CVS MODULE

3 weeks

Introduction

The KMU-IMS Cardiovascular-II (CVS-II) Module is designed to provide basic and clinical knowledge along with practical skills to the 3rd year MBBS students. The module is aligned to the general outcomes required at the exit level, and includes sessions on pathological mechanisms, preventive medicine, pharmacological aspects, communication skills, professionalism, self-management, medicolegal aspects, clinical application of knowledge and skills. The purpose is to facilitate the student learning.

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Themes for CVS-II Module

S. No.	Theme Title	Week No.
Theme 1	**Chest Pain**	**2 (1)**
Theme 2	**blood pressure**	**1**
Theme 3	**Shortness of breath**	**2 (1)**

Subject	TOPIC	Hours needed	S. No	Learning objectives At the end of this module, students of year 3 will be able to:
Theme 1: Chest pain				
Anatomy	Gross anatomy of heart, valves and coronary arteries	1	1	Describe surface anatomy of the heart and heart valves
			2	Describe the anatomy of coronary circulation
			3	Enumerate heart valves and describe their gross morphology
Biochemistry	Lipoproteins and cholesterol	1	4	Classify and Describe types of lipoproteins
			5	Summarize cholesterol synthesis
Pathology	Atherosclerosis	1	6	Discuss the risk factors, Morphology, pathological changes and consequences of Atherosclerotic plaque
	Ischemia and infarction		7	Define Ischemia and infarction, and differentiate it from infarction
			8	Discuss Classification and pathophysiology of ischemic heart disease
			9	Discuss pathophysiology of myocardial infarction
Pharmacology	Antianginal drugs	1	10	Classify antianginal drugs
			11	Explain mechanism of action, pharmacokinetics and adverse effects of organic nitrates and calcium channel blockers
			12	Explain the rationale for use of β-adrenergic blockers and sodium channel blocker in the management of angina pectoris
	Lipid lowering drugs	2	13	Briefly describe the types of dyslipidemias

			14	List the lipid lowering drug classes
			15	Explain the mechanism of action, effect on serum lipid profile and adverse effects of each of the five drug classes
			16	Discuss drug-drug interaction of lipid lowering drugs
	Anticoagulant drugs	2	17	Classify anticoagulant drugs
			18	Discuss mechanism of action, uses of Unfractionated heparin
			19	Compare low molecular weight and unfractionated heparin
			20	Describe adverse effects of heparin and treatment of heparin overdose
			21	Describe mechanism of action and uses of direct Xa and IIa inhibitors
			22	Describe mechanism of action and uses of warfarin
			23	Describe adverse effects of warfarin and treatment of warfarin overdose
			24	Compare heparin and warfarin in terms of mechanism and onset of action
			25	Explain monitoring of anticoagulant therapy
			26	Describe important diet and drug interactions of warfarin
	Antiplatelet and thrombolytic drugs	1	27	Classify antiplatelet drugs
			28	List indications of antiplatelet therapy
			29	Explain the mechanism of action and adverse effects of each antiplatelet drug group
			30	Name thrombolytic drugs and explain their mechanism of action, uses and adverse effects
Forensic Medicine	Chest trauma	1	31	Describe heart injuries caused by regional injuries

			32	Discuss chest wall injuries in general
			33	Enumerate the complications of rib fracture
	Sudden death	1	34	Define sudden death
			35	Explain the causes of sudden death
			36	Describe autopsy findings in sudden death
			37	Describe the medicolegal importance of sudden death
Community Medicine	Non-communicable diseases: Cardiovascular diseases as public health issues	2	38	Define Cardiovascular disease (CVD)
			39	Elaborate the concept of CVD risk stratification
			40	Describe the epidemiology of cardiovascular diseases and explain cardiovascular diseases of Public Health importance globally and in Pakistan
			41	Explain the known risk factors of CVD and cultural, racial and gender difference in CVD prevalence and incidence
	Hypertension			Describe the epidemiology of hypertension and its public Health importance globally and in Pakistan
General Medicine/Cardiology	Coronary Heart disease	1	42	Discuss CAD risk factors and strategies to reduce them
			43	Discuss strategies for primary and secondary prevention of CHD in outpatient setting
			44	Define chronic stable angina, its clinical signs and symptoms, laboratory findings, imaging techniques for assessment of it and management protocols

