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***Lahore Medical & Dental College, Lahore***

***Department of Pharmacology***

***Study Guide***

***For***

***PHARMACOLOGY***

**(3rd Year MBBS)**

***Contents*:-**

|  |  |  |
| --- | --- | --- |
| **Sr. #** | **Contents** | **Page. No** |
| **1** | **Introduction** | **03** |
| **2** | **Learning Objects** | **04** |
| **3** | **Syllabus (PMDC)** | **05** |
| **4** | **Teaching & Learning Methodology** | **08** |
| **5** | **On-Line Teaching Methodology** | **09** |
| **6** | **Attendance Required** | **10** |
| **7** | **Learning Resources** | **11** |
| **8** | **Assessments Methods** | **12** |
| **9** | **Exam Rules and Regulation** | **13** |
| **10** | **Planner** | **16** |
| **11** | **Timetable** | **17** |
| **12** | **Pharmacology Study Hours** | **18** |
| **13** | **Curriculum Map) 3rd year MBBS** | **19** |
| **14** | **Organogram of Pharmacology** | **20** |

1. ***Introduction*:-**

It is the science that deals with the origin, nature, chemistry, effects, and uses of drugs. It includes pharmacognosy, pharmacokinetics, pharmacodynamics, pharmacotherapeutics and toxicology.

**Teaching in Year**

**3rd Year M.B.B.S**

**Duration of Course**

**One Year**

1. ***Learning Objectives: -***

MBBS student, at the end of one year training in Pharmacology, is expected to:

1. Understand pharmacokinetic and pharmacodynamic principles involved in the use of drugs
2. Understand and identify the various factors that can affect the action of drugs
3. Know the various routes of drug administration with advantages and disadvantages of the various routes
4. Undertake dosage calculations as appropriate for the patient and be able to select the proper drug and dose for the at risk population i.e. patients with kidney or liver disease, elderly, pregnant and lactating females, and children.
5. Understand the importance of rational prescribing of drugs and the concept of essential drugs
6. To be able to identify and monitor adverse drug reactions (ADRs) and appreciate the importance of ADR reporting
7. Know the drugs used in systemic illnesses, infections and chemotherapy etc. with main mechanism(s) of action, pharmacokinetics, uses, side-effects and indications
8. Understand the principles and practice of pharmacy
9. Understand the methods in experimental pharmacology, principles of bioassay and be able to correlate drug effects with the action of drugs at the receptors.
10. Have knowledge of common drugs and doses used for different ailments
11. Have an understanding of basic mechanism by which a drug acts
12. Should be able to select rationally from the available drugs
13. ***Syllabus (PMDC)***

**Topic**

# ***General Pharmacology***

# Introduction

## Routes of Administration

Transport across cell membrane

Absorption+ Bioavailability

Distribution

Biotransformation

# Excretion, 1/2 Life, Kinetics

## Pharmacodynamics

Dose response curve + Therapeutic Index

Drug allergy & Adverse effects

Drug dependence, addiction

Posology

Pharmacogenetics

Bioassay & Standardization

Locally acting drugs & Chelating agents

Disinfectants & Antiseptics + Phenol Chemo

### Autonomic Nervous System

Introduction

Cholinergic Drugs

Anticholinergic Drugs

Muscle Relaxants

Ganglion Blockers

Catecholamines

Non-Catecholeamines

Beta Blockers

Alpha Blockers

Adrenergic Neuron Blockers

Ergot Alkaloids & Bromocryptine

#### GIT Drugs

Bitters & Sialogogues

Emetics & Anti emetics

Purgatives & Laxatives

Treatment of P.U & Antacids

Anti diarrheals & Bacillaryt Dysentry

#### Respiratory System Drugs

Mucolytics, Expectorants & Antitussives

Bronchodilators & Treatment of Asthma

#### Cardiovascular System Drugs

Vasodilators: Direct & Ca++ Channel Blockers

Antihypertensive drugs & Treatment of Hypertension

ACE Inhibitors

Antianginal Drugs

Treatment of CCF

Anti arrythmic Drugs

Diuretics

**DRUGS ACTING ON BLOOD**

Antihyperlipidemic Drugs

Coagulants, Anti coagulants & Thrombolytic agents

Anti Platelets

Treatment of Anemia (Vitamins & Iron)

##### Autocoids:-

Histamine & Anti histamine

Prostaglandins & Serotonins

##### *Drugs acting on CNS*

Introduction

General Anesthetics

Local Anesthetics

Anti-Psychotic drugs

Antidepressants

Antimaniacs

Anti Parkinsonian Drugs

Sedative & Hypnotics + Anti-anxiety Drugs

Alcohol & Drug abuse

Trea arcotic Analgesics

Non-narcotic Analgesics

Treatment of Rheumatoid arthritis

Treatment of Epilepsy

CNS Stimulants & Xanthines

Treatment of gout

.

