

CORE CURRICULUM **CARDIAC** MANUAL



**Philippine Association of Thoracic and
Cardiovascular Surgeons, Inc.
(PATACSI)**



PATACSI

ACCREDITATION GUIDELINES

CARDIAC PATHWAY



**PHILIPPINE ASSOCIATION OF THORACIC
AND CARDIOVASCULAR SURGEONS, INC.
(PATACSI)**

PATACSI CARDIAC SURGERY CORE AND PATHWAY CURRICULUM

**PATACSI Final Curriculum for
Cardiac Surgery as a result of 2
Workshops held in 2016**

Caseload revision in 2019



PHILIPPINE ASSOCIATION OF THORACIC AND CARDIOVASCULAR SURGEONS, INC. (PATACSI)

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PHILIPPINE ASSOCIATION OF THORACIC AND CARDIOVASCULAR SURGEONS, INC. (PATACSI)

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PHILIPPINE ASSOCIATION OF THORACIC AND CARDIOVASCULAR SURGEONS, INC. (PATACSI)

PATACSI INSTRUCTIONAL DESIGN FOR CARDIAC

A. LEVEL 1: CORE CURRICULUM

CARDIAC SURGERY				
INTENDED LEARNING	CONTENT	LEARNING ACTIVITIES	RESOURCES	EVALUATION
<p><i>At the end of Level 1, the trainees should demonstrate mastery of the basic knowledge of general Cardiac Surgery; acquire sufficient experience in the management of patients on the wards, ER, OPD, PACU and/or ICU; and, be able to safely perform simple surgical procedures, all under the supervision of the consultant, and/or as directed by the consultant, to be supervised by the senior surgical fellow.</i></p>				
I. COGNITIVE				
<p>1.1. Intended Learning 1.1.1. At the end of level I, the trainee must be able to discuss the basic knowledge relevant to the diagnosis and management of surgical cardiac diseases.</p>	<p>1.2. Content 1.2.1. Discuss broad knowledge on the following: 1.2.1.1. Basic knowledge relevant to the management of patients with cardiovascular disease including the following: 1.2.1.2. Anatomy (heart, pericardium, great vessels, mediastinum, thoracic inlet, neck, tracheobronchial tree, lungs, chest wall and diaphragm) 1.2.1.3. Physiology (hemodynamics, electrophysiology, hemostasis, bleeding, thrombosis, Acid-base balance, pulmonary physiology, ventilation, gas exchange, metabolic response to trauma and surgery, GIT physiology, renal physiology, hepatic physiology, nutrition, and temperature regulation). 1.2.1.4. Pharmacology (inotropes, vasodilators, vasoconstrictors, anti-arrhythmia, hemostatic, antiplatelet, anticoagulant, thrombolytic, analgesic, local anesthetic, and general anesthetic) 1.2.1.5. Pathology (inflammation, bleeding, thrombosis, atherosclerosis, myocardial infarction and complications, endocarditis, valve disease, electrophysiology abnormalities, central and peripheral vascular diseases, thoracic diseases, pericarditis, SIRS, infection, wound healing, ARDS and TCVS tumors) 1.2.1.6. Radiology and other diagnostic modalities (CXR, CT scan, MRI/MRA, angiography, ultrasound, and echocardiography and nuclear imaging)</p>	<p>1.3. Teaching-Learning Activities 1.3.1. Daily SICU/RR rounds 1.3.2. Ward and emergency room duties 1.3.3. OPD rotations 1.3.4. Regular pre-and-post-operative conference 1.3.5. Lectures 1.3.6. Rotations to ancillary departments or other training hospitals 1.3.7. Journal club 1.3.8. Morbidity and mortality conferences 1.3.9. Multidisciplinary meetings 1.3.10. Small group discussion with consultants 1.3.11. Individual study</p>	<p>1.4. Resources 1.4.1. Textbooks: 1.4.1.1. Kirklin Cardiac Surgery 1.4.1.2. Bojar Manual of Perioperative Care in Adult Cardiac Surgery 1.4.1.3. Rutherford Vascular 1.4.1.4. Shield's General Thoracic Surgery 1.4.2. Access to: 1.4.2.1. STS, AHA and EATS Evidence based guidelines. 1.4.3. Audio-video teaching files. 1.4.4. Internet access 1.4.5. Conventions and postgraduate courses 1.4.6. Workshops 1.4.7. Surgery Consultant staff 1.4.8. Department of surgery consultant staff 1.4.9. Multidisciplinary consultants and trainees</p>	<p>1.5. Assessment 1.5.1. Written examination 1.5.2. Oral examination</p>



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CARDIAC SURGERY				
INTENDED LEARNING	CONTENT	LEARNING ACTIVITIES	RESOURCES	EVALUATION
I. COGNITIVE				
1.1.2. At the end of level I, the trainee must be able to demonstrate knowledge of the principles of Research and critical appraisal of literature	1.2.2. Research methods 1.2.3. Critical appraisal of literature 1.2.4. Research Paper as per requirement of the institution	1.3.3. Journal Clubs 1.3.4. Research Lectures	1.4.4. Internet Access 1.4.5. Workshops 1.4.6. Research Consultants 1.4.7. Department of Surgery consultant staff	1.5.5. Completed Research paper review



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CARDIAC SURGERY				
INTENDED LEARNING	CONTENT	LEARNING ACTIVITIES	RESOURCES	EVALUATION
II. PSYCHOMOTOR				
2.1.1. Intended Learning 2.1.1.1. At the end of Level I, the trainee must be competent in dealing with straightforward cardiac cases in regard to the following: a) Perform history-taking and thorough physical examination b) Order and interpret necessary diagnostic examinations c) Formulate a logical diagnosis d) Draw up a management plan e) Refer to the surgical and medical team f) Carry-out agreed management plan	2.1.2. Content: 2.1.2.1. Competent to perform <i>without</i> assistance 2.1.2.1.1. Assess signs and symptoms of cardiac diseases 2.1.2.1.2. Diagnostic procedures. 2.1.2.1.3. Applies basic principles of management of patients presenting with the common elective and emergency cardiac acquired diseases, including preoperative, postoperative, intensive care rehabilitation. 2.1.2.1.4. Can perform the whole procedure <i>with</i> assistance 2.1.2.1.5. Risk assessment of operative and non-operative management. 2.1.2.1.6. Valve selection and anticoagulation management including complications. 2.1.2.1.7. Application of institutional/departmental protocols such as blood transfusion management, infection control, blood glucose management, etc. 2.1.2.1.8. Recognition, evaluation and treatment of hemodynamic abnormalities. 2.1.2.1.9. Recognition, evaluation of ventilatory abnormalities. 2.1.2.1.10. Recognition, evaluation and treatment of multiorgan dysfunction. 2.1.2.1.11. Anatomy, physiology, investigations, diagnosis and treatment of common congenital hearts diseases. 2.1.2.1.12. Provide timely, complete, relevant, and legible clinical documents. 2.1.2.1.13. OPD valuation of new and old patients.	2.1.3. Teaching-Learning Activities 2.1.3.1. Daily SICU/RR Rounds 2.1.3.2. Ward and emergency room duties 2.1.3.3. OPD rotations. 2.1.3.4. Pre-and-post-operative conference 2.1.3.5. Lectures 2.1.3.6. Rotations to ancillary departments and/or other hospitals 2.1.3.7. Journal Club 2.1.3.8. Morbidity and mortality conferences 2.1.3.9. Small group discussion with consultants 2.1.3.10. Individual study 2.1.3.11. Assist senior trainees and consultants during operation 2.1.3.12. Supervised operations	2.1.4. Resources 2.1.4.1. Textbook in Cardiac, Vascular and Thoracic surgery especially the ff: 2.1.4.1.1. Kirklind Cardiac Surgery 2.1.4.1.2. Rutherford Vascular 2.1.4.1.3. Bojar's Manual of preoperative Care in Adult Cardiac Surgery 2.1.4.1.4. Shield's General Thoracic Surgery 2.1.4.2. Access to STS, AHA/ACC and EACTS Evidence-based guidelines 2.1.4.3. Audio-video teaching files. 2.1.4.4. Internet access 2.1.4.5. Conventions and postgraduate meetings 2.1.4.6. Workshops 2.1.4.7. Consultant staff 2.1.4.8. Department of Surgery consultant staff 2.1.4.9. BLS and ACLS courses 2.1.4.10. Operating room facilities 2.1.4.11. OPD facilities 2.1.4.12. E.R. facilities 2.1.4.13. Ward and SICU facilities 2.1.4.14. Ancillary facilities such as radiology, cath. lab., cardiographics, pathology and laboratory	2.1.5. Assessment 2.1.5.1. Written examinations 2.1.5.2. Oral examinations 2.1.5.3. Clinical examination and Consenting (CEXC) (forms provided in appendix 5) 2.1.5.4. Case-based discussion (CBD) (forms provided in appendix 6)



