



STUDY GUIDE	
PROGRAM	MBBS
MODULE TITLE	CARDIOVASCULAR SYSTEM-II
ACADEMIC YEAR	3rd Year - 2026
INTRODUCTION	Cardiac conditions are one of the major, preventable causes of mortality in third-world countries like Pakistan; heart attacks are still common in Pakistan. Along with these, cardiac congenital anomalies are not unheard of and are a cause of concern. This module builds on Cardiovascular System-1, in which students have learned the normal structure and function. This module provides the learners with the abnormal functions and corrective measures that need to be taken in order to restore health and Prevent illnesses.
RATIONALE	In order to understand the basis of CVS-related disorders which the students of 3rd year MBBS will come across in their clinical postings, it is imperative that they have a firm grasp on the underlying mechanisms of the diseases and their treatment and prevention aspects.
OUTCOMES	By the end of the module, students should be able to: Justify initial plans of management and prevention of common CVS-related disorders based on knowledge of Pathology, Pharmacology and community medicine.
DEPARTMENTS INVOLVED	1. Community Medicine, 2. Forensic Medicine & Toxicology, 3. General Surgery

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	4. Internal Medicine 5. Pathology & Microbiology, 6. Pharmacology 7. Vascular Surgery
MODULE OBJECTIVES	By the end of the module, students will be able to:
<u>LECTURES</u> COMMUNITY MEDICINE	<p>1. Coronary heart diseases and its prevention</p> <ul style="list-style-type: none"> • Describe coronary heart diseases • Discuss the epidemiology of coronary artery diseases • Describe the prevention and control of coronary artery diseases <p>2. Hypertension</p> <ul style="list-style-type: none"> • Classify Hypertension • Describe epidemiology of hypertension • Explain the “rule of halves” in hypertension • Discuss prevention and control of hypertension <p>3. Rheumatic Heart Disease</p> <ul style="list-style-type: none"> • Describe Rheumatic Heart Disease • Describe the epidemiology of Rheumatic Heart Disease • List the diagnostic criteria of Rheumatic Heart Disease • Discuss prevention and control of Rheumatic Heart Diseases <p>4. Preventive Cardiology</p> <ul style="list-style-type: none"> • Describe the basics of Cardiovascular Disorders • Discuss the Global Burden of Cardiovascular Disorders • List the risk factors of Cardiovascular Disorders

	<ul style="list-style-type: none"> Explain preventive measures of Cardiovascular Disorders
FORENSIC MEDICINE	<p>1. Forensic sexology I: Virginity & Pregnancy and their medico legal perspectives</p> <ul style="list-style-type: none"> Describe signs of virginity on medico-legal examination List the differences between true and false virgin on examination Define defloration along with causes of rupture of hymen State the method of estimation of duration of a torn hymen Calculate EDD (Expected date of delivery) List the signs of pregnancy (presumptive, probable and definite signs) Describe the diagnosis of pregnancy in medico-legal cases List the motives of feigned pregnancy List the abnormal forms of pregnancy Define legitimacy and legitimate child as per law. <p>2. Forensic sexology II: Delivery and its medico legal aspects</p> <ul style="list-style-type: none"> Describe signs of recent delivery in living and in dead Describe the signs of remote delivery in living and in dead State the medico legal aspects of delivery <p>3. Forensic sexology III: Impotence, Sterility & Artificial insemination</p> <ul style="list-style-type: none"> Define consummation of marriage List the causes of nullity of marriage and divorce from legal aspects Describe Impotency and sterility with legal dictums List the causes of impotency and sterility Mention the steps of examination of a case of impotency and how to give opinion in such case Discuss artificial insemination, its types, procedure, precautions in selecting a donor, and legal implications. Surrogate birth.

4. Forensic sexology IV: Abortion & it's the medico-legal aspects

- Define the types of abortion
- List the grounds for abortion with special emphasis on pregnancy after rape
- Define criminal abortion and its type according to Pakistan Penal Code and unskilled, semi-skilled, and skilled methods of criminal abortion
- List the complications of Criminal abortion
- List the causes of death in criminal abortion and autopsy findings

5. Forensic sexology V: Natural Sexual offenses (Rape & Incest)

- Classify sexual offenses
- State the legal definition of Rape
- Mention the procedure of examination of a victim of rape, collection of specimens during examination
- Mention the procedure of examination of an accused person
- Discuss rape in children
- List the complications following rape with special stress on post-traumatic stress disorder.
- List the problems in the medico-legal examination of victim of rape
- Define Incest and its legal aspects

