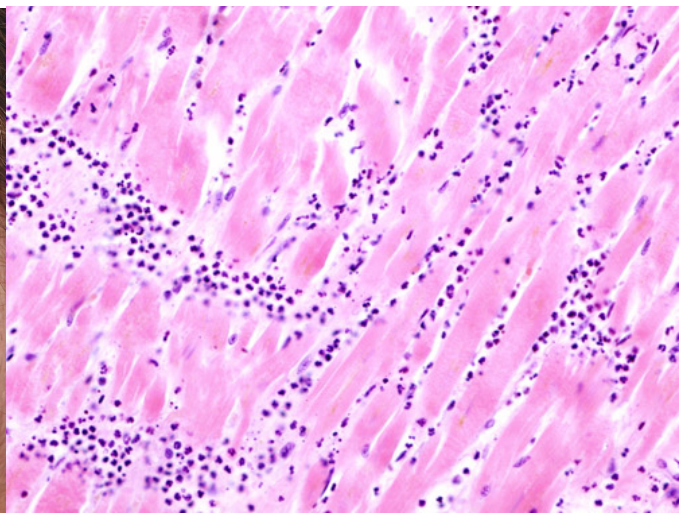
AJK Medical College, Muzaffarabad

Cell Pathology, General & Autonomic Pharmacology Module
CPGAP-0202
3rd Year

Duration: 4-Weeks

Starting on:

DEPARTMENT OF MEDICAL EDUCATION

AJK Medical College, Muzaffarabad

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Table of Contents

Module Development Team

Name	Role
Prof. Sarosh Majid Salaria	Principal/Patron in Chief/Dean
Prof. Muhammad Arif	Module Planner
Prof. Muhammad Munir	Coordinator
Dr. Ziyad Afzal Kayani	DME/Member
Dr. Javed Akhtar Rathore	Member
Dr. Nasir Ahmed Sheikh	Member
Dr. Malik Mehmood	Member
Dr. Uzma Hafeez	Member

Caution

80% mandatory attendance to appear in Modular / Professional / University Examination as per Pakistan Medical and Dental Council (PM&DC) regulation.

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Rationale

For the better understanding of various diseases of human beings, it is vital to know the etiology, pathogenesis, morphology and clinical features of lesions. This aspect has got paramount importance for the effective management of health care issues of human being. The basic idea of this module is to familiarize the undergraduate medical students (from the beginning of their training) to the fundamental components of human diseases. The understanding, diagnosis and management of diseases is impossible without the functional cellular and molecular knowledge of human tissue.

Clinical assessment of human diseases is very challenging at times. The basic concepts of pathological aspects of diseases will help in understanding of disease pattern. Similarly basic pharmacological principles will help in formulating treatment plan of human diseases. Medico legal aspects are also important in human diseases.

Module Organization

In second Spiral / 3nd year, we are beginning with basic concepts of pathological aspects of diseases, pharmacological features and medico legal aspects of human lesions. This module integrates horizontally the disciplines of pathology, pharmacology and forensic medicine and vertically integrates with medicine, surgery, Paeds, Eye, ENT, Gynecology and Obstetrics.

This module will run for 4 weeks and comprises 4 Themes and two PBLs (each based on real life clinical problems). Each theme has its explicit outcomes/LOs. In order to enhance the quality of integration of basic science concepts with clinical sciences and to facilitate problem solving skills, this module has been designed and will be delivered by a committed integrated team comprising of pathologist, pharmacologist, forensic experts, Physicians and surgeons.

This module structured in a way that you will attain your objectives by pursuing different clinical themes while following a presented schedule/ time table. Based on these themes will be clinical cases; that you'll discuss in different sessions (SGDs, PBL, SDL, LGIS, Skill Lab) during the program. The time table/ schedule with clinical themes are included in this study guide.