#### Drugs acting on Endocrine System

Pituitary hormones& Parathyroid drugs

Anti-thyroid

Corticosteroids

Antidiabetic Drugs(Insulin, Oral Hypoglycemic)

Sex Hormones, Contraceptives & Drugs for fertility

Drugs acting on uterus

#### Therapeutics

Antibiotics: Introduction

**Cell wall synthesis inhibitors**

Penicillins & Cephalosporins

Bacitracin, Vancomycin, Monobactam,

carbapenems,aztreonam

**Protein Synthesis Inhibitors**

Aminoglycosides Macrolides

Tetracyclines & Chloramphenicol

**Antifolates Drugs**

Sulphonamides & Cotrimoxazole+

Trimethoprine and Pyrimethamine

**DNA Synthesis Inhibitors**

Urinary Antiseptics & Quinolone derivatives

Anti-Cancer Drugs

Anti-Viral Drugs

Antifungal Drugs

Anti TB & Leprosy drugs

Antimalarial

Anti-amoebic Drugs

Anthelmintics

**Miscellaneous Topics**

Treatment of Edema, Shock, & plasma Expanders

Immuno modulators & Anti-D

Drug Interactions

**PRACTICALS**

**A) Experimental pharmacology exercise on isolated organ** - Assay of various drugs using rabbit ileum - Identification of unknown drugs by evaluating its action antagonism and drug interaction on rabbit ileum - Determination of concentration of unknown drug solution by different methods

**B) Experimental exercise on pharmacy -** General principles of pharmacy - Prescription writing exercises - Preparation and dispensing of powders, emulsions ointments, mixtures, liniments, suppositories and syrups

**C) Spotting exercise -** Identify the commonly used items in Pharmacology

**D) Exercises on drug interactions**

1. ***Teaching & Learning Methodologies***
2. Interactive Lectures
3. Tutorials
4. Practicals
5. Small Group Discussions
6. Batch Wise Viva Voce
7. Monthly bases tests (MCQ’s and SEQ’s)
8. CME
9. Long Tutorial Sessions
10. Topic Wise Practice Test
11. Using Latest Techniques of electronic facilities like Audio Visual and Multimedia
12. Recommended E. Books
13. ***On- Line Teaching Methodology***

We use latest technologies, high speed internet and software for on-line coaching/ teaching.

1. ***On-Line Classes / Lectures***

*We deliver on-line classes/ Lectures on google meet, Microsoft teams and google class room*

1. ***On- Line Tutorials Classes***

*We conduct on-line tutorial classes on google meet, Microsoft teams and google class room*

1. ***On- Line Practical Classes***

*We arrange on-line practical classes on google meet, Microsoft teams and google class room*

1. ***On- Line Assignments***

*On-line Assignments on google meet, Microsoft teams and google class room*

1. ***On- Line Test Conducting***

*We conduct on-line tests on class room (Google forms)*

1. ***On- Line Notifications***

*On-line notifications on google calender, Microsoft teams and lmdc web portal*

1. ***Attendance Required***
2. 75% Attendance is mandatory in (Lectures, Practical and Tutorials)
3. A minimum 75% Attendance is required for eligibility to appear in Annual Examination according to University of Health Sciences, Lahore
4. Attendance will be marked through the Bio- Metric Attendance Systems (thumb Impression) and also record in Attendance Registers.
5. Absences due to Sickness/ Illness must be certified by a Medical Officer and approved by Principal and Head of Department also.
6. ***Learning Resources***

***Recommended Books:-***

1. Goodman & Gilman’s - The Pharmacological Basis of Therapeutics
2. Basic & Clinical Pharmacology by Bertram G, Katzung
3. Clinical Pharmacology by DR Lawrence, PN Bennett & MJ Brown
4. Essentials of Medical Pharmacology by K.D. Tripathi
5. Lippincott Illustrated Review Pharmacology
6. ***Technologies to be Used:-***
7. Text Books are the Most Important source to learn for this Subject
8. Hand Outs (by Senior Faculty Members)
9. E. Books (Available)
10. Multimedia (Power Point)
11. Tables of Drugs Chart
12. Discussions
13. Viva Voce type Practice
14. Departmental Library
15. ***Assessments Methods***

