

# Dow University of Health Sciences



## INFECTIOUS DISEASE MODULE STUDY GUIDE Third Year MBBS

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## INTRODUCTION

### WHAT IS A STUDY GUIDE?

A study guide provides a focus for different educational activities in which the students are engaged. It equips students with information on the topic of study and assists in management of student learning. Furthermore, it imparts relevant information about the organization of the module and thus helps students organize their educational activities accordingly. Another important purpose of a study guide is the dissemination of information about rules and policies and teaching and assessment methods.

### HOW DOES A STUDY GUIDE HELP LEARNERS?

- Includes information on organization and management of the module.
- Advises the learners about representatives who can be contacted in case of need.
- Defines the outcomes and objectives which are expected to be achieved at the end of the module.
- Elaborates the teaching and learning strategies which will be implemented during the module.
- Inform learners about the learning resources in order to maximize their learning.
- Provides information about the assessment methods that will be held to determine every student's achievement of objectives.

### CURRICULUM MODEL:

Integrated modular curriculum is followed at Dow University of Health Sciences for MBBS program. This implies that instead of studying basic and clinical sciences separate and apart, students will experience a balanced and integrated combination of basic and clinical sciences in the form of a system –based modules.

The modular curriculum followed by Dow University of Health Sciences is integrated both in the vertical and the horizontal directions. However, in order to prepare the students for clinical teaching with a sound background knowledge of the basic sciences, the curriculum has been divided in three spirals.

The three spirals are:

1. Spiral -1 Basic Sciences
2. Spiral -2 Clinical Sciences
3. Spiral -3 Integrated Supervised Practical Training

The Basic Sciences Spiral is spread over the first two years and Clinical Sciences Spiral is distributed over the next two years. In the final year students are given practical hands-on training in the role similar to that of a shadow house officer. The whole curriculum is divided into modules, each module being related to a particular system. For example, Cardiovascular 1 module is in the Basic Sciences Spiral-1 and Cardiovascular 2 module is in the Clinical Sciences Spiral-2 and the relevant practical and clinical teaching/learning will be accomplished in Final year Spiral-3.

### **TEACHING & LEARNING METHODOLOGIES:**

The following teaching/ learning methods may be used to facilitate the learning process:

1. **Interactive Lectures:** Lectures are considered as an efficient means of transferring knowledge to large audiences.
2. **Small Group Discussion:** Small group discussion such as Demonstrations, tutorials and case- based learning (CBL) sessions facilitate interactive learning which helps students develop discussion skills and critical thinking.
3. **Practicals:** Practical related to Basic Sciences are held to facilitate student learning.
4. **Skills:** Skills sessions are scheduled parallel with various modules at fully equipped Skills Lab and Simulation Lab in which students observe and learn skills relevant to the respective modules under guidance of Clinical Faculty.
5. **Self-Directed Learning (Self- Study):** Students have a measure of control over their own learning. They diagnose their needs, set objectives in accordance to their specific needs, identify resources and adjust their pace of learning

**5YEAR CURRICULAR ORGANIZATION**

Spiral	year	Modules			
First Spiral	I	<b>FND1- Foundation</b> Cell, Genetics & Cell Death (Basics of Anatomy, Physiology, Biochemistry, Gen. Pathology, Gen. Pharmacology, Community Medicine & Behavioral Sciences, <b>9 Weeks</b>		<b>HEM1- Blood Module</b> Immunity, Inflammation, Tissue repair, Antimicrobials & Neoplasia <b>9 Week</b>	
		<b>LCM1- Locomotion</b> Bones, Joints, Nerves & Muscles, 9weeks		<b>RSP1- Respiratory System</b> 6 weeks	<b>CVS1- Cardiovascular System</b> 4 weeks
	II	<b>NEU1- Nervous System</b> 8 weeks		<b>HNN1- Head &amp; Neck &amp; Special</b> 6 weeks	<b>END1- Endocrinology</b> 5weeks
		<b>GIL 1-GIT and Liver</b> 8 weeks		<b>EXC1- Renal and Excretory System</b> 5 weeks	<b>REP1- Reproductive System</b> 5 weeks
Second Spiral	III	<b>IDD 1- Infectious diseases</b> 5 weeks	<b>HEM2- Hematology</b> 5 weeks	<b>RSP2- Respiratory System</b> 5 weeks	<b>CVS2- Cardiovascular System</b> 5 weeks
		<b>GIL 2-GIT and Liver (including Nutritional Disorders)</b> 8weeks		<b>EXC2- Renal &amp; Excretory System</b> 5 weeks	<b>END2- Endocrinology</b> 5 weeks
	IV	<b>ORT2- Orthopedics, Rheumatology, Trauma</b> 7 weeks	<b>PMR-Physical Medicine &amp; Rehabilitation</b> <b>DPS-Dermatology Plastic Surgery / Burns</b> <b>GEN-Genetics</b> 6 weeks	<b>REP2- Reproductive System</b> 8 Weeks	
		<b>NEU2- Neurosciences and Psychiatry</b> 8 weeks		<b>ENT*</b> 4 weeks	<b>OPHTHALMOLOGY/ EYE</b> 4 weeks
Third Spiral	V	Clinical Rotation 9:30 to 3:00 (with Ambulatory, Emergency, Intensive care) In Medicine, Pediatrics, Cardiology and Neurology units <ul style="list-style-type: none"> <li>▪ Lecture on problem based approach, twice a week</li> <li>▪ Ward tutorial twice a week</li> <li>▪ Student research presentation once a week</li> </ul>		Clinical Rotation 9:30 to 3:00 (Inpatient, Ambulatory, Emergency, Intensive care and Operation Theatres) In Surgery, Gynecology & Obstetrics, Orthopedics and Neurosurgery. <ul style="list-style-type: none"> <li>▪ Lecture on problem based approach, twice a week</li> <li>▪ Ward tutorial twice a week</li> <li>▪ Student research presentation once a week</li> </ul>	

