

## AIMS

- To evaluate the effect of integration of a non-dispensing pharmacist in general practice on the safety of pharmacotherapy
- To understand the role of Clinical Pharmacist to improve Rational Drug Use
- To **impart knowledge** and skills necessary for contribution to quality use of medicines.

## OBJECTIVES

- To understand the Etiopathogenesis. Clinical manifestations, Management of selected diseases and other parameters which are related in initiating drug therapy
- To understand the needs to identify the patient-specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, time-course of clinical and laboratory indices of therapeutic response and adverse effects)
- Assess patient-specific disease states
- Collaborate with patients, caregivers, and health professionals
- Select and recommend a comprehensive drug therapy plan
- Educate patients and health professionals

## OUTCOME

- To know the pathophysiology of selected diseases states and the rationale for drug therapy.
- To evaluate patient-specific drug therapy and therapeutic problems.
- To Summarise the therapeutic approach for the management of these diseases including reference to the latest available evidence.
- To address the controversies in drug therapy
- To communicate with patients and health professionals.
- To understand importance of preparation of individualised therapeutic plans based on diagnosis.

**Topic 1: Cardiovascular System**

27 hours

Lecture hour	Topic to be covered
6	Hypertension
4	Congestive cardiac failure
4	Angina Pectoris
3	Myocardial infarction
4	Hyperlipidemia
3	Electrophysiology of heart
3	Arrhythmias

**1A: Hypertension**

6 hours

**Long Essays - 10 Marks**

- 1) Explain the pathophysiology and management of hypertension.
- 2) Explain the treatment protocol of Hypertension.
- 3) Explain in detail about compelling indication of Hypertension.
- 4) Explain the pathogenesis and pharmacotherapy of hypertension.
- 5) Define and classify hypertension according to JNC guidelines. Explain the etiology, pathogenesis and pharmacotherapy of essential hypertension.
- 6) Discuss management of hypertension with treatment algorithm • Enumerate the risk factors and complications of Hypertension.

**Short Essays - 5 Marks**

- 1) Define hypertension and write its types and aetiology
- 2) Explain Therapeutic management of hypertension with special reference to drug of choice.
- 3) Write the management of Hypertensive crisis.
- 4) Explain clinical manifestations and complications of hypertension.

**Short Answers - 2 Marks**

- 1) Write JNC 7 Classification of Hypertension.
- 2) Define Malignant Hypertension
- 3) Define Hypertensive Urgency and Hypertensive Emergency
- 4) Mention ADRs of diuretics.
- 5) Explain DASH therapy.
- 6) Why diuretics are least preferred in Indian population for the management of Hypertension.
- 7) Define Pseudo hypertension and emergency hypertension.
- 8) Enlist ADRs of ACE Inhibitors.
- 9) Mention the role of diuretics in hypertension therapy.
- 10) Define accelerated hypertension.
- 11) Define Hypertensive crisis and classify it.

**1B: Congestive cardiac failure****4 hours****Long Essays - 10 Marks**

- 1) What is atherosclerosis? Explain the management of atherosclerosis.
- 2) Define Congestive heart failure and its management.
- 3) Explain the pharmacotherapy of congestive cardiac failure.

**Short Essays - 5 Marks**

- 1) Define CCF. Write its aetiology, signs & symptoms of CCF.
- 2) Explain the role of inotropic agents in the treatment of congestive heart failure.
- 3) Explain the role of diuretics and sympathomimetics in congestive cardiac failure.
- 4) Mention the investigations performed to confirm the diagnosis of heart failure.

**Short Answers - 2 Marks**

- 1) Explain the role of digoxin in congestive cardiac failure.
- 2) List the risk factors for congestive cardiac failure.
- 3) Define CCF.
- 4) Comment on diuretic and digoxin combination in management of congestive cardiac failure.
- 5) ABCDE standard treatment for coronary heart disease.
- 6) Mention NYHA classification of functional status of the patient with heart failure.
- 7) List the clinical manifestations of heart failure.
- 8) Enlist vasodilators used in heart failure.
- 9) Enumerate ADR's of Digoxin.
- 10) Differentiate between right heart failure and left heart failure.

