

Clinical Pharmacotherapeutics (Theory)

BP802T

A Textbook for B. Pharm Semester VIII

*As per the new Pharmacy Council of India (PCI) Syllabus
2026 (NEP 2020)*

Dr. Prevesh Kumar

Associate Professor

IFTM University, Moradabad, Uttar Pradesh.
India

Anchal Gaur

Assistant Professor

ABESIT College of Pharmacy, Ghaziabad,
Uttar Pradesh. India

Abhishek Sharma

Lecturer

Faculty of pharmacy, Madhav University,
Rajasthan, India



Copyright © 2026 Wiseleaf Scientific Ventures Pvt. Ltd.

All rights reserved.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher, except for brief quotations in reviews or scholarly works permitted by copyright law.

ISBN: 978-81-689588-1-4



August, 2026.

Published by: Wiseleaf Scientific Ventures Pvt. Ltd.

Address: Wework - Berger Delhi One Floor 19, C-001/A2, Sector 16b, Noida, Uttar Pradesh, 201301, India

Preface

Clinical pharmacotherapeutics is where the pharmacology of the earlier semesters meets the individual patient. The subject asks a single, disciplined question of every disease: given this patient, with these symptoms, these laboratory values, and these coexisting conditions, what is the rational drug therapy, and how is it monitored and adjusted? This book is built around that question.

The chapters follow the prescribed syllabus unit by unit, from the cardiovascular disorders through the respiratory, renal, endocrine, neurological, gastrointestinal, musculoskeletal, infectious, and haematological systems. Each disease is developed in the same order the clinic reasons in: definition, cause and mechanism, clinical presentation with its subjective and objective parameters, goals of therapy, the drug classes and the rationale for choosing among them, the patient-specific factors that individualize treatment, and the non-pharmacological measures that accompany every regimen. Diagrams and comparison tables are used throughout, and every chapter closes with a graded self-assessment written in the university examination pattern.

The treatment of tuberculosis, malaria, and HIV follows the Indian national programme regimens, since these govern practice in this country. Global guideline logic is given alongside so that the student understands why the regimens take the shape they do.

The book is intended to be read the night before a clinical posting and the week before an examination with equal profit. It rewards the student who wants to understand therapy, not merely to memorize it.

Authors

Dr. Prevesh Kumar

Anchal Gaur

Abhishek Sharma

Course Objectives

The objectives of this course are to:

1. Explain the pathophysiology and clinical manifestations of selected disease conditions and their relevance to drug therapy.
2. Provide an understanding of the pharmacological and therapeutic approaches used in the management of these diseases.
3. Develop the ability to design individualized therapeutic plans based on diagnosis and patient characteristics.
4. Enable identification of patient-specific parameters required for initiating, monitoring, and modifying drug therapy.
5. Familiarize students with evidence-based therapeutic guidelines and non-pharmacological approaches in disease management.

Course Outcomes

Upon successful completion of this course, the students will be able to:

1. Understand the subjective and objective parameters, risk factors for common disease conditions.
2. Describe the general therapeutic approach in management of selected diseases.
3. Identify the patient-specific parameters relevant in initiating the drug therapy.
4. Discuss the rationale for drug therapy of the selected disease.
5. Understand the methods of non-pharmacological management.

Syllabus

Unit	Topics	No. of lectures
I	Definition, etiopathogenesis, clinical manifestations and overview of management of Ischemic Heart Disease: a) Hypertension b) Heart failure c) Myocardial infarction d) Hyperlipidaemia e) Arrhythmia	05 Hours
II	Respiratory System: a) Asthma b) COPD	02 Hours
III	Renal System: a) Acute renal failure b) Chronic renal failure c) Renal replacement therapy	03 Hours
IV	Endocrine System: a) Diabetes b) Thyroid disorders	03 Hours
V	Nervous System: a) Epilepsy b) Stroke c) Parkinsonism	05 Hours
VI	Gastrointestinal System: a) Peptic ulcer disease b) GERD	02 Hours
VII	Diseases of bones and joints: a) Rheumatoid arthritis b) Osteoarthritis	03 Hours
VIII	Infectious Diseases: a) Tuberculosis b) Pneumonia c) UTI d) Malaria e) HIV	04 Hours
IX	Hematological Diseases: a) Anemia	03 Hours