6. Forensic sexology VI: Unnatural sexual offence

- Describe legal definition of sodomy and its types
- Discuss the steps of examination of a victim of Sodomy, a habitual passive agent (Catamite), and habitual active agent

(Sodomite)

- Describe the method of collection of samples from passive and active agents.
- Describe the following:
 - Bestiality and the method of examination in such cases
 - Tribadism or female homosexuality and its legal aspects
 - Buccal coitus

7. Forensic sexology VII: Sexual Perversions

- Define a sexual pervert
- List the various types of sexual perversions with special emphasis on Sadism, lust murder, necrophilia, necrophilia, Masochism, Transvestism and Transsexualism and other sexual perversions their medicolegal aspects

8. Therapeutic poisons II- Aspirin and Paracetamol poisoning

- Describe the mode of action, signs and symptoms, fatal dose, fatal period, treatment and medico legal importance of aspirin & paracetamol poisoning

**GENERAL
SURGERY**

1. Shock

- Define shock
- Classify shock
- Explain the:
 - I. Pathophysiology of Shock
 - II. cardiovascular and metabolic characteristics of shock
 - III. Severity and consequences of shock
- Describe the principles of Resuscitation, fluid therapy

2. Hemorrhage

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	<ul style="list-style-type: none">• Define Hemorrhage• Classify hemorrhage and its degrees• List the indications for transfusion, transfusion of blood and blood components for hemorrhage• discuss the hazards of massive blood transfusion & transfusion
INTERNAL MEDICINE	<ol style="list-style-type: none">1. Approach to Patient with Chest Pain<ul style="list-style-type: none">• Explain the etiology, differential diagnosis, clinical features and investigations for patients with chest pain• Discuss the outline of management plan for such conditions2. ECG Interpretation (4) interpret ECGs related to various common cardiac conditions (Angina, MI, Arrhythmias)
PATHOLOGY	<ol style="list-style-type: none">1. Hypertensive Vascular Disease + Hypertensive heart disease<ul style="list-style-type: none">• Discuss vascular wall injury response• Discuss the causes, pathogenesis and morphology of hypertensive vascular injury• Explain types of hypertensive heart disease2. Atherosclerosis<ul style="list-style-type: none">• Define Arteriosclerosis & Atherosclerosis• Describe the epidemiology and risk factors of Atherosclerosis• Discuss in detail the pathogenesis, morphology and clinical consequences of Atherosclerotic disease3. Aneurysms and Dissection<ul style="list-style-type: none">• Define aneurysm and dissection of vessel wall

- Explain the pathogenesis, morphology & clinical features of aneurysms

- Discuss Aortic dissection with relation to pathogenesis, morphology & clinical features

4. Vasculitis

- Define Vasculitis

- List the types of vasculitis

- Discuss the etiology, pathogenesis, morphology and clinical features of various types of Vasculitis

5. Disorders of blood vessel hyper-reactivity, veins and lymphatic

- Discuss various disorders of blood vessel hyper-reactivity:

- Raynaud Phenomenon

- Myocardial Vessel Vasospasm

- Discuss various disorders of veins and lymphatic including:

- Varicose Veins

- Thrombophlebitis and

- Phlebothrombosis

- Superior and Inferior Vena Cava Syndromes

- Lymphangitis and Lymphedema

6. Vascular Tumors

- Classify vascular tumors

- Discuss benign, borderline and malignant vascular tumors with respect to etiology, pathogenesis and morphology

7. Heart Failure

- Define cardiac failure
- Discuss the etiology, pathogenesis, morphology and clinical features of left sided and right sided heart failure

8. Congenital Heart Disease

- Classify congenital heart diseases
- Explain the pathophysiology, morphology and clinical features of left to right, right to left diseases
- Briefly discuss congenital obstructive lesions

9. Ischemic Heart Disease I

- Define ischemic heart disease & myocardial infarction (MI)
- Discuss the significance of time in diagnosing and treating acute MI
- Describe the morphological features of MI
- Discuss the clinical features of an acute attack of MI
- Discuss the laboratory evaluation, consequences, complications and prognosis of MI