**1C: Angina Pectoris****4 hours****Short Essays - 5 Marks**

- 1) Define angina pectoris. Describe its aetiology and pathogenesis.
- 2) Explain signs and symptoms and pharmacotherapy of angina.
- 3) Explain therapeutic management of Angina Pectoris.
- 4) Explain the role of nitrates in coronary heart disease.
- 5) Explain different types of angina pectoris and its management.

**Short Answers - 2 Marks**

- 1) Define angina pectoris, outline different types of angina
- 2) Mention the role of Nitro-glycerine in angina
- 3) Mention the role of calcium channel blockers in angina
- 4) Mention diagnostic tests for angina pectoris.
- 5) Write the differential diagnosis between angina and myocardial infarction.
- 6) Define nitrate tolerance. How it can be prevented.

- 7) Write the mechanism of action of nitrates and list out its adverse effects.  
8) Define variant angina.  
9) Mention adverse effects of nitrates.  
10) Differentiate between ISMN & ISDN.

**1D: Myocardial Infarction****3 hours****Short Essays - 5 Marks**

- 1) Explain the treatment algorithm for the treatment of acute MI
- 2) Describe the aetiology, clinical features and investigations of ischemic heart disease.
- 3) Explain therapeutic management of MI.
- 4) Define myocardial infarction. Explain the etiopathogenesis, risk factors, treatment
- 5) Write the treatment algorithm for NSTEMI.

**Short Answers - 2 Marks**

- 1) Write the treatment goals of IHD.
- 2) Mention role of morphine in the management of myocardial infarction.
- 3) Enlist Diagnosis tests used for myocardial infarction.
- 4) Define myocardial infarction. Mention its risk factors.
- 5) Write the importance of lactate dehydrogenase and troponins.
- 6) Mention any four Fibrinolytic agents.
- 7) Mention the indication and treatment regimen for Streptokinase.
- 8) Mention the significance of ECG in myocardial infarction.
- 9) Differentiate between STEM! and NSTEMI.

**1E: Hyperlipidemia****4 hours****Short Essays - 5 Marks**

- 1) Explain Pharmacotherapy of hyperlipidaemias.
- 2) Explain etiopathogenesis of Hyperlipidaemias.
- 3) Write the pharmacological and non-pharmacological management of dyslipidaemia
- 4) Discuss the role of HMG CO-A reductase inhibitors and fibrates in the management of hyperlipidaemia

**Short Answers - 2 Marks**

- 1) List the types of primary hyperlipidaemia
- 2) Write the dosage regimen of any two statins with their adverse effects
- 3) Write the complications of Hyperlipidaemias
- 4) Enlist different etiological conditions of Hyperlipidaemias
- 5) Suggest in brief the life style modification of hyperlipidaemia
- 6) Explain the role of statins in hyperlipidaemia
- 7) Define diabetic dyslipidaemia
- 8) Mention any four ADRs of statins.

**IF: Electrophysiology of heart****3 hours****Short Essays - 5 Marks**

- 1) Explain different phases of ECG.
- 2) Explain the electrophysiology of heart.

**Short Answers - 2 Marks**

- 1) Mention the drugs which causes Q-T prolongation
- 2) Draw a neat labelled diagram of normal ECG. Enlist various intervals and what they represent.
- 3) Illustrate the electrophysiology of the heart

**1G: Arrhythmias****3 hours****Long Essays - 10 Marks**

- 1) Explain pharmacotherapy of cardiac arrhythmia
- 2) Explain the etiopathogenesis, pharmacotherapy for cardiac arrhythmia with treatment algorithm
- 3) Explain the pharmacology of arrhythmia

**Short Essays - 5 Marks**

- 1) Write in detail about aetiology, signs & symptoms of Arrhythmia.
- 2) Explain the pathogenesis of cardiac arrhythmias
- 3) Explain different types of arrhythmia.
- 4) Explain the role of class-I anti-arrhythmic agents.

**Short Answers - 2 Marks**

- 1) Enlist different types of Arrhythmias
- 2) Mention the clinical features of arrhythmia
- 3) Write the mechanism of action and adverse effects of Amiodarone.