Teaching Strategies

The content of this module will be delivered by a combination of different teaching strategies. These include small group discussions (SGD), large group interactive sessions (LGIS), demonstrations in clinics, lab practical, general club, dissection/ skill videos, clinical skill sessions at skill lab and case discussion in ward rounds and OPD. Entire curriculum will be delivered by clinical case scenarios each covering a theme. Read the cases and the objectives of the theme which you are supposed to encounter next day, understand and explain the case to yourself and read the relevant information. Following learning/teaching strategies will be used in this Module:

Small Group Discussion: Main bulk of the course content will be delivered in small group sessions. Each theme has an associated case. The case will be the centre around which learning will take place. Depending on the case you might be required to deduce

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objectives and learning issues or only learning issues. Every group will have a facilitator assigned to it. The facilitator will be there to keep you on track, giving you maximum liberty to discuss and achieve the objectives as a group. Small groups will be followed by a wrap up session to standardize learning. Rest of the information will be in the schedule/ time table. There are no secrets regarding how to make the best of small group sessions. Come prepared for your session and make use of the combined wisdom of the group to achieve your learning objectives. The facilitator is your guide to help achieve them and clarify any misconceptions. Feel free to consult me in person or by e-mail, in case of any problems.

Large Group Interactive Sessions: LGIS will be employed at times to augment small groups. By and large they will be used to pass on general concepts regarding the theme. Large group instruction will be employed at times sparingly. Attend large group sessions with the following focus:

a. Diagnose learning misconceptions.
b. Clarify misconceptions.
c. Standardize learning of all learners.
d. Scaffolding of important concepts.
e. Learn concepts not well understood in SGDs.
f. Measure your learning comprehension.

Hands-on Activities/ Practical: This will be in the form of laboratory practical, spotting on slides, images, radiology and clinical skills. Attend your scheduled lab and take advantage of free time for study. Use your labs to correlate text structures to actual specimens in lab practice.

Videos: Videos demonstration of clinical skills will be given in Skills lab. Video demonstrations on history taking and clinical examination / invasive procedures, will be shown to give you an idea into the disease process, clinical testing and practical aspect of communication with the patients.

Self Directed Learning: A task will be given in SDL regarding the theme to be discussed on the next day. This will help to prepare you a bit before the theme is under discussion. A few SDLs (10%) have been added in between to create an environment for you to search literature as well as to deduce and synthesize information from different sources to meet the learning objectives. It will also help in breaking the monotonous / strenuous schedule and make you life- long learner.

Assessment

A full-fledged summative assessment will be conducted at the end of module. This will give you an idea about the format of the examination that you will go through at the end of the year. Of course, this will be followed by feedback on your performance in the exam. Marks obtained in the module examination will contribute 30% (internal assessment) towards end of year Professional University Examination. **There is no RESIT exam for module written assessment and block IPE** under any circumstances. If you miss them, your internal assessment will be recorded as zero. No excuse of any kind is permissible for absence in module or IPE assessment.

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Table of Specification

S.NO	THEME	WEIGHTAGE
1	Energy Crisis	15%
2	Murder She Wrote	15%
3	Invaders	20%
4	Defenders	25%
5	Palpitations	25%

Themes & Learning Outcomes

1. ENERGY CRISIS

At the end of the theme insha Allah, the students will be able to;

1) Revisit Cell! Describe Cell's personality, Shape, Fashion and Functions
2) Draw the light and electronmicroscopic picture of a typical cell labeling all its components and organelles
3) Enumerate the function of each cellular organelle
4) Enlighten the role of ischemia causing cell injury
5) Draw the cytoplasmic changes in ischemic injury
6) Define the roles of ATP depletion, mitochondria, Cytoplasmic calcium, sodium potassium pump, endoplasmic reticulum, lysosomes, phagosomes and nucleus in cell injury
7) Define reversible Cell injury giving its types and mechanisms in;
    a. Hydropic degeneration
    b. Fatty change
8) Define irreversible cell injury. Enumerate its types
    a. Coagulative necrosis
    b. Caseation necrosis
    c. Liquifactive necrosis
    d. Gangrene, give its types and causes
9) Define pathological classification, describe its types and manifestations
10) Define aging and its accompanying features
11) Explain the role of flawed Nutrition in causing cell injury
12) Define the role of Radiation in causing cell injury
13) Explain the role of life style and socio ethical factors in causing cell injury
14) Describe the role of environment in causing cell injury
15) Enumerate Free Radicals and explain their role in causing cell injury
16) Explain the mechanism and types of cell death
17) Differentiate between necrosis and apoptosis
18) Enumerate adaptive responses to physiological and pathological stresses including;
    a. Atrophy
    b. Hyperplasia
    c. Hypertrophy
    d. Metaplasia
19) Enumerate abnormal intracellular accumulations; give examples along with mechanism and manifestations in
    a. Glycogen storage disease
    b. Lipid storage diseases