Table of Contents

Preface	iii
Table of Contents	vi
Chapter 1: Introduction to Clinical Pharmacotherapeutics	1
Learning outcomes	1
Introduction	1
What clinical pharmacotherapeutics is.....	1
The therapeutic reasoning workflow.....	2
Subjective and objective parameters, and risk factors (CO1)	3
General therapeutic approach and goals of therapy (CO2).....	4
Patient-specific parameters for initiating, monitoring, and modifying therapy (CO3).....	4
Rationale for drug therapy (CO4)	6
Evidence-based medicine and therapeutic guidelines.....	6
Non-pharmacological management (CO5)	8
Adverse drug reactions, pharmacovigilance, and therapeutic drug monitoring.....	9
Self-assessment	9
Chapter 2: Hypertension.....	11
Learning outcomes	11
Introduction	11
Definition and classification	11
Etiology and pathophysiology	12
Clinical manifestations.....	13
Evaluation parameters	14
Goals of therapy and general therapeutic approach	15
Pharmacotherapy and its rationale	16
Patient-specific considerations.....	19
Non-pharmacological management	19
Self-assessment	20
Chapter 3: Heart Failure	22
Learning outcomes	22
Introduction	22
Definition and classification	22
Etiology and pathophysiology	23
Clinical manifestations.....	25
Goals of therapy and general therapeutic approach	26
Pharmacotherapy and its rationale	26
Patient-specific considerations.....	29
Non-pharmacological management	30
Self-assessment	30
Chapter 4: Ischemic Heart Disease and Myocardial Infarction	31
Learning outcomes	31
Introduction	32
Definition and classification	32
Etiology and pathophysiology	33
Clinical manifestations.....	33
Diagnosis and evaluation parameters.....	34
Goals of therapy and general therapeutic approach	35
Pharmacotherapy and its rationale	36
Patient-specific considerations.....	39
Non-pharmacological management	39
Self-assessment	40
Chapter 5: Hyperlipidaemia and Cardiac Arrhythmias.....	42
Learning outcomes	42
Introduction	42

Section A: Hyperlipidaemia	42
Definition and classification	42
Etiopathogenesis and cardiovascular risk	44
Clinical manifestations and evaluation	44
Goals of therapy and general approach.....	44
Pharmacotherapy and its rationale	45
Patient-specific considerations.....	46
Non-pharmacological management	47
Section B: Cardiac Arrhythmias	47
Definition and electrophysiology.....	47
Classification of arrhythmias	47
Etiopathogenesis	47
Clinical manifestations and diagnosis.....	48
Goals and therapeutic approach	48
Antiarrhythmic pharmacology: the Vaughan-Williams classification.....	48
Atrial fibrillation: rate, rhythm and stroke prevention	50
Adverse effects of amiodarone and monitoring	50
Patient-specific considerations.....	51
Non-pharmacological management	51
Self-assessment	51
Chapter 6: Asthma and COPD	53
Learning outcomes	53
Introduction	53
Definition and classification	53
Etiology and pathophysiology	54
Clinical manifestations and evaluation	55
Goals of therapy and general approach.....	56
Asthma pharmacotherapy and its rationale	56
COPD pharmacotherapy and its rationale.....	59
Patient-specific considerations.....	61
Non-pharmacological management	61
Complications and where therapy fails	62
Self-assessment	62
Chapter 7: Renal Disorders and Renal Replacement Therapy	64
Learning outcomes	64
Introduction	64
Renal function and its measurement	64
Acute kidney injury.....	65
Chronic kidney disease	67
Drug dosing in renal impairment	70
Renal replacement therapy	71
Non-pharmacological management	72
Self-assessment	73
Chapter 8: Diabetes Mellitus and Thyroid Disorders.....	75
Learning outcomes	75
Introduction	75
Part A: Diabetes Mellitus	75
Definition and classification	75
Etiology and pathophysiology	76
Clinical manifestations.....	77
Diagnosis and evaluation	77
Complications	77
Goals of therapy and general approach.....	78
Pharmacotherapy and its rationale	78
Insulin initiation and titration (worked example).....	82