Lecture hour	Topic to be covered
2	Introduction to Pulmonary function test
4	Asthma
4	Chronic obstructive airways disease
3	Drug induced pulmonary diseases

**2A: Introduction to Pulmonary Function Test**
**2 hours**
**Short Essays - 5 Marks**

- 1) Discuss in detail the significance of pulmonary function test in respiratory disorders
- 2) Differentiate lung volume tests and lung capacities with a neat illustration
- 3) Explain different Pulmonary function tests.
- 4) Discuss in detail importance of pulmonary function test in COPD and asthma.

**Short Answers - 2 Marks**

- 1) What is the significance of Pulmonary Function test
- 2) Enlist different types of Pulmonary Function Test
- 3) Define lung volume and lung capacity
- 4) Mention the significance of Spirometry
- 5) Define tidal volume and vital capacity.
- 6) Define PEFR and FEV<sub>1</sub>

**2B: Asthma**
**4 hours**
**Long Essays - 10 Marks**

- 1) Discuss in detail treatment of asthma
- 2) Discuss the etiology, pathogenesis, signs and symptoms, diagnosis and pharmacotherapy of asthma.
- 3) Discuss the management of asthma with treatment algorithm.
- 4) Discuss in detail management of Acute Severe Asthma and write its algorithm.

**Short Essays - 5 Marks**

- 1) Discuss in detail Etiopathogenesis of Asthma
- 2) Explain the role of inhaled beta agonists in the management of asthma.
- 3) Discuss in detail management of exercise induced Asthma
- 4) Discuss in detail step on therapy for Asthma
- 5) Write the Steps involved in using Metered Dose Inhalers.
- 6) Write the Pharmacological and non- pharmacological therapy for asthma.
- 7) Discuss the role of sympathomimetics and methyl xanthine in management of asthma

- 1) Define and Classify Asthma
- 2) Differentiate Extrinsic and Intrinsic asthma
- 3) Enlist triggering factors for Asthma
- 4) Enlist etiologic factors for Asthma
- 5) What are the sign and symptoms for Asthma
- 6) Write the difference between Asthma & COPD
- 7) Write the dosing of intravenous aminophylline in acute severe asthma.
- 8) Mention the Diet for asthma.
- 9) Define pulmonary embolism?
- 10) Differentiate between bronchitis and emphysema.
- 11) Define Cor-pulmonale
- 12) Mention the clinical presentations of Asthma.

**2C: COPD****4 hours****Long Essays - 10 Marks**

- 1) Discuss in detail treatment of COPD
- 2) Explain pharmacotherapy of COPD
- 3) Discuss in detail Pharmacology of COPD

**Short Essays - 5 Marks**

- 1) Discuss in detail about etiopathogenesis of COPD
- 2) Discuss the GOLD guidelines for the management of COPD
- 3) Explain in detail non-pharmacological treatment of COPD
- 4) Explain treatment algorithm of COPD in detail
- 5) Describe the role of antibiotics and corticosteroids in COPD
- 6) Explain the common therapeutic problems associated with stages of COPD

**Short Answers - 2 Marks**

1. Define COPD. List down its symptoms
2. Discuss the difference between Chronic Bronchitis and Emphysema based on clinical manifestations
3. What is pack years? Give equation to calculate the same.
4. List out the Clinical manifestations for Chronic Bronchitis
5. What is Blue bloaters and Pink puffers.
6. Write a short note on smoking cessation in COPD
7. Mention the role of corticosteroids in COPD.
8. List the Treatment goals of COPD
9. Define Long Term Oxygen Therapy (LTOT)
10. Mention Guidelines for prescribing LTOT
11. Describe the mMRC scale

**Short Essays - 5 Marks**

- 1) Write a short note on Drugs induced Pulmonary disorders
- 2) Enumerate drug induced pulmonary diseases. Explain pharmacotherapy of any one of them.
- 3) List out the various drug induced pulmonary disorders. Explain any two mechanisms

**Short Answers - 2 Marks**

- 1) Give examples of drugs that causes Bronchospasm
- 2) Enlist the drugs causes Fibrosis
- 3) Name any four drugs that cause pulmonary disorders.