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CARDIAC SURGERY				
INTENDED LEARNING	CONTENT	LEARNING ACTIVITIES	RESOURCES	EVALUATION
II. PSYCHOMOTOR				
2.1.1. Intended Learning 2.1.1.1. At the end of Level I, the trainee should perform cardiopulmonary resuscitation	2.1.2. Content: 2.1.2.1. BLS 2.1.2.2. ACLS 2.1.2.3. IABP insertion and management 2.1.2.4. Chest opening 2.1.2.5. Cardiac pacing 2.1.2.6. Chest tube insertion 2.1.2.7. External and internal defibrillation	2.1.3. Teaching-Learning Activities 2.1.3.1. Daily SICU/RR Rounds 2.1.3.2. Ward and emergency room duties 2.1.3.3. Lectures 2.1.3.4. Morbidity and mortality conferences 2.1.3.5. Small group discussion with consultants 2.1.3.6. Individual study 2.1.3.7. Assist senior trainees and consultants during operation 2.1.3.8. Supervised operations	2.1.4. Resources 2.1.4.1. Textbook in Cardiac, Vascular and Thoracic surgery especially the ff: 2.1.4.1.1. Kirkin Cardiac Surgery 2.1.4.1.2. Rutherford Vascular 2.1.4.1.3. Bojar's Manual of preoperative Care in Adult Cardiac Surgery 2.1.4.1.4. Shield's General Thoracic Surgery 2.1.4.2. Department of Surgery consultant staff 2.1.4.3. BLS and ACLS courses 2.1.4.4. Intensive care specialists 2.1.4.5. Ward and SICU facilities 2.1.4.6. Ancillary facilities such as radiology, cath. lab., cardiographics, pathology and laboratory	2.1.5. Assessment 2.1.5.1. Written examinations 2.1.5.2. Oral examinations 2.1.5.3. ACLS & BLS Certificate of Completion