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c. Congenital hyperlipidemia
d. Lipofuchsin

20) Enumerate causes of damage to the blood cells
   a. Explain the role of cell membrane damage in Erythrocytes
   b. Explain defects in hemoglobin and enzymes leading to Erythrocytes injury
   c. Explain how physical trauma causes damage to erythrocytes
   d. Explain immunological mechanism of cell damage
   e. Explain genetic abnormalities adversely affecting bactericidal ability of White Blood Cells and macrophages
   f. Enumerate causes of platelet and megakaryocyte injury
   g. Explain how parasites damage erythrocytes
21) Correlate cell injury with cellular components released in the blood
   a. Define biomarker, Enlist characteristics of good biomarker
   b. Enumerate different Biomarkers of liver cell injury
   c. Enumerate different Biomarkers of cardiac cell injury
   d. Enumerate different Biomarkers of renal cells injury
   e. State the difference between different biomarkers in terms of;
   a. Those represent functioning of the cell
   b. Those represent cell injury

2. MURDER SHE WROTE

At the end of the THEME the student should be able to:

1) Define Inquest
2) discuss different medico legal system of death investigation in the world
3) discuss criminal procedure code regarding postmortem examination in Pakistan
4) Define Postmortem examination
5) Enlist types of postmortem examinations
6) Give objectives of postmortem examination
7) discuss prerequisites of postmortem examination
8) Enlist different postmortem techniques
9) Define postmortem protocol
10) Enlist different types of postmortem protocol
11) Discuss procedure of postmortem examination
12) Visualization of postmortem procedure on multimedia
13) Define negative / obscure autopsy
14) Enlist causes of negative autopsy
15) Define exhumation
16) Give objectives of exhumation
17) Enlist precautions of exhumation
18) Explain the procedure of exhumation and give its limitations
19) Correlate cell injury with intracellular accumulations
20) Explain cellular responses to stress and noxious stimuli.
21) Differentiate between metastatic and dystrophic calcification
22) Enumerate and classify various causative agents of infections in humans.
23) Differentiate between Prokaryotic & Eukaryotic Cells.
24) Classify the medically important bacteria.

3. INVADERS

At the end of the THEME the student should be able to:

1) Describe and explain various mechanisms of cell injury by different types of microbial agents including bacteria, mycobacteria, fungi, parasites, viruses and prion

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2) Classify the medically important bacteria
3) Illustrate structure of bacterial cell membrane and enumerate its functions
4) Draw and label Gram positive and Gram negative cell wall
5) Enlist the cytoplasmic structures of prokaryotes along with their functions
6) Define hospital infection control and role of Infection Control Committee in containing infections
7) Define SIRS, Sepsis, severe sepsis, and septic shock, discuss pathogenesis of septic shock
8) Enlist and explain mechanism of antibiotics resistance
9) Perform the Gram Stain. Identify/ draw Gram Positive Cocci and Gram Negative Bacilli.
10) Perform correct technique for Hand hygiene
11) Define normal flora and enlist microorganisms of normal flora of skin, nasopharynx, gastrointestinal tract and vaginal flora.
12) Explain various routes of transmission of microbes. Illustrate the chain of infection. Describe the precautions to prevent the transmission of infections
13) Enlist and explain the various diagnostic techniques for infectious agents.
14) Define hospital acquired infections. Enlist Common Hospital acquired infections, Name the most Common organisms causing HAIs, and describe the types, steps and techniques of Hand hygiene
15) Describe the cell structure of fungi, classify fungal infections, and describe the various laboratory methods for diagnosis of fungal infections
16) Describe structure of viruses, classify viruses, and describe the various laboratory methods for diagnosis of viral infections

4. DEFENDERS

At the end of the THEME the student should be able to:

1) Define the term Pharmacology.
2) Define Different Branches of Pharmacology.
3) Define Pharmacopoeias with examples.
4) What is drug nomenclature? Illustrate with one example.
5) Classify the different sources of drugs with examples.
6) Define the active principle and what are their types?
7) List the names of active principles
8) Define different types of active principles with examples of drugs.
9) Give the formulas for calculating the dose of a drug according to age and weight
10) Define the different dosage forms
11) What are the advantages & disadvantages of the different routes of administration?
12) What are different means by which drug transport across cell membrane? Illustrate with examples.
13) Define the term Drug Absorption
14) How different factors affecting absorption of drugs?
15) Define Bioavailability. How it is calculated? What is it's clinical importance?
16) How different factors affecting Bioavailability?
17) Define First- pass metabolism and What is its significance?
18) Define the terms Bioequivalence and therapeutic equivalence
19) Define drug distribution
20) How different factors affecting distribution of a drug?
21) Write the distribution of a drug through various body compartments
22) Define volume of distribution
23) Give the importance of distribution and the volume of distribution
24) What are the characteristics/features of a drug that is bound to plasma proteins? What is it's clinical significance? Illustrate with examples.
25) Define Biotransformation.
26) Enlist sites of biotransformation
27) What are the aims and outcomes of Biotransformation?

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28) Define phase I and phase II biotransformation reactions and their types
29) Enlist examples of drugs undergoing Phase 1 and phase 2 metabolic reactions
30) What are the characteristics of Phase 1 and Phase 2 biotransformation reactions?
31) What are microsomal and non- microsomal biotransformation reactions?
32) How different factors affecting biotransformation of a Drug?
33) Define enzyme induction and its significance with examples?
34) Define enzyme inhibition and its significance with examples?
35) Define plasma half life
36) Enumerate and explain the factors affecting half-life?
37) What is the importance of plasma half life
38) Define steady state concentration and give its significance
39) Define the terms First order kinetics and Zero Order Kinetics with examples
40) What are differences between First order kinetics and Zero Order Kinetics?
41) Define Maintenance Dose & loading dose, how these are calculated and what is their clinical significance.
42) Define the drug excretion and clearance.
43) Enlist various routes through which drugs are excreted from the body with examples
44) Explain the basic principles by which drugs are excreted from the kidneys?
45) How different factors affecting excretion of drugs?
46) What are different mechanisms by which drugs produce their action?
47) What are different types of mechanisms by which drugs act through receptors, with their examples?
48) What are different types of G-Proteins with examples of drugs?
49) Write the role of second messengers involved in receptors transduction
50) Differentiate between Receptor Down regulation and up regulation with examples. What is their significance?
51) Differentiate between the terms potency and efficacy
52) What are the characteristics of a Graded Dose Response Curve?
53) What information can be obtained from a Graded Dose Response curve?
54) What are the characteristics of Quantal Dose Response Curve?
55) Define ED_{50}, LD_{50}
56) Define Therapeutic Index and Therapeutic Window with examples. What are their clinical significance?
57) What are the differences between Graded and Quantal Dose Response curve
58) How different factors can affect the actions of different drugs?
59) Define with examples the term Agonist, Partial Agonist, Antagonist and Inverse Agonist
60) Define Spare Receptors. What is their importance?
61) Write different types of Antagonism with examples and clinical significance.
62) Define and explain the characteristics of competitive and non-competitive antagonism?
63) Enumerate different types of adverse drug reactions? Differentiate with examples.
64) Define drug dependence, addiction, abuse.
65) Differentiate between psychological dependence and physical dependence with examples
66) Define Tolerance. Differentiate different types of Tolerance with their mechanisms and examples.
67) Explain difference between Pharmacokinetic and Pharmacodynamic Tolerance
68) Define Tachyphylaxis, it's mechanisms and examples.
69) Differentiate between Tolerance and Tachyphylaxis
70) Define Pharmacogenetics and Pharmacogenomics. What are their importance? Illustrate with examples.
71) Define idiosyncrasy with examples.
72) Define Drug interactions
73) Differentiate between various types with examples?
74) Give the different types of Drug Interactions

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75) Define Synergism, Summation (addition) and Potentiation with examples.