			45	Discuss coronary vasospasm and angina with normal coronary angiograms
	Acute coronary syndrome	1	46	Define Acute coronary syndrome
			47	Explain the spectrum of illness in ACS and relevant management steps
			48	Describe the clinical features and steps of the management of Myocardial infarction
			49	Describe risk stratification in myocardial infarction
			50	Describe complications of acute MI
	Hypertrophic cardiomyopathy		51	Discuss clinical features, imaging protocols, risk stratification and short/long-term management of hypertrophic cardiomyopathy
PRIME/MEDICAL EDUCATION	Informed consent	1		Obtaining informed consent from a patient before an invasive procedure
Theme 2: Blood Pressure				
Pathology	Blood pressure	2	52	Describe the mechanisms of blood pressure regulation
	Shock		53	Classify shock
			54	Describe the pathophysiology and types of shock
			55	Describe the stages pf shock
			56	Define sepsis and septic shock
			57	Discuss causes, pathogenesis, and laboratory findings in shock
			58	Discuss Disseminated intravascular coagulation in the context of sepsis
			59	Describe classification and pathophysiology of Hemorrhage
	Hypertension	1	60	Describe the causes, Pathogenesis, morphology and complications of Hypertension

	Aneurisms	1	61	Discuss pathophysiology of hypertension in pregnancy
			62	Describe the etiology, morphology and manifestations of vascular aneurisms
			63	Describe the causes, Pathogenesis and types of Aortic Aneurysm
	Aortic dissection		64	Describe the pathogenesis, morphology and clinical features of Aortic Dissection
	Vasculitis	1	65	Define vasculitis
			66	Classify vascilitides
			67	Describe the immunological mechanisms of non-infectious vasculitis
			68	Describe the morphology and clinical features of Giant cell arteritis
			69	Describe the morphology and clinical features of Takayasu arteritis
			70	Describe the morphology and clinical features of Polyarteritis nodosa
			71	Describe the morphology and clinical features of Kawasaki disease
			72	Describe the morphology, serological markers and clinical features of Wegener granulomatosis
			73	Describe the morphology and clinical features of Thromboangitis obliterans
	Diseases of veins	1	74	Differentiate between thrombophlebitis and Phlebothrombosis
			75	Describe the etiology and clinical features of varicose veins
			76	Enlist the benign and malignant tumors of the arteries and veins
Pharmacology	Antihypertensive drugs	2	77	Classify antihypertensive drugs
			78	Discuss role of diuretics in the management of hypertension

			79	Discuss the role of ACE inhibitors, Angiotensin receptor-blocking agents, Renin inhibitor in hypertension
			80	Explain the rationale for the use of β-blockers, α-adrenoceptor blocking agent, centrally acting sympatholytic drugs in hypertension
			81	Describe the direct vasodilators (mechanism of action and drug toxicity) in relation to antihypertensive drug therapy
			82	Describe the role of Calcium channel blockers in hypertension
General Medicine/Cardiology	Hypertension	1	83	Define and classify hypertension
			84	Discuss drug treatment protocols for hypertension
			85	Describe the risk factors and complications of hypertension
			86	Describe the management of hypertensive emergencies and urgencies
Forensic medicine	Cardiac poisons	1	87	Classify Cardiac Poisons
			88	Describe the characteristic, clinical signs/symptoms, treatment and medicolegal aspects of cardiac glycosides
			89	Discuss cardiac effects of methylphenidate, cocaine and Ice
			90	Describe the characteristic, clinical signs/symptoms, treatment and medico legal aspects of Oleander
PRIME/MEDICAL EDUCATION	Counselling skills	1		Develops counselling skills in professional life
Theme 3: Shortness of breath				
Physiology	Cardiac cycle	1	91	Outline major events in cardiac cycle
			92	Discuss physiology of heart sounds and murmurs
Pathology	Congestive heart failure	2	93	Describe the types, etiology, pathogenesis, and clinical features of congestive heart failure