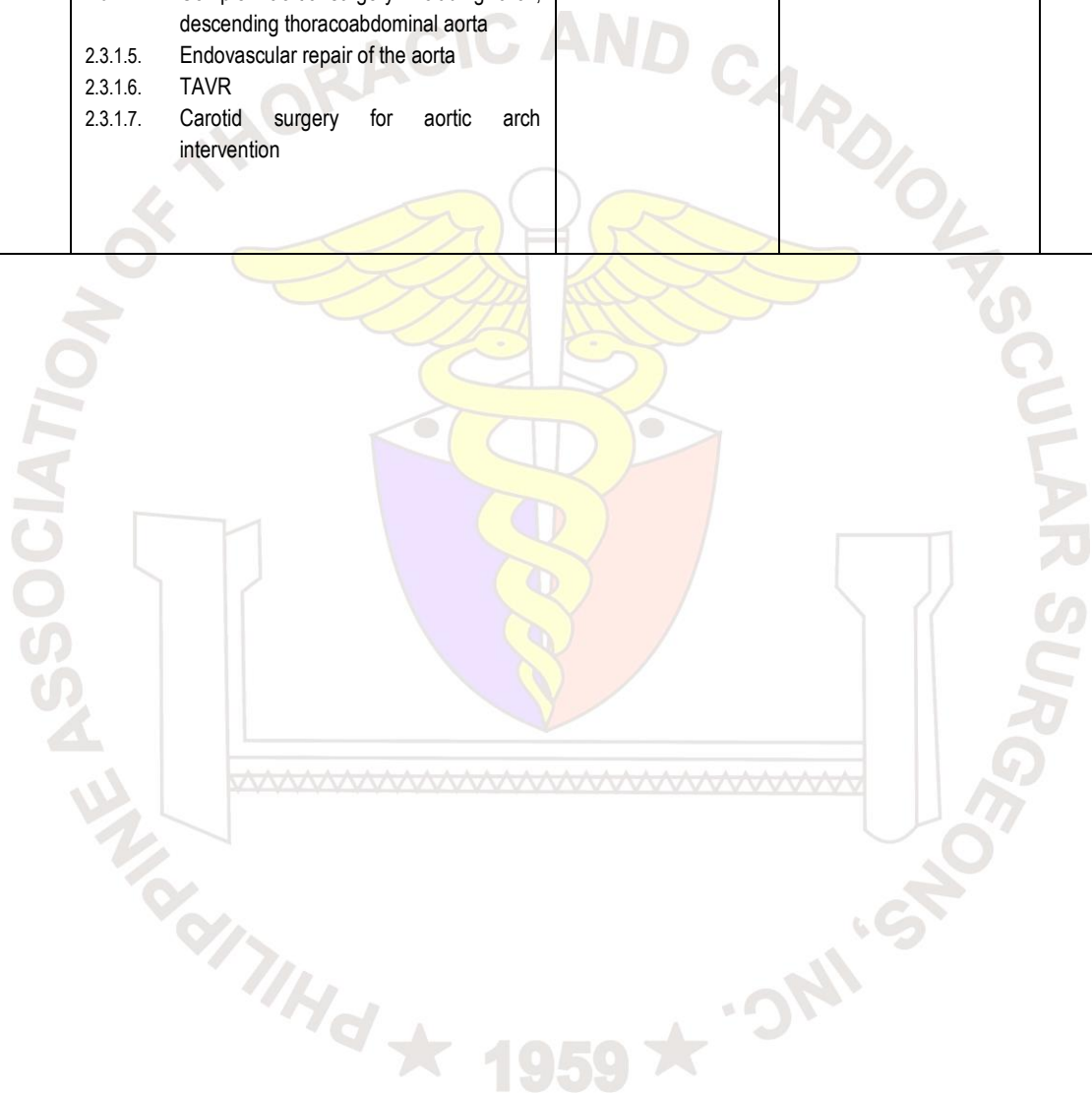
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CARDIAC SURGERY				
INTENDED LEARNING	CONTENT	LEARNING ACTIVITIES	RESOURCES	EVALUATION
II. PSYCHOMOTOR				
2.3.1. Intended Learning 2.3.1.1. At the end of level I, the trainee should perform, under supervision in the basic operative management of cardiovascular and thoracic procedures.	2.3.2. Content: 2.3.2.1. Can perform the whole procedure but <i>may</i> need assistance, and requires advice rather than help, in the following: 2.3.2.1.1. Median sternotomy 2.3.2.1.2. Saphenous vein harvest 2.3.2.1.3. Internal mammary harvest 2.3.2.1.4. Central venous access 2.3.2.1.5. Chest aspiration / thoracentesis 2.3.2.1.6. Chest drain insertion and management 2.3.2.1.7. Wound Management 2.3.2.2. Can perform <i>with assistance</i> , and knows the reason, in the following: 2.3.2.2.1. Central venous and aortic cannulation 2.3.2.2.2. Pulmonary artery catheterization 2.3.2.2.3. Cardiopulmonary bypass 2.3.2.2.4. Myocardial preservation 2.3.2.2.5. Proximal coronary bypass anastomosis 2.3.2.2.6. PDA surgical closure 2.3.2.2.7. ASD surgical closure 2.3.2.2.8. Mediastinal exploration for bleeding or tamponade 2.3.2.2.9. Permanent pacemaker insertion 2.3.2.2.10. Pericardiocentesis and Pericardiostomy tube insertion 2.3.2.2.11. Thoracotomy for PDA, BTS, etc. 2.3.1.3. Has adequate knowledge of the steps through direct observation, and can perform some parts of the procedure with reasonable fluency, in the following: 2.3.1.3.1. Distal coronary artery bypass anastomosis 2.3.1.3.2. Aortic valve replacement 2.3.1.3.3. Tricuspid valve repair/replacement 2.3.1.3.4. CHD VSD surgical closure 2.3.1.3.5. Modified Blalock Taussig shunt 2.3.1.3.6. Pulmonary artery banding 2.3.1.3.7. Femoral arterial and venous cannulation 2.3.1.3.8. Hypothermic circulatory arrest 2.3.1.3.9. MICS 2.3.1.3.10. Pericardiectomy 2.3.1.3.11. Redo-sternotomy 2.3.1.3.12. Surgery for dissection or aneurysm of the ascending aorta	2.3.3. Teaching-Learning Activities 2.3.3.1. Daily SICU/RR Rounds 2.3.3.2. Ward and emergency room duties 2.3.3.3. OPD rotations. 2.3.3.4. Pre-and-post-operative conference 2.3.3.5. Lectures 2.3.3.6. Rotations to ancillary departments and/or other hospitals 2.3.3.7. Journal Club 2.3.3.8. Morbidity and mortality conferences 2.3.3.9. Small group discussion with consultants 2.3.3.10. Individual study 2.3.3.11. Assist senior trainees and consultants during operation 2.3.3.12. Supervised operations	2.3.4. Resources 2.3.4.1. Textbook in Cardiac, Vascular and Thoracic surgery especially the ff: 2.3.4.1.1. Kirkin Cardiac Surgery 2.3.4.1.2. Rutherford Vascular 2.3.4.1.3. Bojar's Manual of preoperative Care in Adult Cardiac Surgery 2.3.4.1.4. Shield's General Thoracic Surgery 2.3.4.2. Access to STS, AHA/ACC and EACTS Evidence-based guidelines 2.3.4.3. Audio-video teaching files. 2.3.4.4. Internet access 2.3.4.5. Conventions and postgraduate meetings 2.3.4.6. Workshops 2.3.4.7. Consultant staff 2.3.4.8. Department of Surgery consultant staff 2.3.4.9. BLS and ACLS courses 2.3.4.10. Operating room facilities 2.3.4.11. Ward and SICU facilities 2.3.4.12. Ancillary facilities such as radiology, cath. lab., cardiographics, pathology and laboratory	2.3.5. Assessment 2.3.5.1. Operative Logbook 2.3.5.2. Written Examination 2.3.5.3. Oral Examination 2.3.5.4. Procedure-based Assessment (PBA)



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CARDIAC SURGERY				
INTENDED LEARNING	CONTENT	LEARNING ACTIVITIES	RESOURCES	EVALUATION
III. PSYCHOMOTOR				
	2.3.1.4. Complex aortic surgery including arch, descending thoracoabdominal aorta 2.3.1.5. Endovascular repair of the aorta 2.3.1.6. TAVR 2.3.1.7. Carotid surgery for aortic arch intervention			





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CARDIAC SURGERY				
INTENDED LEARNING	CONTENT	LEARNING ACTIVITIES	RESOURCES	EVALUATION
III. AFFECTIVE				
3.1. Intended Learning 3.1.1. At the end of Level I, the trainee must demonstrate professionalism in the practice of surgery.	3.2. Content: 3.2.1. Recognize the need for and participate in the multidisciplinary team approach of the assessment and management of critically ill patients. 3.2.2. Adherence to patient safety and confidentiality guidelines. 3.2.3. Intellectual integrity ⁹ 3.2.4. Moral and ethical value ⁹ 3.2.5. Reliability 3.2.6. Appropriate bedside decorum ⁹ 3.2.7. Respectful relationship with colleagues and other hospital staff 3.2.8. Coping to stress 3.2.9. Punctuality 3.2.10. Regular updating of consultants 3.2.11. Empathy to the patient and relatives	3.3. Teaching-Learning Activities 3.3.1. Ward rounds with consultants	3.4. Resources	3.5. Assessment 3.5.1. Clinical examination and Consenting (CEXC) (forms provided in appendix 5) 3.5.2. Case-based discussion (CBD)(forms provided in appendix 6) 3.5.3. Critical incident report 3.5.4. Non-technical skills for surgery (NOTTS)



PHILIPPINE ASSOCIATION OF THORACIC AND CARDIOVASCULAR SURGEONS, INC. (PATACSI)