**OVERVIEW**

<b>Program</b>	<b>MBBS</b>	
Year	Three	
Module Title	Infectious Diseases	
Module Code	IDD-1	
Credit Hours	4.5	
Duration	4 weeks	
	Pathology	27.5
	Pharmacology	20
	Forensic Medicine	9.5
	Community medicine	6
	Pediatrics	3
	Medicine	14
	Skill Lab	1.5
Total Hours	Infectious Disease Module	81.5

**INTEGRATED MODULE COMMITTEE**

<b>RESPONSIBILITIES</b>	<b>NAMES</b>	<b>DESIGNATION</b>	<b>EMAILS</b>
Chairperson Curriculum Committee, DUHS Chief Module coordinator	Prof. Naheed Khan	Prof. and Chairperson Anatomy	<a href="mailto:naheed.khan@duhs.edu.pk">naheed.khan@duhs.edu.pk</a>
Coordinator DIMC	Dr. Mehreen Fatima	Assistant Professor	<a href="mailto:mehreen.fatima@duhs.edu.pk">mehreen.fatima@duhs.edu.pk</a>
Co-coordinator DMC	Dr. Sadia Iqbal	Assistant Professor	<a href="mailto:saadia.iqbal@duhs.edu.pk">saadia.iqbal@duhs.edu.pk</a>
Medical Education	Dr Munizha Nisar	Medical Simulation Facilitator	<a href="mailto:munizha.nisar@duhs.edu.pk">munizha.nisar@duhs.edu.pk</a>

**MODULE DESCRIPTION:**

This module has been designed for students to introduce them to the basic concepts of infectious diseases. This module includes Pathology, Microbiology, Pharmacology, Forensic Medicine, Community medicine, Medicine, Pediatrics and Behavioral sciences,

Lectures, tutorials, small group sessions including SBL and practical are important components of this module. History taking, as part of clinical skills, is included in this module. Your co-operative and teamwork abilities will be improved by working in different teams. You will be able to develop problem solving skills to apply your medical knowledge to practical situations by means of group and individual tasks. This study guide has been developed to assist you and keep you focused to achieve your goals.

Welcome to the Infectious Diseases module and it is hoped that students will be able to achieve the desired module learning outcomes.

**RATIONALE:**

Infectious diseases are the most common problems of our community. In the under developed countries, like Pakistan, infectious diseases along with malnutrition are the commonest causes of mortality. Most of the diseases are identifiable and curable if recognized early. It is important for medical graduates to have sound understanding of microbiology of the organisms and the diseases that they cause. Students should also understand the rationale of the investigations to diagnose these diseases. They should also know the pharmacology of the various drugs used to treat infectious disease and the rationale to treat the common diseases.