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Lecture hour	Topic to be covered
6	Diabetes
4	Thyroid diseases
2	Oral contraceptives
2	Hormone replacement therapy
3	Osteoporosis

**3A: Diabetes**
**6 hours**
**Long Essays - 10 Marks**

- 1) Discuss in detail general management of Type II Diabetes mellitus
- 2) Discuss in detail about Diabetes mellitus complications and its management.
- 3) Explain pathogenesis, diagnostic tests and Pharmacotherapy of Diabetes mellitus.
- 4) Explain the pharmacotherapy of IDDM/type I diabetes mellitus.
- 5) Explain the pathophysiology, symptoms, treatment goals and treatment of diabetes mellitus with oral drugs.
- 6) Define and classify diabetes mellitus. Discuss in detail about insulins in diabetic management.
- 7) Enumerate the various types of insulins and explain, the insulin regimens in the management of type I diabetes mellitus.

**Short Essays - 5 Marks:**

- 1) Discuss in detail management of Diabetic ketoacidosis
- 2) Discuss in detail Pharmacology of type II diabetes mellitus.
- 3) **Write** a short note on Insulins
- 4) Differentiate Insulin Preparation based on Onset of action, duration of action and peak.
- 5) Differentiate Type I and Type II Diabetes mellitus
- 6) Discuss the complications involved in diabetes mellitus.
- 7) Explain the pharmacotherapy of type II DM emphasizing the ADR of each group of agents.
- 8) Discuss the role of thiazolidinediones in the management of type II diabetes mellitus.
- 9) Explain the counselling points to diabetic patients with respect to diet and life style.

**Short Answers - 2 Marks:**

- 1) Define Diabetes mellitus
- 2) Discuss the difference between Type I and Type II Diabetes mellitus
- 3) What are the signs and symptoms for Diabetes mellitus
- 4) What is diabetic nephropathy
- 5) Define HbA1C.
- 6) What is nocturnal hypoglycaemia?
- 7) Define Diabetic Ketoacidosis.
- 8) Define Hyperosmolar hyperglycemic state.

- 10) Mention appropriate diet for hyperglycemic patients.
- 11) Why would nocturnal hypoglycaemia cause elevated blood glucose level in morning.
- 12) What are the types and their clinical features of diabetes mellitus?
- 13) Explain Patient counselling for patients taking insulin.
- 14) Explain Glucose tolerance test.
- 15) What is lipohypertrophy.
- 16) What is gestational diabetes.
- 17) Enlist the various microvascular and macrovascular complications associated with diabetes mellitus.
- 18) What is diabetic neuropathy.
- 19) What is diabetic nephropathy.

**3B: Thyroid disease****4 hours****Short Essays - 5 Marks**

- 1) Discuss in detail about Grave's disease.
- 2) Explain in detail about Anti-hyperthyroid drugs.
- 3) Discuss in detail management of Myxedema coma
- 4) Explain in detail about etiology, clinical manifestations and treatment of hyperthyroidism
- 5) Explain in detail about etiology, clinical manifestations and treatment of hypothyroidism.
- 6) Write a note on Goitre.
- 7) Explain treatment modalities of hypothyroidism.

**Short Answers - 2 Marks**

- 1) **What** is Thyroid storm.
- 2) What are the clinical features and diagnosis for Hyperthyroidism.
- 3) Discuss in detail about Hashimoto disease.
- 4) What are the clinical features and diagnosis for Hypothyroid
- 5) Write a short note on Thyroxine.
- 6) Define thyrotoxicosis.
- 7) Explain thyroxine administration in pregnancy.
- 8) Discuss the difference in Hyperthyroidism and Hypothyroidism.
- 9) Enumerate 4 drug effects on thyroid function.
- 10) Define Grave's disease.
- 11) Mention Counselling points for patient on anti-thyroid drugs.
- 12) Enlist some adverse effects and contraindication of radioactive iodine
- 13) How does amiodarone causes Thyrotoxicosis.
- 14) Explain in brief about Thyroid ablative therapy.
- 15) What is hyperparathyroidism its causes and symptoms?
- 16) Mention the management of Iodine deficiency in pregnancy.

**3C: Oral Contraceptives****2 hours****Short Essays - 5 Marks**

- 1) Write a note on Oral contraceptives.
- 2) Enlist the merits and demerits of various contraceptives.
- 3) Explain the Principles of oral contraception.