Patient-specific considerations.....	82
Non-pharmacological management	83
Part B: Thyroid Disorders	83
The hypothalamic-pituitary-thyroid axis.....	83
Hypothyroidism	84
Hyperthyroidism (thyrotoxicosis).....	85
Non-pharmacological and supportive measures	86
Self-assessment	86
Chapter 9: Epilepsy	88
Learning outcomes	88
Introduction	88
Definition and classification	88
Etiology and pathophysiology	89
Clinical manifestations.....	90
Diagnosis and evaluation	90
Goals of therapy and general approach.....	91
Pharmacotherapy and its rationale	91
Status epilepticus.....	94
Patient-specific considerations.....	95
Non-pharmacological management	95
Self-assessment	96
Chapter 10: Stroke and Parkinsonism	98
Learning outcomes	98
Introduction	98
Part A: Stroke	98
Definition and classification	98
Etiology and pathophysiology	99
Clinical manifestations.....	100
Diagnosis and evaluation	100
Goals of therapy and general approach.....	101
Pharmacotherapy and its rationale	102
Patient-specific considerations.....	103
Non-pharmacological management	104
Part B: Parkinsonism.....	104
Definition and etiopathogenesis.....	104
Clinical manifestations.....	105
Goals of therapy and general approach.....	106
Pharmacotherapy and its rationale	106
Patient-specific considerations.....	108
Non-pharmacological management	108
Self-assessment	109
Chapter 11: Peptic Ulcer Disease and GERD	111
Learning outcomes	111
Introduction	111
Part A: Peptic Ulcer Disease	111
Part B: Gastro-oesophageal Reflux Disease	116
Self-assessment	119
Chapter 12: Rheumatoid Arthritis and Osteoarthritis	121
Learning outcomes	121
Introduction	121
PART A: Rheumatoid Arthritis.....	121
Definition and classification	121
Etiology and pathophysiology	122
Clinical manifestations and evaluation	123
Goals of therapy and general approach.....	124

Pharmacotherapy and its rationale	125
Patient-specific considerations	128
Non-pharmacological management	128
PART B: Osteoarthritis	128
Definition, etiology and pathophysiology	128
Clinical manifestations and evaluation	129
Goals of therapy and general approach	130
Pharmacotherapy and its rationale	130
Patient-specific considerations and non-pharmacological management	130
Self-assessment	131
Chapter 13: Tuberculosis, Pneumonia and Urinary Tract Infections	133
Learning outcomes	133
Introduction	133
Principles of antimicrobial therapy	133
PART A: Tuberculosis	134
Definition and classification	134
Etiology and pathophysiology	135
Clinical manifestations and evaluation	135
Goals of therapy and general approach	136
Pharmacotherapy and its rationale	137
Patient-specific considerations	139
Non-pharmacological management	139
PART B: Pneumonia	139
Definition and classification	139
Etiology and pathophysiology	139
Clinical manifestations and evaluation	140
Goals of therapy and general approach	141
Pharmacotherapy and its rationale	141
Patient-specific considerations and non-pharmacological management	142
PART C: Urinary Tract Infections	143
Definition and classification	143
Etiology, pathophysiology and risk factors	143
Clinical manifestations and evaluation	143
Goals of therapy and general approach	144
Pharmacotherapy and its rationale	144
Patient-specific considerations and non-pharmacological management	145
Self-assessment	145
Chapter 14: Malaria and HIV/AIDS	148
Learning outcomes	148
Introduction	148
PART A: Malaria	149
Definition, causative species and vector	149
Etiopathogenesis and the parasite life cycle	149
Clinical manifestations and diagnosis	150
Goals of therapy and general approach	150
Pharmacotherapy and its rationale	151
Patient-specific considerations and non-pharmacological management	152
PART B: HIV/AIDS	152
Definition and the causative virus	152
Etiopathogenesis: the replication cycle and CD4 depletion	153
Clinical manifestations, staging and diagnosis	154
Goals of therapy and general approach	154
Pharmacotherapy and its rationale	154
Patient-specific considerations and non-pharmacological management	156
Self-assessment	156

Chapter 15: Anaemia.....	159
Learning outcomes	159
Introduction	159
Definition and classification	160
Etiopathogenesis of the major types	161
Clinical manifestations and evaluation	162
Goals of therapy and general approach.....	163
Pharmacotherapy and its rationale	164
Patient-specific considerations.....	165
Non-pharmacological management	166
Complications and where therapy fails	166
Self-assessment	166
Consolidated References	168