**LEARNING OUTCOMES**

- Describe pathogenesis & clinical presentations of common bacterial, viral, fungal & microbial infections
- Explain the host immunity and the process of inflammation
- Recognize the clinical presentation of common infectious diseases in community.
- Analyze findings of history, examinations & investigations for diagnosis.
- Take history & formulate appropriate plan of investigations for attaining differential diagnosis.
- Describe the role of Doctor in Legal system of Pakistan



**DISCIPLINE-WISE LEARNING OBJECTIVES AND CONTENTS****PATHOLOGY****Learning Objectives:**

- Enlist the major pathogens that cause disease.
- Explain the major mechanisms of transmission and pathogenesis.
- Describe the microbial mechanisms related to drug resistance
- Describe the process of inflammation.
- Enlist host immune mechanisms and explain how microbes evade host defenses.
- Describe how infections proceed to sepsis
- Enlist the common pathogens causing human disease.
- Describe the biological features of pathogenic microorganisms
- Correlate microbial disease symptoms with microbial pathogenesis.
- Explain the working of an infectious disease laboratory, along with related biosafety and biosecurity concerns
- Identify the approaches of laboratory diagnosis
- Describe the basics of bacterial, viral, parasitic and fungal diagnostics with emphasis on locally prevalent organisms.
- Explain immunologic methods for diagnosis
- Enlist and briefly describe nucleic acid based diagnostic methods.

**Topics/ Contents:****Lectures: (1 hour each)**

- An Overview of Infectious Agents
- General Principles of Microbial Pathogenesis
- Microbial Mechanisms of Drug resistance
- Immune Evasion by Microbes
- Acute Inflammation, Chronic Inflammation
- Pathophysiology of Sepsis and Systemic Inflammatory Response
- Common Microorganisms in Relation to Fever
- Microorganisms Causing Fever with Rash
- Leprosy and Atypical Mycobacteria,
- Leishmaniasis and Cysticercosis,
- Microorganisms causing STD's,
- HIV structure and pathogenesis,
- Diarrhea and Dysentery: Agents causing Diarrhea-1,
- Diarrhea and Dysentery: Agents causing Diarrhea-2,
- Malaria: Pathology, Complications and Types,
- An overview of Fungal Infections,
- Worm infestation,
- Clostridial Infections,

- VHF & Dengue,
- Zoonotic Diseases: An Overview.

**Practicals: (1.5 Hour each)**

- An Overview of Microbial Diagnosis, An overview of infection control
- Lab Diagnosis and Disease Monitoring of HIV, Diagnosis of Worm Infestations in the Lab
- Bioterrorism, Biosafety and Biosecurity, Biosafety Levels and Risk Groups of Organisms
- Bacterial Culture Techniques
- Introduction to Mycobacterial Diagnosis

**MEDICINE****Learning Objectives:**

- Define fever and classification of temperature
- Demonstrate the method of temperature monitoring
- Discuss the conditions causing fever
- advise relevant laboratory investigations
- Determine the general treatment measures.
- Discuss the common clinical features of malaria
- Define the criteria of severe malaria
- Analyze the common laboratory features
- Explain the complications including hyperimmune malarial splenomegaly
- Discuss the management of malaria.
- Elaborate the clinical features of typhoid fever
- Discuss the role of blood culture in the diagnosis of typhoid fever
- Explain the complications and management of typhoid fever
- Discuss the prevention and control of typhoid fever
- Recognize the causes of gastroenteritis on history taking
- Describe Inflammatory & Non-Inflammatory Diarrhea
- Elucidate Available Diagnostic Modalities And Their Appropriate Use
- Discuss key Steps in cholera management especially rehydration protocols
- Explain the role of additional therapies in cholera including antibiotics and zinc supplementation
- Describe the role of vaccinations in control of diarrheal diseases
- Discuss the general concepts of the anaerobic bacteria
- Determine the risk factors for tetanus and clostridia infections
- Recognize the different stages of tetanus
- Explain management of tetanus and clostridial infections
- Discuss the role of vaccinations in preventing the tetanus

- Describe causative organisms of these viral exanthems
- Identify Pattern Of Rashes In These Viral Infections
- Describe Common Clinical Presentations
- Describe Incubation Periods And Isolation Needed To Stop Spread
- Diagnose clinically or laboratory parameters
- Describe basic treatment plan
- Define the viral hemorrhagic fever
- Discuss the types of dengue virus, vector and host factors
- Classify dengue fever, Explain the treatment of dengue fever
- Describe the Do's and Don'ts in the management of dengue fever
- Describe the principles of fluid management in dengue hemorrhagic fever
- Dengue shock syndrome
- Describe the presentation
- Diagnosis and treatment of Congo fever.
- Define rabies
- Discuss Its Mode Of Transmission
- Describe Symptoms, Diagnosis
- Treatment And Prognosis
- Discuss its preventive measures both in humans and animals.
- Define hydatid disease
- Discuss Its Mode of Transmission
- Describe Symptoms, Diagnosis
- Treatment and prognosis
- Discuss its preventive measures in humans.
- Describe the epidemiology, pathogenesis, transmission route and life cycle
- Classify leishmaniasis/ leishmania syndrome
- Recognize and list clinical features
- Diagnose the leishmaniasis
- Explain the management of leishmaniasis and prognosis of the disease
- Define epidemiology and transmission of cysticercosis
- Relate clinical features and investigations to diagnose the disease
- Describe the management steps of cysticercosis
- Define and differentiate between SIRS, sepsis, severe sepsis, and septic shock
- Review basic pathophysiology of sepsis
- Discuss the treatment goals for sepsis and how Early Goal Directed Therapy, antibiotics, fluids, vasopressors and ionotropes are used to reach these goals
- Appreciate the mechanism of actions of these specific agents.
- Describe the history of leprosy control in Pakistan
- Discuss the different classification of leprosy