5. Palpitations

At the end of theme student should be able to:

1) Revision of anatomy & physiology of ANS?
2) Discuss autonomic receptors and explain their role in functional organization of autonomic activity?
3) Explain how different drugs act to modify the autonomic function?
4) Discuss the clinical importance of autonomic pharmacology?
5) Classify Cholinomimetics and anticholinergic drugs.
6) Enlist subtypes & characteristic of cholinergic receptors?
7) Enumerate various direct acting cholinomimetics and write their pharmacokinetics properties
8) Discuss the mechanism of Action, Pharmacological effects and uses of direct acting cholinergic drugs?
9) Enlist the adverse effects, precautions/contraindications and drug interactions of direct acting cholinomimetics.
10) Classify indirectly acting cholinomimetics and give their pharmacokinetic properties
11) Discuss the mechanism of action, pharmacological effects & therapeutic uses of anti- cholinestrases.
12) Discuss the adverse effects, precautions/contraindications & drug interactions of cholinesterase inhibitors?
13) Discuss the role of reversible anti-cholinestrases in treatment of Alzheimer's disease
14) Enlist the features of overdose toxicity of organophosphates and their management
15) Classify Anticholinergic drugs and differentiate between antimuscarinic & anti nicotinic drugs.
16) Write down the pharmacokinetic Properties of Natural Belladonna Alkaloids.
17) Give mechanism of action, Pharmacological effects & uses of Anti-muscarinics.
18) Discuss the adverse effects, precautions /contraindications & drug interactions of antimuscarinic drugs?
19) Enlist the features of overdose toxicity of antimuscarinics and how their management
20) Discuss the role of Ganglion-blocker drugs in modern pharmacology
21) Classify Adrenomimetic drugs.
22) Enlist types & subtypes of Adrenoceptors?
23) Discuss the pharmacokinetic properties of Adrenomimetic drugs.
24) Describe the mechanism of action and pharmacological effects of Adrenomimetics.
25) Discuss the therapeutic uses, adverse effects precautions/ contraindications & drugs interactions of Adrenomimetics
26) Give classification of Antiadrenergics
27) Discuss the pharmacokinetics of alpha – adrenoceptor antagonists
28) Write down themechanism of action, pharmacological effects and clinical uses of alpha- adrenoceptor antagonists.
29) Enlist the adverse effect, precautions/contraindications & drug interactions of alpha adrenoceptor antagonists.
30) Discuss the logic of using long acting alpha adrenoceptor antagonists in the treatment of pheochromocytoma & benign prostatic Hyperplasia
31) Enlist the pharmacokinetic properties of Beta- adrenoceptor antagonists
32) Describe the mechanism of action, pharmacological effects & clinical applications of Beta blockers.
33) Write down the adverse effects, precautions/contraindications & drug interactions of beta – adrenoceptor antagonists.
34) Enlist the drugs used in treatment of Glaucoma along with their mechanism of actions.
35) Write down the clinical importance of adrenergic neuron blockers in modern day therapy.

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PBL-1

68-year-old man presents with a complaint of light-headedness on standing that is worse after meals and in hot environments. Symptoms started about 4 years ago and have slowly progressed to the point that he is disabled. He has fainted several times, but always recovers consciousness almost as soon as he falls. Review of symptoms reveals slight worsening of constipation, urinary retention out of proportion to prostate size, and decreased sweating. He is otherwise healthy with no history of hypertension, diabetes, or Parkinson's disease. Because of his urinary retention, he was placed on the α 1 antagonist tamsulosin but he could not tolerate it because of worsening of orthostatic hypotension. Physical examination revealed a blood pressure of 167/84 mm Hg supine and 106/55 mm Hg standing. There was an inadequate compensatory increase in heart rate (from 84 to 88 bpm), considering the degree of orthostatic hypotension. Physical examination is otherwise unremarkable with no evidence of peripheral neuropathy or parkinsonian features. Laboratory examinations are negative except for plasma norepinephrine, which is low at 98 pg/mL (normal is 250–400 pg/mL for his age).

PBL-2

A 55 year old man resident of Swat was removing ice from his car screen when he became quite uncomfortable and began excessively sweating. He felt quite dizzy. He was taken to the hospital where his pulse was 120 beats per minute and blood pressure was 90/56. On examination he had tenderness in liver area. His random blood glucose was 275 mg/dl. He had a history of smoking 2 packs per day, naswar and alcohol.

