



MODULE- 05

CARDIO-PULMONARY II

3rd Year BDS

Themes

Table 1: Themes

S. No	Theme	Duration in hours
1	Chest Pain	16
2	Blood Pressure and Palpitations	5
3	Cough and Breathlessness	19
	Total in hours	40
	Total in weeks	2.6 weeks

***3 Hours per day for 5 days (Monday to Friday) = 15 hours/ week**

Teaching Hours Allocation

Table 2: Hour's allocation for different subjects

S. No	Subject	Hours
1	General Medicine	16
2	General Surgery	4
3	Oral Medicine	3
4	Oral & Maxillofacial Surgery	8
5	Periodontology	2
7	Prosthodontics	5
9	General Pathology	2
	Total	40

LEARNING OBJECTIVES

By the end of this module the students of 3rd year BDS will be able to:

1. Explain the pathophysiology, etiology, and complications of major cardiovascular and respiratory diseases.
2. Describe the clinical features and diagnostic criteria of ischemic heart disease, heart failure, arrhythmias, asthma, COPD, and tuberculosis.
3. Differentiate between obstructive and restrictive lung diseases based on pathophysiology and presentation.
4. Discuss the pathogenesis and complications of atherosclerosis, thrombosis, and vascular disorders.
5. Describe key surgical conditions and cardiopulmonary emergencies, including thoracic trauma, pulmonary embolism, and aortic dissection.
6. Outline immediate assessment and stabilization steps for acute cardiac and respiratory emergencies.
7. Perform focused history-taking and physical examinations for patients with chest pain, breathlessness, cough, palpitations, or fever.
8. Interpret essential diagnostic investigations relevant to cardiopulmonary diseases.
9. Discuss pharmacological management including antihypertensives, anticoagulants, antiplatelet agents, bronchodilators, and oxygen therapy.
10. Explain the role and indications of antibiotic prophylaxis in dental patients at risk of infective endocarditis.
11. Identify oral manifestations and drug-induced changes associated with systemic cardiopulmonary diseases.
12. Recognize the impact of respiratory diseases and medications on oral health and dental treatment planning.
13. Modify dental and surgical treatment plans for patients with limited respiratory reserve or significant cardiovascular disease.
14. Apply principles of local hemostasis and perioperative care for patients on antiplatelet or anticoagulant therapy.
15. Explain when continuation of combination antiplatelet therapy is appropriate during minor oral surgery.
16. Recognize and manage common medical emergencies such as vasovagal syncope, angina, myocardial infarction, and hyperventilation.
17. Demonstrate basic life support (BLS) and emergency oxygen administration in simulated dental settings.
18. Discuss infection control protocols and preventive strategies for tuberculosis and infective endocarditis.
19. Explain the dentist's role in smoking cessation and preventive strategies for respiratory diseases.
20. Provide patient education and collaborate effectively with medical professionals for comprehensive cardiopulmonary care.

TABLE OF SPECIFICATION

Theme 1: Chest Pain

S.no	Topic	Hours	Learning Objectives
General Pathology			
1	Over view of hemodynamic disorders	2	Relate the (basic hemodynamic concepts) pathophysiology of edema, thrombosis/ deep venous thrombosis, embolism, infarction, and shock to their common clinical presentations.
General Medicine			
2	Ischemic Heart Disease/Acute Coronary Syndrome	1	<ol style="list-style-type: none"> 1. Describe spectrum of Ischemic Heart Disease (IHD) and Acute Coronary Syndrome (ACS). 2. Differentiate stable angina, unstable angina, NSTEMI, and STEMI. 3. List modifiable and non-modifiable risk factors for IHD/ACS. 4. Identify typical and atypical clinical presentations of ACS and differentiate it from noncardiac pain. 5. Enlist the investigations used in ACS (ECG, biomarkers, imaging). 6. Interpret ECG changes in STEMI, NSTEMI, and unstable angina. 7. Outline emergency management of ACS. 8. Explain long-term secondary prevention and lifestyle modification. 9. Enlist short-term and long-term complications of ACS. 10. Recognize dental implications of ACS/IHD in patient care. 11. Assess cardiovascular risk before dental procedures.
3	Vascular Heart Diseases	1 hr	<ol style="list-style-type: none"> 12. Identify the common types of VHD 13. Describe the pathophysiology of stenosis and regurgitation. 14. Enlist common causes of VHD. 15. Recognize clinical features of different valvular lesions 16. Identify complications of VHD 17. Describe investigations to diagnose VHD 18. Explain pharmacological management of VHD . 19. Enlist interventional and surgical management used in VHD 20. Discuss dental implications: risk of infective endocarditis, need for prophylactic antibiotics in high-risk patients, bleeding risk assessment etc
4	Infective Endocarditis	1 hr	<ol style="list-style-type: none"> 21. Define infective endocarditis and differentiate acute vs subacute forms. 22. List common causative organisms 23. Identify risk factors for IE 24. Recognize clinical features of IE