***Formative:-***

* MCQ’s and SEQ’s type Test will be held at the end of the every topic.
* Viva Voce will be held at the end of every major topic.
* Assignments given, checked and marked for 10 marks
* Summer Vacation work (assignments type)
* Arrange CME’s to build and improve their knowledge and skills

1. ***Exam Rules and Regulation***

**Examination will be held at the end of the academic session.**

Marks Distribution Scheme According to University of Health Sciences Rules and Regulation:-

Total Marks of the subject in Professional examination----**300 Marks**

**Theory Examination:**

* 65 Multiple Choice Questions (1 Mark for Each Question) --------65 Marks
* 10 short Essay Questions (7 marks for Each Question) ---------70 Marks
* Internal Assessment ----------15 Marks

Total Marks 150 Marks

**Oral//Practical & Viva Voce Examination:**

**Viva Voce Examination:**

* Viva Voce will be held after Theory Examination
* Viva Voce (Internal Examiner): 30 Marks and 05 Marks for Note Book---35 Marks
* Viva Voce (External Examiner): ----30 Marks

**OSPE Examination:-**

* 07 Observed and non-Observed Stations (Each Station having 05 Marks)---35 Marks
* Experimental Pharmacology: ----20 Marks
* Pharmacy Practical: -----15 Marks
* Internal Assessment: ------15 Marks

Total Marks: 150 Marks

1. ***Planner for the Year 2020-2021***

# ***General Pharmacology***

# Introduction Prof. Dr. Ajaz Fatima 01

## Routes of Administration Dr. Asia Firdous 02

Transport across cell membrane Prof. Dr. Shazia Asim 01 Absorption+ Bioavailability Prof. Dr. Shazia Asim 02 Distribution Prof. Dr. Ajaz Fatima 02 Biotransformation Prof. Dr. Shazia Asim 02 Excretion, 1/2 Life, Kinetics Dr. Asia Firdous 03 Pharmacodynamics Prof. Dr. Shazia Asim 04 Dose response curve + Therapeutic Index Prof. Dr. Shazia Asim Drug allergy & Adverse effects Dr.Awais Qarni 02 Drug dependence, addiction Dr.Awais Qarni 02