B. LEVEL 2: CORE CURRICULUM

CARDIAC SURGERY				
INTENDED LEARNING	CONTENT	LEARNING ACTIVITIES	RESOURCES	EVALUATION
<p><i>At the end of Level II, the trainee should demonstrate mastery of the basic knowledge of the subspecialties of Cardiac surgery ; acquire sufficient in-depth clinical skills in the evaluation and management of common surgical cases on the wards, ER, OPD, PACU and/or ICU; gain experience in the management of emergency Cardiac cases; and, be able to safely perform moderately complex surgical procedures, all under the supervision of the consultant and/or senior surgical fellow, as directed by the consultant.</i></p>				
I. COGNITIVE				
<p>1.1. Intended Learning 1.1.1. At the end of Level II, the trainee should be able to discuss the complex principles of general cardiac surgery and basic knowledge of the subspecialties of cardiac surgery.</p>	<p>1.2. Content 1.2.1. In-depth comprehension of the following: 1.2.1.1. Anatomy (heart, pericardium, great vessels, mediastinum, thoracic inlet, neck, tracheobronchial tree, lungs, chest wall and diaphragm) 1.2.1.2. Physiology (hemodynamics, electrophysiology, hemostasis, Acid-base balance, pulmonary physiology, ventilation, gas exchange, metabolic response to trauma and surgery, GIT physiology, renal physiology, hepatic physiology, nutrition, and temperature regulation) 1.2.1.3. Pharmacology (inotropes, vasodilators, vasoconstrictors, anti-arrhythmia, hemostatic, antiplatelet, anticoagulant, thrombolytic, analgesic, local anesthetic, and general anesthetic) 1.2.1.4. Pathology (inflammation, bleeding, thrombosis, atherosclerosis, myocardial infarction and complications, endocarditis, valve disease, electrophysiology abnormalities, central and peripheral vascular diseases, thoracic diseases, pericarditis, SIRS, infection, wound healing, ARDS, and TCVS tumors) 1.2.1.5. Radiology and other diagnostic modalities (ECG, CXR, CT scan, MRI/MRA, angiography, ultrasound, echocardiography and nuclear imaging) 1.2.1.6. Extracorporeal life support 1.2.1.7. Congenital cardiothoracic disease 1.2.1.8. Cardiac trauma diagnosis and principles of management</p>	<p>1.3. Teaching-Learning Activities 1.3.1. Daily SICU/RR rounds 1.3.2. Ward and emergency room duties 1.3.3. OPD rotations 1.3.4. Pre-and-post-operative conference 1.3.5. Lectures 1.3.6. Rotations to ancillary departments or other hospitals 1.3.7. Journal club 1.3.8. Morbidity and mortality conference 1.3.9. Small group discussion with consultants 1.3.10. Individual study</p>	<p>1.4. Resources 1.4.1. Textbooks: 1.4.1.1. Kirklın Cardiac Surgery 1.4.1.2. Bojar Manual of Perioperative Care in Adult Cardiac Surgery 1.4.1.3. Rutherford Vascular 1.4.1.4. Shield's General Thoracic Surgery 1.4.2. Extracorporeal life Support Organization Handbook 1.4.3. Access to: 1.4.3.1. STS, AHA and EATS Evidence based guidelines. 1.4.3.2. Audio-video teaching files. 1.4.3.3. Internet access 1.4.3.4. Conventions and postgraduate courses 1.4.3.5. Workshops 1.4.3.6. Surgery Consultant staff 1.4.3.7. Department of surgery consultant staff 1.4.3.8. Multidisciplinary consultants and trainees</p>	<p>1.5. Assessment 1.5.1. Written examination 1.5.2. Oral examination</p>



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CARDIAC SURGERY				
INTENDED LEARNING	CONTENT	LEARNING ACTIVITIES	RESOURCES	EVALUATION
I. COGNITIVE				
1.1.2. At the end of Level II, the trainee must be able to demonstrate knowledge of the principles of research and critical appraisal of literature	1.2.2. Critical appraisal of literature 1.2.3. Research paper as per requirement of the institution	1.3.3. Daily SICU/RR rounds 1.3.1. Ward and emergency room duties 1.3.2. OPD rotations 1.3.3. Regular pre-and-post-operative conference 1.3.4. Lectures 1.3.5. Rotations to ancillary departments or other training hospitals 1.3.6. Journal club 1.3.7. Morbidity and mortality conferences 1.3.8. Multidisciplinary meetings 1.3.9. Small group discussion with consultants 1.3.10. Individual study	1.4.1. Textbooks: 1.4.1.1. Kirklind Cardiac Surgery 1.4.1.2. Bojar Manual of Perioperative Care in Adult Cardiac Surgery 1.4.1.3. Rutherford Vascular 1.4.1.4. Shield's 1.4.1.5. Extracorporeal life Support Organization Handbook 1.4.2. Access to: 1.4.2.1. STS, AHA and EATS Evidence based guidelines. 1.4.2.2. Audio-video teaching files. 1.4.2.3. Internet access 1.4.2.4. Conventions and postgraduate courses 1.4.2.5. Workshops 1.4.2.6. Surgery Consultant staff 1.4.2.7. Department of surgery consultant staff 1.4.2.8. Multidisciplinary consultants and trainees	1.5.1. Completed research paper review



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CARDIAC SURGERY				
INTENDED LEARNING	CONTENT	LEARNING ACTIVITIES	RESOURCES	EVALUATION
II. PSYCHOMOTOR				
<p>2.1. Intended Learning</p> <p>2.1.1. At the end of level II, the trainee must be competent in dealing with complex elective cardiovascular cases and straightforward subspecialty diseases in regard to the following:</p> <p>2.1.1.1. Perform history-taking and thorough physical examination</p> <p>2.1.1.2. Order and interpret necessary diagnostic examinations</p> <p>2.1.1.3. Formulate a logical diagnosis</p> <p>2.1.1.4. Risk assessment of operative and non-operative treatment</p> <p>2.1.1.5. Draw up a management plan</p> <p>2.1.1.6. Refer to the surgical and medical team</p> <p>2.1.1.7. Carry-out agreed management plan</p>	<p>2.2. Content</p> <p>2.2.1. Can perform the whole but <i>may</i> need assistance, and requires advice rather than help, in the following:</p> <p>2.2.1.1. Applies basic principles of management of patients presenting with the elective complicated cardiovascular acquired diseases, including preoperative, postoperative, intensive care and rehabilitation.</p> <p>2.2.1.2. Valve selection and anticoagulation management including complications.</p> <p>2.2.1.3. Application of institutional/departmental protocols such as blood transfusion management, infection control, blood glucose management, etc.</p> <p>2.2.1.4. Recognition, evaluation and treatment of hemodynamic abnormalities.</p> <p>2.2.1.5. Cardiopulmonary resuscitation including use of defibrillator, cardiac pacing and IABP</p> <p>2.2.1.6. Recognition and management of immediately life-threatening conditions such as ruptured arterial aneurysms/dissections, acute aortic dissection, cardiac tamponade, tension pneumothorax, massive pleural effusion, open chest wound, flail chest, and obstructed airway</p> <p>2.2.1.7. Recognition, evaluation and treatment of ventilatory abnormalities.</p> <p>2.2.1.8. Recognition, evaluation and treatment of multi-organ dysfunction.</p> <p>2.2.1.9. Investigations, diagnosis and treatment of common congenital hearts diseases.</p>	<p>2.3. Learning Activities</p> <p>2.3.1. SICU / RR Rounds</p> <p>2.3.2. Ward and emergency room duties</p> <p>2.3.3. OPD rotations</p> <p>2.3.4. Pre-and-post-operative conference</p> <p>2.3.5. Lectures</p> <p>2.3.6. Journal Club</p> <p>2.3.7. Morbidity and mortality conferences</p> <p>2.3.8. Small group discussions with consultants</p> <p>2.3.9. Individual study</p> <p>2.3.10. Assist senior trainees and consultants during operations</p> <p>2.3.11. Supervised operations</p>	<p>2.4. Resources</p> <p>2.4.1. Textbook in Cardiac, Vascular and Thoracic surgery especially the ff:</p> <p>2.4.1.1. Kirklind Cardiac Surgery</p> <p>2.4.1.2. Rutherford Vascular</p> <p>2.4.1.3. Bojar's Manual of preoperative Care in Adult Cardiac Surgery</p> <p>2.4.1.4. Shield's General Thoracic Surgery</p> <p>2.4.2. Access to STS, AHA/ACC and EACTS Evidence-based guidelines</p> <p>2.4.3. Audio-video teaching files.</p> <p>2.4.4. Internet access</p> <p>2.4.5. Conventions and postgraduate meetings</p> <p>2.4.6. Workshops</p> <p>2.4.7. Consultant staff</p> <p>2.4.8. Department of Surgery consultant staff</p> <p>2.4.9. BLS and ACLS courses</p> <p>2.4.10. Hospital database</p> <p>2.4.11. Operating room facilities</p> <p>2.4.12. OPD facilities</p> <p>2.4.13. E.R. facilities</p> <p>2.4.14. Ward and SICU facilities</p> <p>2.4.15. Ancillary facilities such as radiology, cath. lab., cardiographics, pathology and laboratory</p>	<p>2.5. Assessment</p> <p>2.5.1. Written Examination</p> <p>2.5.2. Oral examination</p> <p>2.5.3. Clinical examination and Consenting (CEXC) (forms provided in appendix 5)</p> <p>2.5.4. Case-based discussion (CBD) (forms provided in appendix 6)</p>