10. Ischemic Heart Disease II

- Define Coronary Artery Disease (CAD)
- Discuss its consequences and various clinical presentations
- Explain its epidemiology and risk factors
- Describe Angina and its types
- Discuss the coronary blood supply and types of infarction
- Briefly discuss the features of chronic IHD and sudden cardiac death

11. Valvular Heart Disease & Non-infected vegetation

- Classify valvular defects of mitral and aortic valves valvular heart disease
- Discuss the etiology, pathogenesis, morphology and clinical features of infective endocarditis, rheumatic fever and rheumatic heart disease
- Discuss non-infected vegetation of heart

12. Cardiomyopathies & Myocarditis

- Define cardiomyopathy
- Discuss types of cardiomyopathies
- List the conditions associated with cardiomyopathy
- Explain the morphology and clinical features cardiomyopathy
- List the causes of myocarditis
- Discuss the morphology of myocarditis

13. Pericardial diseases & tumors of heart

- Define pericardial effusion & Hem pericardium
- Discuss causes, pathogenesis & morphology of different types of pericarditis
- Classify tumors of heart

Discuss the pathogenesis and morphology of primary tumors of heart

- Discuss the clinical effects of non-cardiac neoplasms

14. Pathogens causing Cardiovascular diseases

- List the pathogens causing cardiovascular diseases

	<ul style="list-style-type: none"> Discuss in detail the properties, pathogenesis, transmission, clinical findings, laboratory diagnosis epidemiology, treatment and prevention of Streptococcus viridians, Staphylococcus epidermidis, Trypanosome Discuss briefly Coxsackie virus, Cytomegalovirus and Epstein-Barr virus in relation to cardiac infections. <p>15. Pathogens causing Sepsis and Septic Shock</p> <ul style="list-style-type: none"> Define sepsis, septic shock, septicemia and bacteremia List the organisms causing sepsis Discuss pathophysiology of sepsis and septic shock. Describe the important properties, transmission, clinical findings and laboratory diagnosis of shock.
PHARMACOLOGY	<p>1. Drug therapy of Acute Coronary Syndrome (ACS)</p> <ul style="list-style-type: none"> Discuss classification, basic & clinical pharmacology of different drug groups used in ACS <p>2. Drugs used in the treatment of Angina pectoris & myocardial infarction (I & II)</p> <ul style="list-style-type: none"> Classify Anti-Anginal drugs Explain basic & clinical pharmacology of Anti-Anginal drugs Discuss treatment of ischemic heart diseases (IHD) including the basic & clinical pharmacology of these drugs <p>3. Anti-hypertensive Drugs I & II</p> <ul style="list-style-type: none"> Discuss drugs of different classes used to treat HTN Explain their basic & clinical pharmacology <p>4. Drug therapy of Congestive Heart Failure (CCF)</p>

	<ul style="list-style-type: none">• Discuss classification of drugs used in cardiac failure• Explain their basic and clinical pharmacology <p>5. Drug treatment of cardiac arrhythmia</p> <ul style="list-style-type: none">• Classify anti-arrhythmic drugs• Explain the basic & clinical pharmacology of anti-arrhythmic drugs <p>6. Anti-hyperlipidemia drugs</p> <ul style="list-style-type: none">• Classify Anti-hyperlipidemia drugs• Discuss their basic and clinical pharmacology <p>7. Vasoactive Peptides</p> <ul style="list-style-type: none">• Classify vasoactive peptides• Discuss the clinical importance and properties of different vasoactive peptides• Describe the basic and clinical pharmacology of vasoactive peptides
VASCULAR SURGERY	<p>1. Arterial disorders</p> <ul style="list-style-type: none">• Identify the signs, symptoms, and diagnostic tests and treatment plans for acute and chronic arterial limb ischemia• Differentiate among dry, wet, and diabetic gangrene.• Describe the signs, symptoms, diagnostic tests, and treatment options for each type of arterial gangrene. <p>2. Venous Disorders:</p> <ul style="list-style-type: none">• Describe the pathophysiology of the veins of the lower limb.• Identify the clinical features of venous hypertension of the leg.