			<p>25. Describe diagnostic investigations for IE diagnosis</p> <p>26. Outline management protocol for IE</p> <p>27. Identify complications of IE</p> <p>28. Discuss Antibiotic prophylaxis in high risk patients</p>
5	Rheumatic Fever	1 hr	<p>29. Define rheumatic fever and describe its link to Group A Streptococcus infection.</p> <p>30. Identify clinical features of RF.</p> <p>31. Describe diagnostic criteria for RF</p> <p>32. Outline investigations for diagnosing RF</p> <p>33. Formulate a treatment plan for acute RF.</p> <p>34. Describe long term prophylaxis for RF</p> <p>35. Recognize complications of RF.</p> <p>36. Assess dental implications in terms of prophylactic antibiotics for high-risk patients</p>
6	Heart failure	1 hr	<p>37. Define heart failure</p> <p>38. Enlist its types</p> <p>39. Differentiate among different types of heart failure.</p> <p>40. Identify common causes and risk factors of heart failure.</p> <p>41. Discuss Clinical features of heart failure</p> <p>42. Enlist NYHA classification</p> <p>43. Describe investigations used in HF</p> <p>44. Outline management of heart failure</p> <p>45. Recognize complications of HF.</p> <p>46. Assess and manage risks in heart failure patient in dental clinic. (Risk of fluid overload, orthopnea during procedures, bleeding with anticoagulants, infective endocarditis prophylaxis if indicated)</p>
General Surgery			
7	Thoracic Trauma	2	<p>47. Classify thoracic trauma (blunt and penetrating injuries)</p> <p>48. Discuss the clinical features, investigations and management of different types of thoracic trauma.</p> <p>49. Describe the primary and secondary survey while approaching a patient with thoracic trauma.</p>
Oral & Maxillofacial Surgery (OMFS)			
8	Dental Management of patient with cardiac diseases	1	<p>50. Identify cardiovascular conditions that require modification of oral surgical care Including IHD, arrhythmias, heart failure.</p> <p>51. Describe the pre-operative assessment steps for a patient with ischemic heart disease undergoing surgical treatment.</p>

			52. Explain the steps for managing acute chest pain during dental treatment.
9	Infective Endocarditis	1	53. Identify dental procedures associated with increased infective endocarditis risk. 54. Explain the role and importance of antibiotic prophylaxis in oral surgery. 55. Outline essential preoperative infection prevention measures. 56. Discuss key surgical and post-operative modifications for at-risk patients. 57. Recognize the need for coordination with physicians or cardiologists.
Periodontology			
10	Atherosclerosis & Coronary Heart Disease	1	58. Explain the pathobiological mechanisms (systemic inflammation, bacteremia) linking periodontitis to atherosclerosis and stroke 59. Describe the evidence associating periodontitis with an increased risk for coronary heart disease and cerebrovascular events
Oral Medicine			
11	Chest Pain in dental chair	1	1. Discuss the clinical features, diagnosis & emergency management of a patient with acute chest pain (including angina and MI) undergoing a dental procedure. 60.
12	Cardiac arrest	1	1. Discuss the causes, diagnosis and management of cardiac arrest in a patient undergoing dental treatment. 61. Discuss the protocol, procedure and significance of CPR in a patient with cardiac arrest in a dental chair.
Prosthodontics			
12	Denture base considerations	1	62. Discuss duplicating materials and duplicating procedures. 63. Discuss Waxing partial denture framework. 64. Discuss Waxing and flasking the RPD before acrylic resin processing.
13	Lab Processing of CPD	1	65. Discuss the processing the denture. 66. Discuss the Remounting for occlusal correction. 67. Discuss Polishing the denture 68.

Theme 2: Blood Pressure and Palpitations			
S.no	Topic	Hours	Learning Objectives
General Medicine			