**Short Answers -2 Marks**

- 1) What are the advantages and disadvantages of Oral contraceptives
- 2) Enlist the major adverse effects of Oral contraceptives
- 3) Enlist the various complications associated with the use of oral contraceptives.
- 4) Administration of estrogens.
- 5) Define mini pills,
- 6) Enlist patient instructions for using oral contraceptives.
- 7) Mention commonly prescribed oral contraceptives
- 8) Enlist the various types of oral contraceptives.

**3D: Hormone Replacement Therapy****2 hours****Short Essays - 5 Marks**

- 1) What are the risks and benefit of Hormone therapy
- 2) Write a short note on Hormonal regimens
- 3) Explain hormone replacement therapy in detail.
- 4) Discuss the treatment objectives with the use of HRT in post -menopausal women.
- 5) Explain the need and importance of HRT.
- 6) Explain the general principles of hormonal replacement therapy.

**Short Answers - 2 Marks**

- 1) Mention the Risks of HRT.
- 2) Mention the need of HRT.
- 3) **List** the symptoms of menopause.
- 4) Define HRT and its significance.
- 5) Mention the importance of administration of estrogen.
- 6) Explain oestrogen and progesterone regimens for use in HRT.
- 7) Mention the signs and symptoms of stopping HRT.
- 8) Define SERMS.
- 9) Mention the non-pharmacological treatment for menopausal symptoms.
- 10) What are the clinical features of Menopause
- II) What are the diagnosis parameters of Menopause
- 12) Write a short note on administration of Estrogens
- 13) Give example of five common combination Post-menopausal Hormone therapy regimens

3E: Osteoporosis

3 hours

Long Essays - 10 Marks

- 1) Discuss in detail management of Osteoporosis
- 2) Describe the clinical features, diagnosis, pathophysiology and treatment of osteoporosis.

Short Essays - 5 Marks

- 1) Discuss in detail etiopathogenesis of Osteoporosis
- 2) Write clinical manifestations, and treatment options of osteoporosis.
- 3) Explain in detail about treatment of osteoporosis in postmenopausal women along with its treatment algorithm.
- 4) Explain in detail about antiresorptive therapy for osteoporosis.

Short Answers - 2 Marks

- 1) Define Osteoporosis
- 2) Define Osteoclast and Osteoblast
- 3) What are the clinical features of Osteoporosis
- 4) What are the treatment goals for Osteoporosis
- 5) Explain the role of Calcium in Osteoporosis
- 6) Enlist the drugs used for treating osteoporosis with their dose and adverse effects
- 7) Write the risk factors for osteoporosis
- 8) Enlist any four drugs which will cause osteoporosis.
- 9) Write the diagnostic tests for confirming osteoporosis.
- 10) Enlist the non-pharmacological therapy for osteoporosis.
- 11) Write the Importance of bisphosphonates in osteoporosis.
- 12) Enlist the ADRs of bisphosphonate therapy.
- 13) Define Glucocorticoids induced Osteoporosis.
- 14) Define RANK ligand.
- 15) Define T-score.

Lecture hour	Topic to be covered
2	General Prescribing Guidelines of Pediatric
2	General Prescribing Guidelines for Geriatric
3	General Prescribing Guidelines for Breast feeding and Pregnancy

**4A: Pediatric Guidelines**
**2 hours**
**Short Essays - 5 Marks:**

1. Write the guidelines for prescribing of drugs to paediatrics.
2. Discuss the various formulas used in paediatric dosage calculation.
3. Discuss the various factors in selecting a drug dosage regimens in paediatric population.
4. Write a short note on prescribing guidelines for Paediatric patients

**Short Answers - 2 Marks:**

1. Classify paediatric age groups.
2. Write Young's formula.
3. Write Dilling's formula.
4. Write Fried's formula.
5. Mention contraindicated drugs for paediatrics.
6. Give reason why chloramphenicol is contraindicated in paediatrics

**4B: Geriatric Guidelines**
**2 hours**
**Short Essays — 5 Marks**

1. Write the guidelines for prescribing of drugs to geriatrics
2. Discuss the various factors to be considered while prescribing the drugs in geriatrics.
3. Explain the pharmacokinetic alterations in geriatric populations as by the age.
4. Explain the principles and goals of drug therapy in geriatrics.