	Cardiomyopathies		94	Describe the Pathological patterns, causes, morphological changes and clinical features of Cardiomyopathies
	Congenital heart diseases	2	95	Describe the Etiology, Pathogenesis and clinical features of Tetrology of Fallots, ASD, VSD and pulmonary stenosis
	Valvular heart diseases		96	Describe the Etiology, pathogenesis and clinical features of Aortic stenosis, Aortic regurgitation, Mitral stenosis and Mitral regurgitation
	Rheumatic fever	1	97	Discuss pathophysiology and laboratory findings in rheumatic fever
	Rheumatic heart disease		98	Discuss pathological changes and morphology of rheumatic heart disease
	Thrombosis and Embolism	1	99	Describe the mechanism and pathogenetic mechanisms of vascular thrombosis
			100	Enlist hypercoagulable states
			101	Define embolism
			102	Discuss types of embolism
			103	Describe the etiology, pathogenesis, morphology and clinical features of pulmonary embolism
	Endocarditis	1	104	Discuss Etiology, Pathogenesis, Morphology, diagnostic criteria, clinical features and complications of infective endocarditis
			105	Discuss the types of non-infected vegetation
Pharmacology	Drugs used in heart failure	2	106	Define the different classes of the drug used in the treatment of heart failure
			107	Explain the pharmacological effects, clinical uses, adverse effects and drug interactions of digitalis glycosides
			108	Explain the signs symptoms and treatment of digoxin overdose

			109	Enlist positive inotropic drugs (other than digoxin) that are used in heart failure
			110	Classify the five major groups of diuretic drugs and relate them to their site of action
			111	Discuss the mechanism of action, clinical applications and adverse effects of carbonic anhydrase enzyme inhibitors, osmotic diuretics, thiazide diuretics, loop diuretics and potassium sparing diuretics
			112	Enlist potassium sparing and potassium losing diuretics
	Antiarrhythmic drugs	2	113	Classify antiarrhythmic drugs
			114	Describe the effect of different classes of antiarrhythmic drugs on membrane potential of cardiomyocytes
			115	Explain the mechanism of action of all the classes of antiarrhythmic drugs
			116	Discuss the adverse effects and clinical uses of antiarrhythmic drugs
General Medicine/Cardiology	Heart failure	1	117	Discuss workup and management of pulmonary edema
			118	Enlist and explain causes of heart failure
			119	Describe workup and management of heart failure
	Disorders of heart rate and rhythm	1	120	Classify arrhythmias and heart blocks
			121	Describe the etiology, ECG findings and management of Atrial fibrillation
			122	Discuss types, workup and management of ventricular arrhythmias
	Pulmonary embolism	1	123	Describe the etiology, clinical features and diagnostic workup of pulmonary embolism
			124	Discuss risk stratification and management of pulmonary embolism

	Pulmonary hypertension		125	Discuss cardiac causes of pulmonary hypertension and outline their management
	Myocarditis	1	126	Discuss causes and management of myocarditis
	Pericardial diseases		127	Define and classify pericarditis
			128	Discuss clinical findings and treatment of pericarditis
			129	Describe the etiology and management of pericardial effusion
Pediatrics	Cyanotic and acyanotic congenital heart disease	1	130	Delineate the difference between the acyanotic and cyanotic heart disease conditions
			131	Enumerate the various defects, involving both conditions
	Rheumatic fever	1	132	Describe the etiology of rheumatic fever
			133	Describe Duckett Johns criteria for diagnosis of RF
			134	Discuss about primary and secondary prophylaxis of rheumatic heart disease
PRIME/MEDICAL EDUCATION	SWOT Analysis	1		Perform SWOT analysis for a particular task
	Practical work			
Pharmacology	Myocardial Infarction	1.5	135	Construct a prescription for a patient with Myocardial Infarction
	Hypertension	1.5	136	Construct a prescription for a patient with Hypertension
	Congestive Cardiac Failure	1.5	137	Construct a prescription for a patient with Congestive Cardiac Failure
Pathology	Lipid Profile	1.5	138	Demonstrate Estimation of total cholesterol
	Hemangioma	1.5	139	Identify the morphological changes occurring in hemangioma
Forensic medicine	Cardiac toxins	1.5	140	Identify the following cardiogenic toxins: • Digitalis • Cannabis • Heroin

Hours allocation to different subjects

S. No	Subject	Hours needed
1	Pathology	18
2	Pharmacology	20
3	Forensic medicine	2
4	Community medicine	2
5	General medicine / cardiology	7
6	Pediatrics	2
7	Anatomy	1
8	Physiology	1
9	Biochemistry	1
10	PRIME/MEDICAL EDUCATION	3
	Total	**57**