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CARDIAC SURGERY				
INTENDED LEARNING	CONTENT	LEARNING ACTIVITIES	RESOURCES	EVALUATION
II. PSYCHOMOTOR				
<p>2.3. Intended Learning</p> <p>2.3.1. At the end of level II, the trainee should demonstrate satisfactory skills in performing entire operations of selected straightforward elective cases, and gain experience in the surgical management of complicated Cardiac cases under the supervision of a consultant.</p>	<p>2.4. Content</p> <p>2.4.1. Competent to perform the following <i>without</i> assistance:</p> <p>2.4.1.1. Use of internal defibrillator</p> <p>2.4.1.2. Median sternotomy</p> <p>2.4.1.3. Saphenous vein harvest</p> <p>2.4.1.4. Internal mammary harvest</p> <p>2.4.1.5. Central venous access</p> <p>2.4.1.6. Chest aspiration / thoracentesis</p> <p>2.4.1.7. Chest drain insertion and management</p> <p>2.4.2. Can perform the whole but <i>may</i> need assistance, and requires advice rather than help, in the following:</p> <p>2.4.2.1. Central arterial and venous cannulation</p> <p>2.4.2.2. Pulmonary artery catheterization</p> <p>2.4.2.3. Intra-aortic balloon pump insertion, pump timing and management</p> <p>2.4.2.4. Radial artery harvesting</p> <p>2.4.2.5. Practical use of inotropes and vasoactive drugs intraoperatively</p> <p>2.4.2.6. Safe conduct of CPB – problem solving and troubleshooting</p> <p>2.4.2.7. Principles and practice of myocardial preservation</p> <p>2.4.2.8. Weaning from bypass and decannulation</p> <p>2.4.2.9. Permanent pacemaker insertion</p> <p>2.4.2.10. Wound management</p> <p>2.4.2.11. Pericardiocentesis, pericardial window or tube Pericardiostomy</p> <p>2.4.3. Can perform <i>with</i> assistance, and knows the reason in the following:</p> <p>2.4.3.1. Isolated, uncomplicated aortic valve replacement stented biological or mechanical)</p> <p>2.4.3.2. Isolated uncomplicated mitral valve replacement</p> <p>2.4.3.3. Tricuspid valve surgery</p> <p>2.4.3.4. Proximal coronary bypass anastomosis</p> <p>2.4.3.5. Distal coronary bypass anastomosis</p> <p>2.4.3.6. Surgical management of the following uncomplicated CHD</p> <p>2.4.3.7. Patent ductus arteriosus</p> <p>2.4.3.8. Atrial septal defect</p> <p>2.4.3.9. Ventricular septal defect</p> <p>2.4.3.10. PA banding</p> <p>2.4.3.11. Modified Blalock-Taussig shunt</p>	<p>2.2. Teaching-Learning Activities</p> <p>2.3.1. Daily SICU/RR Rounds</p> <p>2.3.2. Ward and emergency room duties</p> <p>2.3.3. Weekly OPD rotations.</p> <p>2.3.4. Pre-and-post-operative conference</p> <p>2.3.5. Lectures</p> <p>2.3.6. Rotations to ancillary departments and/or other hospitals</p> <p>2.3.7. Journal Club</p> <p>2.3.8. Morbidity and mortality conferences</p> <p>2.3.9. Small group discussion with consultant</p> <p>2.3.10. Individual study</p> <p>2.3.11. Assist senior trainees and consultants during operation</p> <p>2.3.12. Supervised operations</p>	<p>2.4. Resources</p> <p>2.4.1. Textbook in Cardiac, Vascular and Thoracic surgery especially the ff:</p> <p>2.4.1.1. Kirklın Cardiac Surgery</p> <p>2.4.1.2. Rutherford Vascular</p> <p>2.4.1.3. Bojar’s Manual of preoperative Care in Adult Cardiac Surgery</p> <p>2.4.1.4. Shield’s</p> <p>2.4.2. Access to STS, AHA/ACC and EACTS Evidence-based guidelines</p> <p>2.4.3. Audio-video teaching files.</p> <p>2.4.4. Internet access</p> <p>2.4.5. Conventions and postgraduate meetings</p> <p>2.4.6. Workshops</p> <p>2.4.7. Consultant staff</p> <p>2.4.8. Department of Surgery consultant staff</p> <p>2.4.9. BLS and ACLS courses</p> <p>2.4.10. Hospital database</p> <p>2.4.11. Operating room facilities</p> <p>2.4.12. OPD facilities</p> <p>2.4.13. E.R. facilities</p> <p>2.4.14. Ward and SICU facilities</p> <p>2.4.15. Ancillary facilities such as radiology, cath. lab., cardiographics, pathology and laboratory</p>	<p>2.5. Assessment</p> <p>2.5.1. Written examinations</p> <p>2.5.2. Oral examinations</p> <p>2.5.3. Clinical examination and Consenting (CEXC) (forms provided in appendix 5)</p> <p>2.5.4. Case-based discussion (CBD) (forms provided in appendix 6)</p> <p>2.5.5. Operative logbook</p>



