



JINNAH SINDH MEDICAL UNIVERSITY

STUDY GUIDE

PROGRAM	MBBS
MODULE TITLE	CARDIOVASCULAR SYSTEM-II
ACADEMIC YEAR	3rd Year - 2024
INTRODUCTION	<p>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 grave 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.</p>
RATIONALE	<p>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.</p>
OUTCOMES	<p>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.</p>
DEPARTMENTS INVOLVED	<ol style="list-style-type: none">1. Community Medicine,2. Forensic Medicine & Toxicology,3. General Surgery4. Internal Medicine

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	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	1. Coronary heart diseases and its prevention <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 2. Hypertension <ul style="list-style-type: none">• Classify Hypertension• Describe epidemiology of hypertension• Explain the “rule of halves” in hypertension• Discuss prevention and control 3. Rheumatic Heart Disease <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 4. Safe blood transfusion <ul style="list-style-type: none">• Explain the importance of a blood transfusion policy and standard operating procedures• Discuss the roles and responsibilities of healthcare professionals in blood transfusion and reporting mechanism• Identify potential adverse events related to blood transfusion and reporting mechanism• Describe the national and international guidelines for safe blood transfusion practice

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	<ul style="list-style-type: none">• Identify the challenges and potential solutions related to blood safety in resource-limited settings.
<p style="text-align: center;">FORENSIC MEDICINE</p>	<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 a case

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- Discuss artificial insemination, its types, procedure, precautions in selecting a donor and legal implications, Surrogate birth

4. Forensic sexology IV: Abortion & its medico legal aspects

- Define the types of abortion
- List the grounds for abortion with special emphasis on pregnancy after rape
- Define criminal abortion, 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 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

	<p>and active agent</p> <ul style="list-style-type: none"> • Describe the following: • Bestiality and the method of examination in such cases • Tribadism or female homosexuality and its legal aspects • Buccal coitus <p>7. Forensic sexology VII: Sexual Perversions</p> <ul style="list-style-type: none"> • 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 medico legal aspects <p>8. Therapeutic poisons II- Aspirin and Paracetamol poisoning</p> <ul style="list-style-type: none"> • Describe the mode of action, sign and symptoms, fatal dose, fatal period, treatment and medico legal importance of aspirin & paracetamol poisoning
<p>GENERAL SURGERY</p>	<p>1. Metabolic Response To Injury</p> <ul style="list-style-type: none"> • Describe the graded nature of response to injury • List the mediators of the metabolic response to injury • Explain the Metabolic stress response to surgery and trauma: the 'ebb and flow' model • Describe the changes in body composition following injury <p>2. Shock</p> <ul style="list-style-type: none"> • Define shock • Classify shock • Explain the: <ol style="list-style-type: none"> I. Pathophysiology of Shock II. cardiovascular and metabolic characteristics of shock III. Severity and consequences of shock • Describe the principles of Resuscitation, fluid therapy

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	<p>3. Hemorrhage</p> <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 reactions.
INTERNAL MEDICINE	<p>1. Approach to Patient with Chest Pain</p> <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 conditions <p>2. ECG Interpretation (4)</p> <ul style="list-style-type: none">• interpret ECGs related to various common cardiac conditions (Angina, MI, Arrhythmias)
PATHOLOGY	<p>1. Hypertensive Vascular Disease + Hypertensive heart disease</p> <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 disease <p>2. Atherosclerosis</p> <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 disease <p>3. Aneurysms and Dissection</p> <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 & Hemopericardium
- 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
- 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.

15. Pathogens causing Sepsis and Septic Shock

- 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.

16. Safe blood transfusion

- Briefly discuss the indications of blood transfusion.
- Enumerate the pre-transfusion testing & blood component selection
- List the steps of transfusion administration
- Briefly discuss monitoring of the patient during transfusion and post-transfusion monitoring

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	<ul style="list-style-type: none"> • Discuss complications of transfusion
<p>PHARMACOLOGY</p>	<ol style="list-style-type: none"> 1. Drug therapy of Acute Coronary Syndrome (ACS) <ul style="list-style-type: none"> • Discuss classification, basic & clinical pharmacology of different drug groups used in ACS 2. Drugs used in the treatment of Angina pectoris & Myocardial Infarction <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 3. Anti-hypertensive Drugs I & II <ul style="list-style-type: none"> • Discuss drugs of different classes used to treat HTN • Explain their basic & clinical pharmacology 4. Drug therapy of Congestive Heart Failure (CCF) <ul style="list-style-type: none"> • Discuss classification of drugs used in cardiac failure • Explain their basic and clinical pharmacology 5. Drug treatment of cardiac arrhythmia <ul style="list-style-type: none"> • Classify anti-arrhythmic drugs • Explain the basic & clinical pharmacology of anti-arrhythmic drugs
<p>VASCULAR SURGERY</p>	<ol style="list-style-type: none"> 1. Arterial disorders <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. 2. Venous Disorders: <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.

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	<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. Lymphadenopathyii. Lymphangitis
<p><u>TUTORIALS</u></p> <p>FORENSIC</p> <p>MEDICINE</p>	<p>1. Toxicology- Cardiac poisons</p> <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 <p>2. Forensic Sexology: Medico legal Report of case of sexual assault</p> <ul style="list-style-type: none">• Describe the procedure of taking swabs in cases of victims of rape and sodomy• Write the medico legal report of rape and sodomy cases based on given scenarios <p>3. Forensic Lab Techniques</p> <ul style="list-style-type: none">• Describe the technique and medico legal importance Polygraph and Brain Finger Printing• Discuss the importance of questioned documents in Forensic

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	<p>investigation</p> <ul style="list-style-type: none">• Describe the Forensic Lab <p>4. Cannabis & Cocaine Poisoning</p> <ul style="list-style-type: none">• Describe the mode of action, signs and symptoms, treatment, postmortem findings and medico-legal importance of Cannabis & Cocaine
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 Shock</p> <ul style="list-style-type: none">• Diagnose various types of shock• Explain the underlying pathophysiology of each type• Recommend corrective measures for each
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</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.

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	<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 - hyperlipidemic drugs • Discuss basic & clinical pharmacology of different anti-hyperlipidemic drug groups
<p><u>PRACTICALS</u> PHARMACOLOGY</p>	<p>1. Evaluate the Effects of Given Drugs on Frogs'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 Power lab system.
<p>INTERNAL ASSESSMENT</p>	<ul style="list-style-type: none"> • MCQs and OSPE (unobserved and Observed)
<p>ANNUAL EXAMINATION</p>	<ul style="list-style-type: none"> • The module will be evaluated according to HEC & JSMU policies.