Posology Prof. Dr. Ajaz Fatima 01

Pharmacogenetics Prof. Dr. Ajaz Fatima 01

Bioassay & Standardization Dr.Wardah Siddique 01

Locally acting drugs & Chelating agents Dr. Wardah Siddique 02

Disinfectants & Antiseptics + Phenol Chemo Dr. Awais Qarni 02

### Autonomic Nervous System

Introduction Prof. Dr. Ajaz Fatima 01

Cholinergic Drugs Prof. Dr. Shazia Asim 01

Anticholinergic Drugs Prof. Dr. Ajaz Fatima 02

Muscle Relaxants Dr.Awais Qarni 01

Ganglion Blockers Dr. Wardah Siddique 01

Catecholamines Prof. Dr. Ajaz Fatima 03

Non-Catecholeamines Prof. Dr. Ajaz Fatima 02

Beta Blockers Prof. Dr. Shazia Asim 02

Alpha Blockers Dr. Asia Firdous 01

Adrenergic Neuron Blockers Dr.Asia Firdous 02

Ergot Alkaloids & Bromocryptine Dr. Wardah Siddique 01

#### GIT Drugs

Bitters & Sialogogues Dr. Asia Firdous 01

Emetics & Anti emetics Prof. Dr. Ajaz Fatima 01

Purgatives & Laxatives Dr. Wardah Siddique 01

Treatment of P.U & Antacids Dr. Wardah Siddique 03

Anti diarrheals & Bacillaryt Dysentry Dr. Asia Firdous 01

#### Respiratory System Drugs

Mucolytics, Expectorants & Antitussives Dr. Awais Qarni 01

Bronchodilators & Treatment of Asthma Dr. Awais Qarni 02

#### Cardiovascular System Drugs

Vasodilators: Direct & Ca++ Channel Blockers Prof. Dr. Ajaz Fatima 03

Antihypertensive drugs & Treatment of Hypertension Prof. Dr. Ajaz Fatima 02

ACE Inhibitors Prof. Dr. Ajaz Fatima 02

Antianginal Drugs Prof. Dr. Nasim Akhtar 03

Treatment of CCF Prof. Dr. Shazia Asim 03

Anti arrythmic Drugs Prof. Dr. Ajaz Fatima 03

Diuretics Prof. Dr. Shazia Asim 02

**DRUGS ACTING ON BLOOD**

Antihyperlipidemic Drugs Dr. Asia Firdous 02

Coagulants, Anti coagulants & Thrombolytic agents Dr. Wardah Siddique 02

Anti Platelets Dr. Wardah Siddique 01

Treatment of Anemia (Vitamins & Iron) Dr. Wardah Siddique 01

##### Autocoids:-

Histamine & Anti histamine Dr. Asia Firdous 02

Prostaglandins & Serotonins Dr. Wardah Siddique 02

##### *Drugs acting on CNS*

Introduction Prof. Dr. Ajaz Fatima 01

General Anesthetics Prof. Dr. Ajaz Fatima 03

Local Anesthetics Dr. Wardah Siddique 02

Anti Psychotic drugs Prof. Dr. Shazia Asim 02

Antidepressants Prof. Dr. Ajaz Fatima 02

Antimaniacs Dr. Asia Firdous 01

Anti Parkinsonian Drugs Prof. Dr. Shazia Asim 01

Sedative & Hypnotics + Anti anxiety Drugs Prof. Dr. Ajaz Fatima 03

Alcohol & Drug abuse Dr. Awais Qarni 02

Trea arcotic Analgesics Prof. Dr. Ajaz Fatima 02

Non-narcotic Analgesics Prof. Dr. Shazia Asim 03

Treatment of Rheumatoid arthritis Prof. Dr. Ajaz Fatima 01

Treatment of Epilepsy Dr. Asia Firdous 02

CNS Stimulants & Xanthines Dr. Awais Qarni 01

Treatment of gout Prof. Dr. Ajaz Fatima 01

.

#### Drugs acting on Endocrine System

Pituitary hormones& Parathyroid drugs Dr. Awais Qarni 01

Antithyroid Dr. Wardah Siddique 02

Corticosterroids Prof. Dr. Ajaz Fatima 02

Antidiabetic Drugs(Insulin, Oral Hypoglycemic) Dr. Awais Qarni 03

Sex Hormones, Contraceptives & Drugs for fertility Dr. Asia Firdous 03

Drugs acting on uterus Dr. Asia Firdous 01

#### Therapeutics

Antibiotics: Introduction Prof. Dr. Ajaz Fatima 01

**Cell wall synthesis inhibitors**

Penicillins & Cephalosporins Dr. Wardah Siddique 02

Bacitracin, Vancomycin, Monobactam,

carbapenems,aztreonam Dr. Wardah Siddique 01

**Protein Synthesis Inhibitors**

Aminoglycosides Macrolides Dr. Asia Firdous 02

Tetracyclines & Chloramphenicol Dr. Asia Firdous 01

**Antifolates Drugs**

Sulphonamides & Cotrimoxazole+ Prof. Dr. Ajaz Fatima 02

Trimethoprine and Pyrimethamine

**DNA Synthesis Inhibitors**

Urinary Antiseptics & Quinolone derivatives Prof. Dr. Shazia Asim 01

Anti Cancer Drugs Dr. Wardah Siddique 03

Anti Viral Drugs Prof. Dr. Ajaz Fatima 02

Antifungal Drugs Dr. Asia Firdous 01

Anti TB & Leprosy drugs Prof. Dr. Shazia Asim 02

Antimalarials Dr. Wardah Siddique 02

Anti amoebic Drugs Prof. Dr. Ajaz Fatima 02

Anthelmintics Dr. Wardah Siddique 02

**Miscellaneous Topics**

Treatment of Edema, Shock, & plasma Expanders Dr. Awais Qarni 01

Immuno modulators & Anti-D Dr. Asia Firdous 01

Drug Interactions Prof. Dr. Ajaz Fatima 02

1. ***Time Table for 3rd Year MBBS (Weekly Schedule Pattern)***

**Lahore Medical & Dental College, Lahore.**

**3rd Year MBBS**

**Weekly Lectures Schedule**

|  |  |  |  |
| --- | --- | --- | --- |
| **Day** | **TIME** | **TOPIC** | **TEACHER** |
| **Monday** | **08:00am** |  |  |
| **Monday** | **12:15am** |  |  |
| **Tuesday** | **08:45am** |  |  |
| **Wednesday** | **08:00am** |  |  |
| **Thursday** | **08:45am** |  |  |
| **Thursday** | **12:15am** |  |  |
| **Friday** | **08:00am** |  |  |