	<ul style="list-style-type: none"> • Outline the clinical picture of varicose veins and venous ulcers. • Classify varicose veins. • Explain the etiology, pathogenesis, clinical features, investigations and treatment options for varicose veins and venous ulcers • Explain the etiology, risk factors, pathogenesis, clinical presentation, management options and complications of venous thrombo-embolism <p>3. Lymphatic Disorders:</p> <ul style="list-style-type: none"> • Differentiate between congenital and acquired lymphatic disorders on the basis of their pathophysiology • Discuss pathophysiology, diagnostic criteria, management plans and complications for: <ul style="list-style-type: none"> i. Lymphadenopathy ii. Lymphangitis
<p>TUTORIALS</p> <p>FORENSIC</p> <p>MEDICINE</p>	<ul style="list-style-type: none"> • Toxicology- Cardiac poisons <ul style="list-style-type: none"> • Describe the mode of action, signs and symptoms, treatment, postmortem findings and medico-legal importance of the Cardiac poisons; Digitalis, Aconite, and Nicotine • Cannabis & Cocaine Poisoning <ul style="list-style-type: none"> • Describe the mode of action, signs and symptoms, treatment, postmortem findings and medico-legal importance of Cannabis & Cocaine <p>4. Forensic Lab Techniques</p> <ul style="list-style-type: none"> • Describe the technique and medico legal importance Polygraph and Brain Finger Printing • Describe the technique and medico legal importance Polygraph and Brain Finger Printing • Discuss the importance of questioned documents in

- Forensic investigation
- Describe the Forensic Lab

3. Medico legal Report of Sexual Assault

- Describe the procedure of taking swabs in cases of victims of rape and sodomy
- Draft a medico-legal report for cases of sexual assault and sodomy, based on a minimum of ten scenarios.

PATHOLOGY	<p>1. Atherosclerosis</p> <ul style="list-style-type: none"> • Discuss the risk factors and morphology of atherosclerosis • Interpret lipid profiles <p>2. Myocardial Infarction</p> <ul style="list-style-type: none"> • Discuss the morphological features of MI • Elaborate the clinical features of an acute attack of MI • Discuss its Laboratory evaluation <p>3. Rheumatic heart disease & Infective Endocarditis</p> <ul style="list-style-type: none"> • Discuss the etiology, morphology and clinical features of infective endocarditis, rheumatic fever and rheumatic heart disease <p>4. Interpretation of lipid profile</p> <ul style="list-style-type: none"> • Discuss the result of lipid profile which can identify certain genetic disease and risk for cardiovascular diseases.
PHARMACOLOGY	<p>1. Drug therapy of Acute Coronary Syndrome (ACS)</p> <ul style="list-style-type: none"> • Discuss the drug therapy of ACS • Describe the basic & clinical pharmacology of different drug groups used in ACS

	<p>2. Drug therapy of Angina & MI (I &II)</p> <ul style="list-style-type: none"> • Discuss the drug therapy of angina & MI • Discuss basic & clinical pharmacology of different drug groups used in Angina & MI. <p>3. Antihypertensive Drugs</p> <ul style="list-style-type: none"> • Discuss the drug therapy of hypertension • Discuss basic & clinical pharmacology of these agents <p>4 Drug therapy of CCF</p> <ul style="list-style-type: none"> • Discuss the drug therapy of CCF • Discuss the basic & clinical pharmacology of different drug groups used in CCF <p>5. Drug treatment of cardiac arrhythmias</p> <ul style="list-style-type: none"> • Discuss the drug therapy of cardiac arrhythmias • Discuss basic & clinical pharmacology of different drug groups used in cardiac arrhythmias <p>6. Anti-hyperlipidemia drugs</p> <ul style="list-style-type: none"> • Classify the anti - hyperlipidemia drugs • Discuss basic & clinical pharmacology of different anti-hyperlipidemia drug groups
<p><u>PRACTICALS</u></p> <p>PHARMACOLOGY</p>	<p>1. Evaluate the Effects of Given Drugs on Frog's heart.</p> <ul style="list-style-type: none"> • Prepare Ringers solution for Frog's heart muscle. • Demonstrate the effects of given drugs (Drug A, B, C) on frog's heart by using the Power Lab system.
<p>SKILL LAB</p>	<p>1. Auscultation of heart</p> <ul style="list-style-type: none"> • Materials required : stethoscope • Brief history points of complains relating to CVS disease • Peripheral pulses

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	<ul style="list-style-type: none">• Apex beat• Assessment of BP• Auscultation of normal heart sounds in all areas
INTERNAL ASSESSMENT	<ul style="list-style-type: none">• MCQs and OSPE (unobserved and Observed)
ANNUAL EXAMINATION	<ul style="list-style-type: none">• The module will be evaluated according to HEC & JSMU Policies.