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CARDIAC SURGERY				
INTENDED LEARNING	CONTENT	LEARNING ACTIVITIES	RESOURCES	EVALUATION
At the end of the SECOND YEAR, the RESIDENT should be able to:				
II. PSYCHOMOTOR				
	2.4.3.12. Femoral cannulation and decannulation 2.4.3.13. MICS 2.4.3.14. Repeat sternotomy with pericardial dissection, cardiac mobilization 2.4.3.15. Pericardiectomy 2.4.3.16. Repair of cardiac injuries 2.4.3.17. Resection of mediastinal cysts and tumors masses. 2.4.4. Has adequate knowledge of the steps through direct observation and can perform some parts of the procedure with reasonable fluency in the following: 2.4.4.1. Combined valve and graft surgery 2.4.4.2. Surgical strategies for managing the small aortic root 2.4.4.3. Aortic root surgery including stentless valves, and root replacement 2.4.4.4. Re-do valve surgery 2.4.4.5. Valve surgery for endocarditis 2.4.4.6. Techniques for surgical ablation of arrhythmias 2.4.4.7. Mitral valve repair 2.4.4.8. Alternative surgical approaches to valve including thoracotomy, transeptal approaches, and minimal access surgery 2.4.4.9. Hypothermic strategies 2.4.4.10. Carotid surgery 2.4.4.11. Surgery for acute dissection of the ascending aorta 2.4.4.12. Aortic root replacement for chronic aortic root disease 2.4.4.13. Complex aortic surgery including arch surgery, descending aortic and thoracoabdominal aortic surgery 2.4.4.14. Endovascular repair 2.4.4.15. TAVR 2.4.4.16. Institution of ECMO			



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CARDIAC SURGERY				
INTENDED LEARNING	CONTENT	LEARNING ACTIVITIES	RESOURCES	EVALUATION
At the end of the SECOND YEAR, the RESIDENT should be able to:				
III. AFFECTIVE				
2.5. Intended Learning 2.5.1. At the end of Level II, the trainee must demonstrate professionalism in the practice of surgery.	2.6. Content: 2.6.1. Recognize the need for and participate in the multidisciplinary team approach of the assessment and management of critically ill patients. 2.6.2. Adherence to patient safety and confidentiality guidelines. 2.6.3. Intellectual integrity ⁹ 2.6.4. Moral and ethical value ⁹ 2.6.5. Reliability 2.6.6. Appropriate bedside decorum ⁹ 2.6.7. Respectful relationship with colleagues and other hospital staff 2.6.8. Coping to stress 2.6.9. Punctuality 2.6.10. Regular updating of consultants 2.6.11. Empathy to the patient and relatives	2.7. Learning Activities 2.7.1. Ward rounds with consultants	2.8. Resources	2.9. Assessment 2.9.1. Clinical examination and Consenting (CEXC) (forms provided in appendix 5) 2.9.2. Case-based discussion (CBD) (forms provided in appendix 6) 2.9.3. Critical incident report 2.9.4. Non-technical skills for surgery (NOTTS)



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C. LEVEL 3: CORE CURRICULUM

CARDIAC SURGERY				
INTENDED LEARNING OUTCOMES	CONTENT	LEARNING ACTIVITIES	RESOURCES	EVALUATION
At the end of Level III, the trainee should be eligible for the PBTCVS diplomate examination by demonstrating mastery of the pathophysiology and multidisciplinary management of common cardiovascular diseases; and, gain sufficient experience, under the supervision of the consultants, in the safe performance of common major cardiac procedures as prescribed by the training institution and PBTCVS.				
I. COGNITIVE				
1.1. Learning outcome 1.1.1. At the end of Level III, the trainee should be able to discuss the complex principles of general Cardiac surgery and its subspecialties in preparation for diplomate examination.	1.2. Content: 1.2.1. In-depth comprehension of the following: 1.2.1.1. Anatomy (heart, pericardium, great vessels, mediastinum, thoracic inlet, neck, tracheobronchial tree, lungs, chest wall and diaphragm) 1.2.1.2. Physiology (hemodynamics, electrophysiology, hemostasis, bleeding, thrombosis, Acid-base balance, pulmonary physiology, ventilation, gas exchange, metabolic response to trauma and surgery, GIT physiology, renal physiology, hepatic physiology, nutrition, and temperature regulation) 1.2.1.3. Pharmacology (inotropes, vasodilators, vasoconstrictors, anti-arrhythmia, hemostatic, antiplatelet, anticoagulant, thrombolytic, analgesic, local anesthetic, and general anesthetic) 1.2.1.4. Pathology (inflammation, bleeding, thrombosis, atherosclerosis, myocardial infarction and complications, endocarditis, valve disease, electrophysiology abnormalities, central and peripheral vascular diseases, thoracic diseases, pericarditis, SIRS, infection, wound healing, ARDS, and TCVS tumors) 1.2.1.5. Radiology and other diagnostic modalities (ECG, CXR, CT scan, MRI/MRA, angiography, ultrasound, echocardiography and nuclear imaging) 1.2.1.6. Extracorporeal life support 1.2.1.7. Congenital cardiothoracic diseases 1.2.1.8. Cardiac trauma diagnosis and principles of management 1.2.1.9. Diagnoses and principles of management of emergency cardiovascular cases	1.3. Teaching-Learning Activities 1.3.1. Daily SICU/RR rounds 1.3.2. Ward and emergency room duties 1.3.3. OPD rotations 1.3.4. Pre-and-post-operative conference 1.3.5. Lectures 1.3.6. Rotations to ancillary departments or other hospitals 1.3.7. Journal club 1.3.8. Morbidity and mortality conferences 1.3.9. Small group discussion with consultants 1.3.10. Individual study	1.4. Resources 1.4.1. Textbook in Cardiovascular surgery especially the ff: 1.4.1.1. Kirklin Cardiac Surgery 1.4.1.2. Rutherford Vascular Surgery 1.4.1.3. Bojar's Manual of perioperative care in Adult Cardiac Surgery 1.4.1.4. Extracorporeal Life Support Organization Handbook 1.4.2. Access to: 1.4.2.1. STS, AHA/ACC and EACTS Evidence-based guidelines 1.4.2.2. Audio-video teaching files 1.4.2.3. Internet Access 1.4.2.4. Conventions and postgraduates meetings 1.4.2.5. Workshops 1.4.2.6. Research Consultants 1.4.2.7. Department of Surgery consultant staff 1.4.2.8. Multidisciplinary consultants and trainees	1.5. Assessment 1.5.1. Written examination 1.5.2. Oral examination



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CARDIAC SURGERY				
INTENDED LEARNING	CONTENT	LEARNING ACTIVITIES	RESOURCES	EVALUATION
1.1.1. At the end of level III, the trainee must be able to demonstrate knowledge of the principles of Research and critical appraisal of literature	1.2.2. Research methods 1.2.3. Critical appraisal of literature 1.2.4. Research Paper as per required by the institution	1.3.1.11. Journal Clubs 1.3.1.12. Research Lectures	1.4.3. Textbook in Research 1.4.4. Internet Access 1.4.5. Workshops 1.4.6. Research Consultants 1.4.7. Department of Surgery consultant staff	1. Completed Research paper review