**Weekly Practical Schedule**

**Time: 01:00 PM to 02:30 PM**

|  |  |  |  |
| --- | --- | --- | --- |
| **Day** | **Batch** | **Practical Topic** | **Teacher** |
| **Monday** | **C + D** |  |  |
| **I + J** |  |  |
| **Tuesday** | **A + B** |  |  |
| **G + H** |  |  |
| **Wednesday** | **I + J** |  |  |
| **E + F** |  |  |
| **Thursday** | **G + H** |  |  |
| **C + D** |  |  |
| **Friday** | **E + F** |  |  |
| **A + B** |  |  |

1. ***Pharmacology Study Hours:-***

For 3rd Year M.B.B.S according to PMDC Rules: **303.75 Hours**

Lectures: **168.75 Hours**

Practical / Tutorial / Grand Tutorial: **135 Hours**

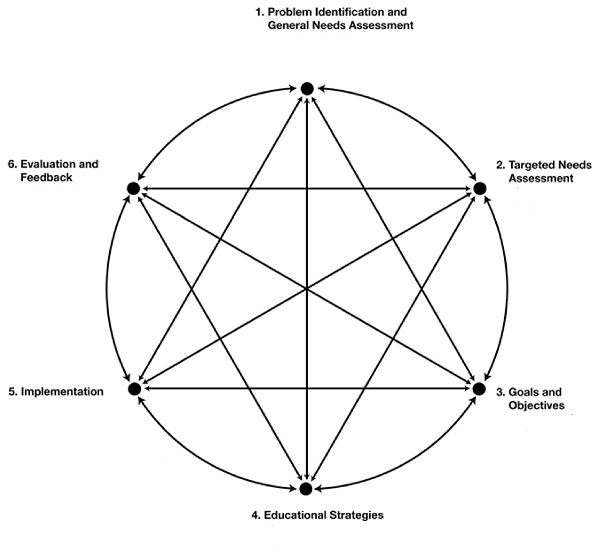
1. ***(Curriculum Map) 3rd year MBBS***

Program evaluation will be done periodically with all the stake holders

**2. Subject of Pharmacology taught in year One of MBBS. Annual examination is under UHS at the end of a minimum nine months term.**

1. How the students of MBBS 3rd year should be prepared for good results in final UHS examination

**3.:** SPICES model of educational strategy is an advanced curricular model and is an ideal approach.



**1. Students of 3rd year MBBS.**

For the successful implementation of this curriculum we will need personal resources, teaching material, sufficient space, computer and internet facility. Regular curriculum committee meetings will held to discuss the implementation of curriculum. Also meetings will be done with all the stake holders.

**2. TEACHING STRATIGIES:**

**Students are prepared for final exam on the pattern of UHS. Lectures, tutorials practical and viva are designed in a way to help students to get best preparation for their exam.**

Regular program evaluations and feedbacks will be taken and changes will be incorporated into curriculum

OBJECTIVES:

.Students should get basic knowledge of Pharmacology during the 3rd year which forms their knowledge base for dental studies.

Our GOAL is to prepare our students with best available teaching methodologies so that they can pass with good grades.

* Lectures
* Tutorials
* Practical
* SGD ( small group discussions)
* Assignments
* Student presentations

Students are motivated to take part actively during all the educational sessions.

**REFERENCE:**

Kern DE, Thomas PA, Hughes MT editors. Curriculum development for medical education, A six-step approach. 2nd ed. United States of America: The Johns Hopkins University press; 2009.

1. **ORGANOGRAM OF PHARMACOLOGY DEPARTMENT**
2. Dr. Rubina Raza (MBBS)
3. Dr. Humeria Mushtaq (MBBS)
4. Dr. Amina Zubiar (MBBS)
5. Dr. Bushra Haider (MBBS)
6. Dr. Maria Liquat (MBBS)
7. Dr. Rabail Ashraf (MBBS)

Dr. Ghulam Awais Qarni

MBBS

Senior Lecturer of Pharmacology Department

Dr. Asia Firdous

MBBS, M.Phil

Assistant Professor of Pharmacology Department

Dr. Wardah Siddique

MBBS, M.Phil

Assistant Professor of Pharmacology Department

Prof. Dr. Shazia Asim

MBBS, M.Phil

Professor of Pharmacology Department

Prof. Dr. Ajaz Fatima

MBBS, M.Phil

Professor of Pharmacology

Head of Pharmacology Department