14	Hypertension	1 hrs	<p>69. Define hypertension and differentiate primary (essential) vs secondary hypertension.</p> <p>70. Classify HTN into stages by AHA/NICE</p> <p>71. List common causes and risk factors for HTN</p> <p>72. Recognize clinical features of HTN</p> <p>73. Identify complications of uncontrolled HTN</p> <p>74. Describe investigations carried out in patient with HTN</p> <p>75. Explain non-pharmacological and pharmacological management for HTN.(according to guidelines AHA/NICE)</p> <p>76. Differentiate between hypertensive emergency and urgency and their management.</p> <p>77. Assess dental implications of HTN</p>
15	Cardiac Arrhythmia	1 hr	<p>78. Define cardiac arrhythmia and differentiate between tachyarrhythmias,</p> <p>79. Identify common types of arrhythmias:</p> <ol style="list-style-type: none"> Atrial fibrillation (AF) Atrial flutter Supraventricular tachycardia (SVT) Ventricular tachycardia (VT) Ventricular fibrillation (VF) <p>80. List common causes/risk factors for arrhythmias</p> <p>81. Recognize clinical features and ECG findings of arrhythmias</p> <p>82. Outline management strategies for Arrhythmias (medical including anticoagulation and interventional)</p> <p>83. Identify emergency arrhythmias requiring immediate intervention: VT, VF</p> <p>84. Discuss dental implications of Arrhythmias</p>
OMFS			
16	Dental Management of patient with HTN	1 hr	85. Discuss dental management of a patient with hypertension
17	Vasovagal Syncope	1	<p>86. Define vasovagal syncope and describe its common causes in the dental setting.</p> <p>87. Identify early signs and symptoms of vasovagal syncope during dental procedures.</p> <p>88. Discuss preventive strategies to reduce the risk of syncope in anxious or medically compromised patients.</p> <p>89. Differentiate between syncope, angina, MI, and hyperventilation based on signs and symptoms</p>

Prosthodontics			
18	Insertion of removable partial denture	1	90. Discuss Adjustment to denture bearing area. 91. Discuss Occlusal interferences from denture framework. 92. Discuss Evaluation of occlusal interference. 93. Discuss Instructions to patient pertinent to RPD insertion and maintenance.

Theme 3: Cough and Shortness of Breath			
	Topic	Hours	Learning Objectives
General Medicine			
19	Pneumothorax and pleural effusion	1 hr	94. Define and classify pneumothorax 95. Recognize risk factors and common causes 96. Identify clinical features of pneumothorax 97. Describe investigations in Pneumothorax. 98. Explain management principles of Pneumothorax 99. Define pleural effusion and classify it as transudate vs exudate. 100. List common causes of Pleural effusion 101. Identify clinical features of pleural effusion 102. Describe investigations required for diagnosis of pleural effusion and its etiology 103. Outline management plan according to etiology of pleural effusion 104. Discuss dental implications of pleural effusion and Pneumothorax.
20	Obstructive Airway Disease (asthma, COPD)	2 hrs	105. Define asthma and differentiate it from other obstructive airway diseases. 106. Describe the pathophysiology of Asthma. 107. List common risk factors of Asthma 108. Identify clinical features of Asthma 109. Recognize triggers for acute exacerbation of Asthma 110. Classify asthma according to severity 111. Describe investigations for diagnosis of Asthma 112. Explain guideline based pharmacological management of Asthma according to severity 113. Outline non-pharmacological management: trigger avoidance, patient education, vaccination. 114. Recognize complications of Asthma

			<p>115. Assess dental considerations and their management in Asthmatic patient</p> <p>116. Define COPD and differentiate it from asthma and other obstructive airway diseases.</p> <p>117. Describe the pathophysiology of COPD</p> <p>118. Enlist risk factors of COPD</p> <p>119. Identify clinical features of COPD</p> <p>120. Classify severity using GOLD criteria based on FEV1 and symptom burden.</p> <p>121. Describe investigations of COPD</p> <p>122. Explain pharmacological management of COPD according to the severity</p> <p>123. Outline non-pharmacological management of COPD</p> <p>124. Recognize complications of COPD</p> <p>125. Assess dental considerations and precautions in COPD</p>
21	TB	2 hrs	<p>126. Define tuberculosis and differentiate pulmonary TB (PTB) from extrapulmonary TB (EPTB).</p> <p>127. Describe the etiology and risk factors for TB.</p> <p>128. Explain the pathophysiology of TB infection, latent TB, and reactivation.</p> <p>129. Identify clinical features of pulmonary TB.</p> <p>130. Recognize clinical features of extrapulmonary TB.</p> <p>131. Describe investigations for pulmonary and extra pulmonary TB</p> <p>132. Understand the role of Mantoux test and IGRA in latent TB detection.</p> <p>133. Enlist first-line anti-TB drugs and their common side effects</p> <p>134. Describe drug regimens for pulmonary and extrapulmonary TB.</p> <p>135. Recognize multidrug-resistant TB (MDR-TB) and extensively drug-resistant TB (XDR-TB).</p> <p>136. Identify complications of pulmonary TB and extrapulmonary TB</p> <p>137. Recognize TB transmission risk in dental practice and infection control measures.</p> <p>138. Enlist oral manifestations of TB.</p>