- Explain the clinical features of leprosy
- Discuss the diagnostic modalities of leprosy
- Explain the treatment options for leprosy.
- Describe the natural history of HIV infection
- Discuss when to suspect and investigate HIV infection
- Outline the diagnostic tests available for the HIV infection
- Discuss the WHO / CDC clinical staging of HIV / AIDS
- Describe when to start ART in HIV patients
- Discuss the opportunistic infections and their diagnosis
- management and prevention
- Discuss the HIV associated malignancies and their treatment
- List common STD's and their causative organisms
- Explain their mode of transmission
- Describe the treatment options in STD's
- Explain how the spread of STDs can be reduced or prevented.

### **Topics/ Contents:**

#### **Lectures (1 hour each)**

- Approach to the patient with fever, types of fever
- Clinical features, diagnosis, management and complication of malaria
- Clinical features diagnosis and management and complications of typhoid fever
- Approach to patient with infectious diarrhea & dysentery diarrhea, dysentery in adults
- Tetanus and clostridia infections
- Mumps, chickenpox, rubella, measles
- VHF & dengue
- Rabies
- Hydatid disease
- Leishmaniasis, cysticercosis
- Clinical features, diagnosis management and complications of sepsis/ sirs
- Leprosy
- Clinical features, diagnosis, management and complications of HIV
- Clinical features, diagnosis, management and complications of STD's

**PHARMACOLOGY****Learning Objectives:**

- Describe classification, therapeutic applications and side effects of anti-bacterial drugs
- Describe classification, therapeutic applications and side effects of anti-viral drugs
- Identify the major antimalarial drugs, which are used for chemoprophylaxis and which are exoerythrocytic schizonticides
- Describe classification, therapeutic applications and side effects of anti-helminthic drugs
- Describe classification, therapeutic applications and side effects of anti-fungal drugs

**Topics/Contents:****Lectures: (1 hour each)**

- Introduction to antimicrobials
- Antimicrobials acting on cell wall-I
- Antimicrobials acting on cell wall-II
- Protein synthesis inhibitors-I
- Protein synthesis inhibitors-II
- Nucleic acid synthesis inhibitors/antifolates
- Quinolones
- Anti-malarial drugs
- Anti-amebic drugs
- Drugs used in leprosy
- Drugs used to treat worms (Anthelmintic drugs)
- Antiviral drugs
- Anti-retroviral drugs (Drugs used to treat HIV)
- Drugs used to treat sexually transmitted diseases

**Practicals: (1.5 hour each)**

- Overview of anti-bacterial drugs (Classification and its clinical uses)
- Treatment of typhoid fever
- Anti-protozoal drugs
- Treatment of HIV treatment, leprosy, STD

**COMMUNITY MEDICINE.****Learning Objectives:**

- Define basic terminologies used in infectious epidemiology
- Explain various components of chain of infection
- Compute secondary attack rate
- Define Febrile illness
- Discuss the differential diagnosis of patient with fever (urinary tract infection, Enteric fever, Malaria, meningitis, Rheumatic fever, Tuberculosis in local context)
- Discuss the prevention and control of common infections causing febrile illness
- Discuss the differential diagnosis of patient with fever (urinary tract infection, Enteric fever, Malaria, meningitis, Rheumatic fever, Tuberculosis in local context)
- Discuss the prevention and control of common infections causing febrile illness
- Discuss their agent, host, etiology, mode of transmission, carrier state, incubation periods, period of communicability, risk factors, clinical features, complications, prevention and control measures
- Explain epidemiological importance of Dengue and VHF
- Identify common sexually transmitted infections
- Explain sexually transmitted infections.
- Discuss agent, host, etiology, mode of transmission, carrier state, incubation periods, period of communicability, risk factors, clinical features, complications, prevention and control measures for HIV and other STIs
- Analyze epidemiological and public health importance of HIV and STIs
- Discuss prevention and control of HIV and STIs
- Discuss national programs for prevention and control of HIV in Pakistan
- Categorize the intestinal diseases according to their source of origin
- Differentiate between food born, water borne and water washed diseases
- Enlist the common intestinal diseases in local context
- Discuss their agent, host, etiology, mode of transmission, carrier state, incubation periods, period of communicability, clinical features, complications, prevention and control measures