PBL-3

A 26-year-old man is brought by friends to the emergency department of the city hospital because he has been behaving strangely for several days. A known user of methamphetamine, he has not eaten or slept in 48 hours. He threatened to shoot one of his friends because he believes this friend is plotting against him. On admission, the man is extremely agitated, appears to be underweight, and is unable to give a coherent history. He has to be restrained to prevent him from walking out of the emergency department and into traffic on the street. His blood pressure is 160/100 mm Hg, heart rate 100, temperature 39°C, and respirations 30/ min. His arms show evidence of numerous intravenous injections. The remainder of his physical examination is unremarkable. After evaluation, the man is given a sedative, fluids, a diuretic, and ammonium chloride parenterally.

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Recommended Books

1. Basic Pathology by Robbins 9th edition
2. Pathologic Basis of Disease 8th edition
3. Jawetzs Medical Microbiology 25th edition
4. Warren Levinson Microbiology
5. Pathology illustrated 25th edition
6. Walter & Israel General pathology 7th edition
7. Katzungs Basic and clinical pharmacology 12th edition
8. Rang and Dale Pharmacology, 7th Edition
9. Parikhs text book of medical jurisprudence, forensic medicine and toxicology 6th edition
10. Text book of forensic medicine and toxicology 2nd edition
11. Ansari Public health and community medicine 7th edition
12. Epidemiology and biostatics by Richard Hebel 7th edition.
13. Tietz Fundamentals of Clinical Chemistry
14. Kaplan Book of Clinical Chemistry

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CAUTION!
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CPGAP Module – (3rd Year)

Week-1

<table>
<tr><td>DATE→</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>TIME↓</td><td>MONDAY</td><td>TUESDAY</td><td>WEDNESDAY</td><td>THURSDAY</td><td>FRIDAY</td></tr>
<tr><td>8:00am-
09:00am</td><td>LGIS
Introduction to CPGAP Module
Prof. Anwar & Module Team</td><td>LGIS
Red Cell Injury
Dr. Malik Mahmood</td><td rowspan="2">SGD
Pharmacokinetics-II
Dr. Arif & Team-4

Wrap-up
Dr. Arif/Dr. Inayat</td><td>LGIS
Cellular Adaptation & Intracellular Accumulation
Dr. Sarosh Majid</td><td rowspan="2">SGD
Postmortem Examination-I
Dr. Naseer & Team</td></tr>
<tr><td>9:00am -
10:00am</td><td rowspan="4">CLINICAL ROTATION</td><td>LGIS
Microbial Cell Injury
Dr. Muhammad Munir</td><td rowspan="3">CLINICAL ROTATION</td></tr>
<tr><td>10:00am-
10:30am</td><td colspan="2">BREAK</td><td>BREAK</td></tr>
<tr><td>10:30am-
11:30am</td><td rowspan="2">SGD
Pharmacokinetics-I
Dr. Arif & Team-4

Wrap-up
Dr. Arif/Dr. Inayat</td><td>SDL
Pharmacokinetics</td><td rowspan="2">SGD
Pharmacokinetics-VI
Dr. Arif/Dr. Inayat</td></tr>
<tr><td>11:30am-
12:30pm</td><td rowspan="2">SGD
Pharmacokinetics-III
Dr. Arif & Team-4

Wrap-up
Dr. Arif/Dr. Inayat</td></tr>
<tr><td>12:30pm–
1:30pm</td><td>LGIS
Introduction to Forensic Medicine
Dr. Humayun/ Dr. Naseer</td><td>SGD
Reversible Cell Injury
Dr. Anwar/ Dr. Wafa</td><td>LGIS
Pharmacokinetics-IV
Dr. Arif/Dr. Inayat</td><td>SDL</td></tr>
<tr><td>1:30pm–
2:00pm</td><td colspan="5">LUNCH BREAK</td></tr>
<tr><td>2:00pm-
3:00pm</td><td>LGIS
Introduction to Pharmacology
Dr. Arif/ Dr. Inayat</td><td>PBL-1A
Dr. Arif & Team-4</td><td>LGIS
Irreversible Cell Injury
Dr. Sarosh Majid</td><td rowspan="2">SGD
Pharmacokinetics-V
Dr. Arif & Team-4