22	Bronchiectasis	1hr	<p>139. Define bronchiectasis and differentiate it from other chronic respiratory diseases.</p> <p>140. Describe the pathophysiology of bronchiectasis</p> <p>141. List common causes/risk factors of bronchiectasis</p> <p>142. Identify clinical features of bronchiectasis.</p> <p>143. Recognize complications of bronchiectasis</p> <p>144. Describe investigations for bronchiectasis.</p> <p>145. Explain principles of management in bronchiectasis</p> <p>146. Recognize its dental implications</p>
23	Pneumonia	1 hr	<p>147. Define pneumonia and differentiate community-acquired pneumonia (CAP) vs hospital-acquired pneumonia (HAP).</p> <p>148. Enlist causative organisms for Pneumonia</p> <p>149. Identify risk factors for Pneumonia</p> <p>150. Recognize clinical features of pneumonia</p> <p>151. Identify complications of pneumonia</p> <p>152. Describe investigations carried out for Pneumonia</p> <p>153. Outline its management principles</p> <p>154. Recognize prevention strategies</p>
24	COVID	1 hr	<p>155. Define COVID-19 and describe the causative agent (SARS-CoV-2).</p> <p>156. List transmission routes</p> <p>157. Recognize risk factors for severe disease</p> <p>158. Identify Clinical features of Covid</p> <p>159. Describe diagnostic investigations</p> <p>160. Formulate management plan for COVID</p> <p>161. Identify complications</p> <p>162. Describe infection control, pre-procedure screening</p>
25	Bronchogenic Carcinoma	1hr	<p>163. Define bronchogenic carcinoma and differentiate small-cell lung cancer (SCLC) and non-small-cell lung cancer (NSCLC).</p> <p>164. Enlist its risk factors</p> <p>165. Identify clinical features of bronchogenic carcinoma</p> <p>166. Recognize paraneoplastic syndrome</p> <p>167. Enlist common sites of metastasis: brain, liver, bones, adrenal glands.</p> <p>168. Enlist investigations carried out in diagnosing and staging Bronchogenic CA.</p> <p>169. Describe staging and its importance in treatment planning.</p> <p>170. Outline principles of management in bronchogenic CA.</p> <p>171. Enlist complications of bronchogenic CA.</p>
General Surgery			

26	Benign and malignant lung diseases	1	<p>172. List common benign lung lesions (e.g., lung abscess, bronchogenic cyst) and malignant lung tumors (primary and secondary).</p> <p>173. Discuss the clinical features, investigations and surgical management of benign lung lesions.</p> <p>174. Discuss the causes and risk factors of primary and secondary lung cancer.</p> <p>175. Describe the clinical features, investigations and management of lung cancer.</p>
27	Acute Upper Airway Obstruction And Aspiration pneumonia	1	<p>176. Define sudden upper airway obstruction.</p> <p>177. List common causes of acute upper airway obstruction (foreign body, laryngeal edema, anaphylaxis, trauma, infections).</p> <p>178. Describe the clinical features and investigations for acute upper airway obstruction.</p> <p>179. Describe the management of acute airway obstruction (including the ABCDE approach).</p> <p>180. Define definitive/surgical airway and list its different types.</p> <p>181. Discuss the causes and management of aspiration pneumonia in surgery.</p>
Oral & Maxillofacial Surgery			
28	Management of patients with respiratory compromise	1	<p>182. Identify signs of poorly controlled asthma or COPD that make outpatient oral surgery unsafe.</p> <p>183. Describe chair-positioning modifications for patients with moderate to severe COPD.</p> <p>184. Explain the steps for managing an acute asthma attack during a dental procedure.</p> <p>185. Identify clinical signs of active tuberculosis that require postponing elective oral surgical procedures.</p>
29	Emergency Management of respiratory difficulty in a dental chair	1	<p>186. Discuss Emergency Management of respiratory difficulty in a dental chair as per cause (asthma, hyperventilation, COPD, Foreign Body Aspiration, Gastric Content Aspiration)</p>
30	Local Complications of Local Anesthesia	2	<p>187. Enumerate local complications of local anaesthesia</p> <p>188. Discuss management of local complications of local anaesthesia</p>
Prosthodontics			
31	Relining and rebasing for RPD.	1	<p>189. Discuss procedure of relining and rebasing for RPD.</p>
32	Post Insertion Protocol	1	<p>190. Discuss post insertion complaints.</p> <p>191. Discuss follow up protocol.</p>
Periodontology			

33	Smoking and Periodontium	1	<p>192. Describe the effects of smoking on prevalence, severity, etiology and pathogenesis of periodontal disease.</p> <p>193. Discuss the approaches and steps of smoking cessation protocol to help patient quit smoking</p> <p>194. Outline the effects of smoking on the response to periodontal therapy and periodontal treatment outcomes.</p>
Oral Medicine			
34	Hyperventilation syndrome, asthma, status asthmaticus	1	<p>195. Discuss clinical features, diagnosis and management of hyperventilation syndrome in a dental chair.</p> <p>196. Discuss clinical features, diagnosis and management of asthma and status asthmaticus in a dental chair.</p>