**Topics/Contents:****Lectures: (1 Hour each)**

- Infectious disease Epidemiology
- Typhoid and other water borne diseases
- Malaria
- Prevention and control of VHF, Dengue and fever with rash

- Prevention and control of AIDS and STD
- Prevention of infectious Diarrhea

## **FORENSIC MEDICINE**

### **Learning Objectives:**

- Describe basic terms related to Forensic Medicine and Toxicology.
- Enumerate the branches of Forensic Sciences
- Explain the importance and utility of Forensic Medicine and its branches, in medical, legal and ethical issues
- Discuss the structure of Legal system and the powers of different courts in Pakistan
- Define important legal terms such as Summons, warrant, perjury, deposition, exhibit, offence, cognizable offence, non-cognizable offence, oath, conduct money, summons case, warrant case, bail, FIR, Explain medical evidence and its types, Enumerate the types of witnesses, Explain the procedure of examination in the court.
- Be conversant with medical ethics, etiquette, duties, rights, medical negligence and legal responsibilities of the physicians towards patients, profession, society, state and humanity at large.

### **Topics/Contents:**

#### **Lectures: (1 hour each)**

- Legal Procedure I
- Legal Procedure II
- Legal procedure III
- **Law related to medical man I**
  - Medical/Bio- ethics and its application.
  - Restated Hippocratic Oath.
  - Duties of the doctor as advised by international Code of medical ethics.
  - PMDC and its functions. Role of PMDC in medical and dental education.
- **Law related to medical man II**
  - Privileges and obligations of registered medical practitioners.
  - Professional misconduct.
  - Professional secrecy and privileged communication.
- **Law related to medical man III**
  - Medical examination and consent.
- **Law related to medical man IV**
  - Professional negligence, Civil and Criminal.
- **Law related to medical man V**
  - Euthanasia and organ transplantation

#### **Practicals: (1.5 hour each)**

- Court room proceedings Role Play

### **PAEDIATRICS.**

#### **Topics/Contents:**

#### **Lectures ( 1hour each)**

- Assess and Classification of the Sick Child and Management with Diarrhea, Dysentery, Worm infestation.
- Fever with Rash and IMNCI, EPI, MMR
- Clinical Presentation & Management of Enteric fever in children

### **STUDY SKILLS**

#### 1. History taking skills

##### Introduction/rationale:

This is an interview with the patient / attendant with the aim of obtaining information useful in formulating a diagnosis and providing appropriate medical care to the patient.

##### Learning objectives:

At the end of the session students should be able to:

Demonstrate correct method of history taking of three specific symptoms fever, diarrhea and cough.

**The contents are subjected to be altered according to requirement of academic calendar**



## **LEARNING RESOURCES**

### **PATHOLOGY**

- Robbins Basic Pathology Kumar & Abbas 10th Edition
- Robbins & Cotran Pathologic Basis Of Disease Kumar & Abbas & Aster 10th Edition

### **COMMUNITY MEDICINE**

- Public Health And Community Medicine Shah, Ilyas, Ansari 7th Edition

### **PHARMACOLOGY**

- Lippincott's Illustrated Review Pharmacology Karen Whalen 6th Or Latest Edition
- Basic And Clinical Pharmacology Bertram G. Katzung 11th Edition

### **FORENSIC MEDICINE**

- Principles And Practice Of Forensic Medicine Nasib R. Awan 1 St Edition

### **MEDICINE**

- Principles & Practice Of Medicine Davidson's 22nd Or Latest Edition
- Essentials Of Kumar And Clark's Clinical Medicine Kumar & Clark 9th Or Latest Edition
- Macleod's Clinical Examination Douglas & Nicol & Robertson 13th Or Latest Edition
- Hutchison's Clinical Methods William M Drake & Michael Glynn 23rd Or Latest Edition

### **PAEDIATRICS**

- Nelson's's Essentials Of Pediatrics Marc dante & Kliegman 7th Or Latest Edition

### ASSESSMENT

Assessment will be done in two parts:

#### At the end of module

- Module Exam (Theory) -20%
- Module Exam Practical Internal Evaluation- 20%

#### At the end of Year

- Annual Exam (Theory) -80%
- Annual Exam (ospe, Viva)-80%

MCQs (Multiple choice questions), OSCE (Objective Structured Clinical Exam) and structured vivas will be the main assessment tool.