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CARDIAC SURGERY				
INTENDED LEARNING OUTCOMES	CONTENT	LEARNING ACTIVITIES	RESOURCES	EVALUATION
2. PSYCHOMOTOR				
<p>2.1. Learning outcome: 2.1.1. At the end of Level III, the trainee must be able to apply the perioperative critical care principles among acute and chronically ill CVS patients.</p>	<p>2.2. Content 2.2.1. Competent to perform the following <i>without</i> assistance: 2.2.1.1. Median and examination of the operative and critically ill patient. 2.2.1.2. The analysis and interpretation of post-operative and critical care charts and laboratory results 2.2.1.3. Analysis of results of hematology, biochemical investigations, CXR, ECG, echocardiogram, angiogram, CT scan and MRI. 2.2.1.4. Risk assessment of operative and non-operative management. 2.2.1.5. Formulate a logical diagnosis and treatment plan. 2.2.1.6. Valve selection and anticoagulation management including complications. 2.2.1.7. Application of institutional/departmental protocols such as blood transfusion management, infection control, blood glucose management, etc. 2.2.1.8. Recognition, evaluation and treatment of hemodynamic abnormalities. 2.2.1.9. Cardiopulmonary resuscitation including use of defibrillator, cardiac pacing, IABP and ECMO. 2.2.1.10. Investigation, diagnosis and treatment of common congenital hearts diseases. 2.2.1.11. Wound management. 2.2.1.12. Provide timely, complete, relevant and legible clinical documents. 2.2.2. Can perform the whole but <i>may</i> need assistance, and requires advice rather than help in the following: 2.2.2.1. Recognition and management of immediately life-threatening conditions such as ruptured arterial aneurysms/dissections, acute aortic dissection, cardiac tamponade, tension pneumothorax, massive pleural effusion, open chest wound, flail chest, and obstructed airway. 2.2.2.2. Recognition, evaluation and treatment of thoracic neoplasms, emphysematous and bullous diseases, disorders of the pleura and disorders of the airway.</p>	<p>2.3. Teaching-Learning Activities 2.3.1. SICU/RR rounds 2.3.2. Ward and emergency room duties 2.3.3. Pre-and-post-operative conference 2.3.4. Lectures 2.3.5. Journal club 2.3.6. Morbidity and mortality conferences 2.3.7. Small group discussion with consultants 2.3.8. Individual study 2.3.9. Assist senior trainees and consultants during operations 2.3.10. Supervised operations</p>	<p>2.4. Resources 2.4.1. Textbook in Cardiac, Vascular and Thoracic surgery especially the ff: 2.4.1.1. Kirklind Cardiac Surgery 2.4.1.2. Rutherford Vascular 2.4.1.3. Bojar's Manual of preoperative Care in Adult Cardiac Surgery 2.4.1.4. Shield's General Thoracic Surgery 2.4.2. Access to STS, AHA/ACC and EACTS Evidence-based guidelines 2.4.3. Audio-video teaching files. 2.4.4. Internet access 2.4.5. Conventions and postgraduate meetings 2.4.6. Workshops 2.4.7. Consultant staff 2.4.8. Department of Surgery consultant staff 2.4.9. BLS and ACLS courses 2.4.10. Hospital database 2.4.11. Operating room facilities 2.4.12. OPD facilities 2.4.13. E.R. facilities 2.4.14. Ward and SICU facilities 2.4.15. Ancillary facilities such as radiology, cath. lab., cardiographics, pathology and laboratory</p>	<p>2.5. Assessment 2.5.1. Written examination 2.5.2. Oral examination 2.5.3. Clinical examination and Consenting (CEXC) (forms provided in appendix 5) 2.5.4. Case-based discussion (CBD) (forms provided in appendix 6)</p>



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CARDIAC SURGERY				
INTENDED LEARNING OUTCOMES	CONTENT	LEARNING ACTIVITIES	RESOURCES	EVALUATION
II. PSYCHOMOTOR				
<p>2.1.2. At the end of level III, the trainee should demonstrate satisfactory skills and caseload of straightforward surgical procedures with safety at consultant level.</p>	<p>2.2.2.2. Recognition, evaluation and treatment of ventilator abnormalities.</p> <p>2.2.2.3. Recognition, evaluation and treatment of multi-organ dysfunction.</p> <p>2.5.5. Competent to perform the following <i>without</i> assistance:</p> <p>2.5.5.1. Median sternotomy</p> <p>2.5.5.2. Arterial and venous cannulation</p> <p>2.5.5.3. Central venous catheter access</p> <p>2.5.5.4. Pulmonary artery catheterization</p> <p>2.5.5.5. Intra-aortic balloon pump insertion, pump timing and management.</p> <p>2.5.5.6. Internal mammary artery, radial artery and great saphenous vein harvesting</p> <p>2.5.5.7. Practical use of inotropes and vasoactive drugs</p> <p>2.5.5.8. Use of internal defibrillator</p> <p>2.5.5.9. Safe conduct of CPB – problem solving and troubleshooting</p> <p>2.5.5.10. Principles and practice of myocardial preservation</p> <p>2.5.5.11. Weaning from bypass and decannulation</p> <p>2.5.5.12. Pericardiocentesis, Pericardiostomy or creation of pericardial window</p> <p>2.5.5.13. Cardiopulmonary resuscitation including open chest resuscitation.</p> <p>2.5.5.14. OPD new and old patient check-up</p> <p>2.5.6. Can perform the whole , but <i>may</i> need assistance, and requires advice rather than help in the following:</p> <p>2.5.6.1. CABG, standard</p> <p>2.5.6.2. Isolated, uncomplicated aortic valve replacement (stented biological or mechanical)</p> <p>2.5.6.3. Isolated uncomplicated mitral valve replacement</p>	<p>3.1. Daily SICU/RR Rounds</p> <p>3.2. Ward and emergency room duties</p> <p>3.3. Weekly OPD rotations.</p> <p>3.4. Pre-and-post-operative conference</p> <p>3.5. Lectures</p> <p>3.6. Rotations to ancillary departments and/or other hospitals</p> <p>3.7. Journal Club</p> <p>3.8. Morbidity and mortality conferences</p> <p>3.9. Small group discussion with consultants</p> <p>3.10. Individual study</p> <p>3.11. Assist senior trainees and consultants during operation</p> <p>3.12. Supervised operations</p>	<p>3.13. Textbook in Cardiac, Vascular and Thoracic surgery especially the ff:</p> <p>3.13.1. Kirklín Cardiac Surgery</p> <p>3.13.2. Rutherford Vascular</p> <p>3.13.3. Bojar's Manual of preoperative Care in Adult Cardiac Surgery</p> <p>3.13.4. Shield's General Thoracic Surgery</p> <p>3.14. Access to STS, AHA/ACC and EACTS Evidence-based guidelines</p> <p>3.15. Audio-video teaching files.</p> <p>3.16. Internet access</p> <p>3.17. Conventions and postgraduate meetings</p> <p>3.18. Workshops</p> <p>3.19. Consultant staff</p> <p>3.20. Department of Surgery consultant staff</p> <p>3.21. BLS and ACLS courses</p> <p>3.22. Hospital database</p> <p>3.23. Operating room facilities</p> <p>3.24. OPD facilities</p> <p>3.25. E.R. facilities</p> <p>3.26. Ward and SICU facilities</p> <p>3.27. Ancillary facilities such as radiology, cath. lab., cardiographics, pathology and laboratory</p>	<p>3.28. Written examinations</p> <p>3.29. Oral examinations</p> <p>3.30. Clinical examination and Consenting (CEXC) (forms provided in appendix 5)</p> <p>3.31. Case-based discussion (CBD) (forms provided in appendix 6)</p> <p>3.32. Operative logbook</p>



