessment of practical knowledge involves oral, spot, or objective structured practical examinations (OSPE).

Multiple Choice Questions (MCQs):

- Multiple choice questions (MCQs) are a form of assessment for which students are asked to select the best choice from a list of answers.
- MCQ consists of a stem and a set of options. The stem is usually the first part of the assessment that presents the question as a problem to be solved; the question can be an incomplete statement which requires to be completed and can include a graph, a picture or any other relevant information. The options are the possible answers that the student can choose from, with the correct answer called the key and the incorrect answers called distractors.
- 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 the college.

- The block exam will comprise of 120 MCQs and will be compiled according to the shared blueprint.

- Requires specific, definite, exact information.
- Can be used to discriminate whether errors can be detected in a diagram, for example

Objective Structured Practical Examination (OSPE)

- The content may assess application of knowledge, or practical skills.
- Student will complete task in define time at one given station.
- All the students are assessed on the same content by the same examiner in the same allocated time.
- A structured examination will have observed, unobserved, interactive and rest stations.
- Observed and interactive stations will be assessed by internal or external examiners.
- Unobserved will be static stations in which students will have to answer the questions related to the given pictures, models or specimens the provided response sheet.
- Rest station is a station where there is no task given, and in this time student can organize higher thoughts.
- The Block OSPE will be comprise of 20 examined station and 5 rest stations. The stations will be assigned according to the shred blueprint. There will be 8 stations for viva of core subjects like Pathology, Pharmacology, Forensic Medicine and Community Medicine (2 station for viva of each core subject) and 2 clinical station and rest of 10 out of 20 stations will be assigned according to shared blue prints.

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Internal Evaluation:

Internal evaluation is a process of quality review undertaken within an institution for its own ends. 10% marks of internal evaluation will be added to final marks. This 10% will be based on

Marks obtained	**13 out of total 40 marks of internal assessment in block G Paper**

Marks obtained	**13 out of total 40 marks of internal assessment in block G OSPE**

Attendance Requirement:

More than 75% attendance is mandatory to sit for the examinations.

Learning Resources for Students

Physiology

- Guyton nd Hall physiology
- Ganong physiology
- Human Physiology from cells to system by lauralee sherwood
- BRS Physiology
- Neuroscience by Dale Purves

Biochemistry

- Chatterjee text book of Biochemistry
- Harpers Biochemistry
- Lippincotts Biochemistry
- Satya Narayan biochemistry

PATHOLOGY

- Robbins textbook of pathology
- Harsh mohan text book of pathology
- Levison text book of microbiology
- Paniker parasitology
- Chatterjee book of parasitology

PHARMACOLOGY

- Basic & Clinical Pharmacology, 14edition
- Katzung & Trevor's Pharmacology: Examination & Board Review, 10edition
- Lippincott Illustrated Reviews: Pharmacology, 8th edition
- Pharmacology for Medical Graduates by Tara V. Shanbhag

FORENSIC MEDICINE

- Parikh's textbook of Medical Jurisprudence and Toxicology.
- Principles and Practice of Forensic Medicine by Nasir R Awan
- Forensic medicine and toxicology principals and practice by Krishan Vij
- Knights forensic pathology by Bernard knight, Pekka saukko
- Forensic medicine and toxicology Nagesh Kumar G rao

Apart from these resource learning ,students can consult books available in library or recommended by the specialty experts.