**Short Answers — 2 Marks**

1. Why geriatric populations are more susceptible for APR?
2. Enlist the drugs causing confusion in geriatrics.
3. Enlist some adverse effects of NSAIDs commonly seen among geriatrics,
4. Why dosage adjustment is required in renal impairment geriatric patients.
5. Mention the reasons for caution for drug use in elderly.
6. Name some common diseases associated with geriatrics.

**Short Essays — 5 Marks**

- 1, Enumerate the prescribing guidelines for pregnancy and lactation.
2. Explain the categorisation of drugs in pregnancy with suitable examples.
- 3, Explain in detail about drug dosing in pregnancy.

**Short Answers — 2 Marks**

1. Mention four drugs which are contraindicated in pregnancy and breast feeding and mention the reasons.
2. Define the pregnancy category of drugs.
3. Enlist four teratogenic drugs.
4. Mention categorisation of drugs for pregnant and lactating mothers.
- 5, Name any three safer antibiotics used during lactation.
6. What is the effect of alcohol and cigarette smoking on pregnancy.
7. What are the risks associated with valproate treatment in pregnancy?
- 8, What are the safest antidepressants in the first trimester of pregnancy?
9. What effect is smoking likely to have on breast feeding?

Lecture hour	Topic to be covered
4	Glaucoma
3	Conjunctivitis — Viral and Bacterial

**5A: Glaucoma****4 hours****Short Essays - 5 Marks:**

1. Explain the **pharmacotherapy** of glaucoma
2. Draw a neat algorithm for pharmacotherapy of open glaucoma.
3. List out distinguish features of open angle and closed angle glaucoma.
4. Explain in detail about etiology, pathophysiology, clinical manifestations and management of chronic open angle glaucoma.

**Short Answers - 2 Marks:**

1. Mention the drugs used to treat glaucoma.
2. What is open angle glaucoma.
3. Define and classify glaucoma.
4. Define glaucoma.
5. Mention the drugs used in the treatment of chronic open-angle glaucoma.
6. Enlist the ocular and systemic side effects of any 4 drug agents used in glaucoma.
7. Mention the counselling for patients taking eye drops.
8. Enlist the drugs contraindicated in narrow angle glaucoma.
9. Explain suitable alternative agent along with its strength for beta blockers in glaucoma.
10. Define I.O.P with its normal value.
11. Define trabecular meshwork and optic nerve fibre.
12. Differentiate between open angle and angle-closure glaucoma.
13. Discuss the non-pharmacological treatment of glaucoma.

**5B: Conjunctivitis - Viral and Bacterial****3 hours****Short Essays - 5 Marks:**

1. Explain the treatment of viral conjunctivitis.
2. Explain the pharmacotherapy of bacterial conjunctivitis.
3. Describe the etiology, pathogenesis, signs and symptoms of bacterial conjunctivitis.

**Short Answers - 2 Marks:**

1. Mention the signs and symptoms of bacterial conjunctivitis.
2. Differentiate between bacterial and viral conjunctivitis.
3. Enlist the two drugs for treating bacterial conjunctivitis with their adverse effects.
4. Explain the treatment of viral conjunctivitis.
5. Mention the diagnostic tests for conjunctivitis.
6. Mention the non-pharmacological treatment of conjunctivitis.

**Short Essays - 5 Marks:**

1. Define rational drug use. Explain the role of pharmacist in rational drug use.
2. Explain WHO's interventions or guidelines for promoting rational drug use.
3. Explain the role of pharmacist in essential drug concept
4. Explain essential drug concepts.
5. Discuss the strategies to overcome irrational use of drugs.

**Short Answers - 2 Marks:**

1. Define rational drug use and essential drug CC-I C-1<sup>7</sup>
2. What are the general guidelines for rational use of antibiotics
3. Mention the importance of essential drug concept.
4. Define rational drug use and list out its objectives.
5. Define essential drug list.
6. List the obstacles contributing towards rational use of drugs.

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