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CARDIAC SURGERY				
INTENDED LEARNING OUTCOMES	CONTENT	LEARNING ACTIVITIES	RESOURCES	EVALUATION
II. PSYCHOMOTOR				
	2.5.6.4. Tricuspid valve surgery 2.5.6.5. Surgical re-exploration for bleeding or tamponade 2.5.6.6. Repeat sternotomy, with pericardial dissection, cardiac mobilization 2.5.6.7. Pericardiectomy 2.5.6.8. Patient selection for IABP and its management 2.5.6.9. Surgical management of the following uncomplicated CHD (a higher level of operative competence is not required during this module) 2.5.6.10. Patent ductus arteriosus 2.5.6.11. Atrial septal defect 2.5.6.12. Ventricular septal defect 2.5.6.13. PA banding 2.5.6.14. Modified Blalock-Taussig shunt 2.5.6.15. Pericardiocentesis, pericardial window or tube pericardiostomy for tamponade 2.5.6.16. Permanent pacemaker implantation 2.5.6.17. Femoral cannulation and decannulation 2.5.6.18. Repair of cardiac injuries 2.5.6.19. Resection of mediastinal cysts and tumors masses. 2.5.6.20. Wound management 2.5.7. Can perform <i>with</i> assistance, and knows the reasons, on the following: 2.5.7.1. Combined valve and graft surgery 2.5.7.2. Mitral valve repair 2.5.7.3. Techniques for surgical ablation of arrhythmias 2.5.7.4. Hypothermic strategies including HCA, RCP and SACP 2.5.7.5. MICS 2.5.7.6. Surgery for acute dissection of the ascending aorta 2.5.7.7. Repair of aortic transection 2.5.7.8. Carotid surgery 2.5.7.9. Endovascular repair 2.5.7.10. Patient selection for mechanical circulatory support			



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CARDIAC SURGERY				
INTENDED LEARNING OUTCOMES	CONTENT	LEARNING ACTIVITIES	RESOURCES	EVALUATION
II. PSYCHOMOTOR				
	2.3.4. Has adequate knowledge of the steps through direct observation and can perform some parts of the procedure with reasonable fluency in the following: 2.3.5. Surgical strategies for managing the small aortic root 2.3.6. Aortic root surgery including stentless valves, and root replacement 2.3.7. Re-do valve surgery 2.3.8. Valve surgery for endocarditis 2.3.9. Aortic root replacement for chronic aortic root disease 2.3.10. Complex aortic surgery including arch surgery, descending aortic and thoracoabdominal aortic surgery 2.3.11. TAVR			



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CARDIAC SURGERY				
INTENDED LEARNING OUTCOMES	CONTENT	LEARNING ACTIVITIES	RESOURCES	EVALUATION
III. AFFECTIVE				
3.1. Learning outcome 3.1.1. At the end of level III, the trainee must demonstrate professionalism in the practice of surgery.	3.2. Content 3.2.1. Recognize the need for and participate in multidisciplinary team approach of the critically ill patients. 3.2.2. Adherence to patient safety and confidentiality guidelines. 3.2.3. Intellectual integrity ⁹ 3.2.4. Moral and ethical value ⁹ 3.2.5. Reliability 3.2.6. Appropriate bedside decorum ⁹ 3.2.7. Respectful relationship with colleagues and other hospital staff 3.2.8. Coping to stress 3.2.9. Punctuality 3.2.10. Regular updating of consultants 3.2.11. Empathy to the patient and relatives 3.2.12. Possesses leadership skills	3.3. Learning Activities 3.3.1. Ward rounds with consultants	3.4. Resources	3.5. Assessment 3.5.1. Clinical examination and Consenting (CEXC) (forms provided in appendix 5) 3.5.2. Case-based discussion (CBD) (forms provided in appendix 6) 3.5.3. Critical incident report 3.5.4. Non-technical skills for surgery (NOTTS)



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CARDIAC SURGERY – COMPETENCY INDEX CASES (CORE)

PROCEDURE	PRIMARY SURGEON*
1. Median Sternotomy / Clamshell (opening and closure)	5
2. Thoracotomy	5
3. Saphenous Vein Harvest	10
4. Pericardial Drainage	5
5. Peripheral Revascularization (embolectomy, etc.)	5
6. Varicose Vein Ablation	5
7. Central Venous Cannulation	10
8. Arterio-Venous Fistula / AV Graft	10
9. Vascular Trauma • (Head & Neck / Chest / Abdominal Vascular / Peripheral Vascular – Artery & Vein Repair)	5
10. Amputations • (BKA / AKA / Metatarsal)	5
11. Thoracic, Cardiac and Vascular Trauma with Visceral Organ Repair	5
12. FNAB / TTNA / Core Biopsy	5
13. Chest Tube Insertion	10
14. Thoracentesis (with or without ultrasound guidance)	10
15. Bronchoscopy: Flexible / Rigid as primary or secondary operator	5
16. Tracheostomy as primary or secondary operator	3
TOTAL	103

*Primary Surgeon: Case credit is given to the trainee for a consultant-supervised procedure if all of the following are satisfied:

1. The trainee participated in the preoperative planning including surgical indications and selection of the appropriate surgical strategy for the current patient
2. The trainee was supervised by the consultant to perform the essential parts of the operation
3. The trainee was involved in the postoperative care from SICU until discharge, and
4. Two first assists of the same procedure is equivalent to 1 primary surgical credit.



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CARDIAC SURGERY – COMPETENCY INDEX CASES (TRACKING)

PROCEDURE	PRIMARY SURGEON*
Median sternotomy (opening and closure)	10
Saphenous vein harvest	10
Internal Mammary Artery harvest (IMA)	10
Central Arterial and Venous cannulation	10
Peripheral Arterial and Venous cannulation	5
Cardiopulmonary Bypass and Cardioplegia Management	30
Hypothermic Strategies (<33 C)	4
Coronary Artery Bypass Grafting	20
Aortic Valve Surgery	10
Mitral Valve Surgery	10
Tricuspid Valve Surgery	5
CHD Surgery (ASD/VSD)	10
CHD Surgery (PDA/BTS)	5
Ascending Aortic Surgery and Aortic Root Surgery	1
Thoracic aortic open/endovascular repair as primary or secondary operator	2
Cardiac Tumors	2
Arrhythmia Surgery (as primary or secondary operator)	2
Re-do Cardiac Surgery (as primary or secondary operator)	2
IABP Insertion	3
Permanent Pacemaker Implantation (can be completed in another specialty institution)	10
Pericardiocentesis	3
Pericardiostomy Tube Insertion	3
Pericardiectomy	1
TOTAL	168

*Primary Surgeon: Case credit is given to the trainee for a consultant-supervised procedure if all of the following are satisfied:

1. The trainee participated in the preoperative planning including surgical indications and selection of the appropriate surgical strategy for the current patient
2. The trainee was supervised by the consultant to perform the essential parts of the operation
3. The trainee was involved in the postoperative care from SICU until discharge, and
4. Two first assists of the same procedure is equivalent to 1 primary surgical credit.