Wrap-up
Dr. Arif/Dr. Inayat</td><td rowspan="2">SDL</td></tr>
<tr><td>3:00pm-
4:00pm</td><td>LGIS
Meet the Healthy Cell
Dr. Anwar</td><td>LGIS
Medicolegal System of Death Investigation
Dr. Humayun/ Dr. Naseer</td><td>LGIS
Bacterial Cell Culture
Dr. Muhammad Munir</td></tr>
</table>

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CPGAP Module – (3rd Year)

Week-2

DATE→					
TIME↓	**MONDAY**	**TUESDAY**	**WEDNESDAY**	**THURSDAY**	**FRIDAY**
8:00am-09:00am	**LGIS** Diagnostic Techniques for Infections Agents **Dr. Munir**	**LGIS** Normal Flora **Dr. Mumtaz Khan**	**LGIS** Biomarkers of Cell Injury **Dr. Sobia Irum**	**LGIS** Pharmacodynamics-VII **Dr.Arif/Dr. Inayat**	**PBL-1B** **Dr. Arif & Team-3**
9:00am - 10:00am	**CLINICAL ROTATION**	**LGIS** Pharmacodynamics-II **Dr. Arif/Dr. Inayat**	**LGIS** Pharmacodynamics-V **Dr. Arif/Dr. Inayat**	**CLINICAL ROTATION**	
10:00am-10:30am		**BREAK**			**BREAK**
10:30am-11:30am		**SGD** Pharmacodynamics-III **Dr.Arif & Team-4**	**LGIS** Exhumation **Dr. Humayun/ Dr. Arif**		**SGD** Pharmacodynamics-VIII **Dr.Arif& Team-4**
11:30am-12:30pm		**WRAP-UP** **Dr. Arif**	**SGD** Pharmacodynamics-VI **Dr.Arif & Team-4**		**WRAP-UP** **Dr. Arif**
12:30pm–1:30pm	**LGIS** Postmortem Examination-II **Dr. Naseer Sheikh**	**LGIS** Postmortem Examination-III **Dr. Naseer Sheikh**	**WRAP-UP** **Dr. Arif**	**LGIS** **Dr. Humayun/ Dr. Naseer**	**SDL**
1:30pm–2:00pm	**LUNCH BREAK**				
2:00pm-3:00pm	**SGD** Pharmacodynamics-I **Dr.Arif & Team-4**	**LGIS** Pharmacodynamics-IV **Dr.Arif/Dr. Inayat**	**PBL-2A** **Dr. Anwar & Team-3**	**PRACTICAL** Gram Stain **Dr. Mumtaz & Team-3**	**SDL**
3:00pm-4:00pm	**WRAP-UP** **Dr. Arif**	**SDL**	**SDL**		

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CPGAP Module – (3rd Year)

Week-3

<table>
<tr><td>DATE→</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>TIME↓</td><td>MONDAY</td><td>TUESDAY</td><td>WEDNESDAY</td><td>THURSDAY</td><td>FRIDAY</td></tr>
<tr><td>8:00am-09:00am</td><td>LGIS
Drug Clearance in Hepatic & Renal Failure
Prof. Arif</td><td>LGIS
Cholinergics-III
Prof. Arif / Dr. Inayat</td><td rowspan="2">SGD
Anticholinergic -II
Prof. Arif & Team-4
<u>Wrap-up</u>
Prof. Arif / Dr. Inayat</td><td>LGIS
Classification of Fungi
Prof. Anwar ul Haq</td><td>LGIS
Management of Myasthenia, Gravis, Alzheimer Disease & Parkinsonism-I
Dr. Liaqat Awan</td></tr>
<tr><td>9:00am - 10:00am</td><td rowspan="4">CLINICAL ROTATION</td><td>LGIS
Prevention of Infectious Disease
Dr. Ahmed Khan</td><td rowspan="3">CLINICAL ROTATION</td><td>PBL-3A
Prof. Arif & Team-4</td></tr>
<tr><td>10:00am-10:30am</td><td colspan="2">BREAK</td><td>BREAK</td></tr>
<tr><td>10:30am-11:30am</td><td rowspan="2">SGD
Cholinergic-IV
Prof. Arif & Team-4
<u>Wrap-up</u>
Prof. Arif/ Dr. Inayat</td><td>LGIS
Transmission of Microbes
Dr. Mumtaz Khan</td><td>SGD
Anticholinergic-IV
Prof. Arif & Team-4
<u>Wrap-up</u>
Prof. Arif / Dr. Inayat</td></tr>
<tr><td>11:30am-12:30pm</td><td rowspan="2">PBL-2B
Dr. Anwar & Team-3</td></tr>
<tr><td>12:30pm–1:30pm</td><td>LGIS
Cholinergics-I
Prof. Arif/ Dr. Inayat</td><td>LGIS
Antibiotic Resistance
Dr. Muhammad Munir</td><td>LGIS
Anticholinergic-III
Dr. Arif/ Dr. Inayat</td><td>SDL</td></tr>
<tr><td>1:30pm–2:00pm</td><td colspan="5">LUNCH BREAK</td></tr>
<tr><td>2:00pm-3:00pm</td><td>LGIS
Bacterial Cell Structure & it's Classification
Prof. Munir</td><td>LGIS
Anticholinergic-I
Prof. Arif/ Dr. Inayat</td><td>LGIS
Role of NMBs in Anesthesia + Management of Organophosphate Poisoning
Dr. Ahsan Ul Haque/ Dr. Javed Rathore</td><td rowspan="2">PRACTICAL
Reversible Cell Injury & Adaptation
Dr. Sarosh Majid & Team-3</td><td rowspan="2">SDL</td></tr>
<tr><td>3:00pm-4:00pm</td><td>LGIS
Cholinergics-II
Prof. Arif / Dr. Inayat</td><td>SDL</td><td>SDL</td></tr>
</table>

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AJK Medical College, Muzaffarabad

CPGAP Module – Class of 2013-18 (3rd Year)

Week-4

DATE→					
TIME↓	**MONDAY**	**TUESDAY**	**WEDNESDAY**	**THURSDAY**	**FRIDAY**
8:00am-09:00am	**LGIS** Adrenergic-I **Dr. Arif/ Dr. Inayat**	**LGIS** Management of Glaucoma and Role of Decongestant in Eye **Dr. Bushra**	**LGIS** Management of Overactive Bladder, Stress Incontinence and BPH-I **Dr. Mohsin shakeel**	**LGIS** Adrenergic-III **Dr. Arif/ Dr. Inayat**	**SGD** Anti-Adrenergic-III **Dr. Arif & Team-4** **Wrap-up** **Dr. Arif/ Dr. Inayat**
9:00am - 10:00am	**CLINICAL ROTATION**	**LGIS** Management of ADHD-I **Dr. Ayesha**	**LGIS** Management of Acute & Chronic Heart Failure-I **Dr. Rizwan Abid**	**CLINICAL ROTATION**	
		Role of Decongestants in ENT **Dr. Farooq**	Asthma-I **Dr. Ashfaq Ahmed**		
10:00am-10:30am		**BREAK**			**BREAK**
10:30am-11:30am		**LGIS** Classification of Fungi and Transmission of Microbes **Dr. Mumtaz Khan**	**SGD** Adrenergic-II **Dr. Arif & Team-4** **Wrap-up** **Dr. Arif/ Dr. Inayat**		**SGD** Anti-Adrenergic-IV **Dr. Arif & Team-4** **Wrap-up** **Dr. Arif/ Dr. Inayat**
11:30am-12:30pm		**PBL-3B** **Dr. Arif & Team-4**			
12:30pm–1:30pm	**LGIS** Disinfection & Sterilization **Dr. Mumtaz Khan**		**LGIS** Bacterial Cell Structure & it's Classification **Dr. Mumtaz Khan**	**LGIS** Pheochromocytoma and its Management **Dr. Ziyad Afzal Kayani**	**SDL**
1:30pm–2:00pm	**LUNCH BREAK**				
2:00pm-3:00pm	**PRACTICAL** Necrosis & Apoptosis **Dr. Anwar & Team-3**	**PRACTICAL** Reversible Cell Injury & Adaptation **Dr. Sarosh Majid & Team-3**	**LGIS** Anti-Adrenergic-II **Dr. Arif/ Dr. Inayat**	**SGD** Adrenergic-IV **Dr. Arif & Team-4** **Wrap-up** **Dr. Arif/ Dr. Inayat**	**SDL**
3:00pm-4:00pm			**SDL**		

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