

Entrustable Professional Activities (EPAs)

List of EPAs for Cardiothoracic Surgery (CTS)

EPA Title	EPA Entrustment Level to be Attained by Exit
EPA 1: Managing Surgical Outpatient Clinics	4
EPA 2: Managing Ward Rounds	4
EPA 3: Managing Emergency Calls	4
EPA 4: Managing a Thoracic Operating List	3
	[1] Segmentectomy, lobectomy, pneumonectomy, sleeve resection [2] Resection of mediastinal masses and thymectomy [3] Pericardial window creation [4] Chest wall and diaphragm resection and reconstruction
	4
	[1] Bronchoscopy [2] Video-Assisted Thoracoscopic Surgery (VATS) and thoracotomy [3] Wedge resection of lung and bullectomy [4] Mediastinal biopsy/dissection [5] Pleurectomy/pleurodesis, pleural biopsy, and decortication
EPA 5: Managing a Cardiac Operating List	3
	[1] Perform coronary graft anastomosis [2] Aortic valve replacement [3] Mitral valve replacement/repair [4] Tricuspid valve replacement/repair
	4
	[1] Sternotomy and thoracotomy for surgical access [2] Harvest conduit for CABG [3] Central and peripheral cannulation for cardiopulmonary bypass (CPB) and extracorporeal membrane oxygenation (ECMO) [4] Manage cardiopulmonary bypass: preparation, cannulation options, initiation, weaning, myocardial protection
EPA 6: Managing Multi-Disciplinary Care	4

Entrustment Scale

Entrustment Level	Description
Level 1	Be present and observe, but no permission to enact EPA
Level 2	Practice EPA with direct (pro-active) supervision
Level 3	Practice EPA with indirect (re-active) supervision
Level 4	Unsupervised practice allowed (distant oversight)

Level 5	May provide supervision to junior learners
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CTS EPA 1

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Title	Managing Surgical Outpatient Clinics
Specifications and limitations	The practice of the EPA should align with Appropriate and Value-based Care (AVBC) principles where relevant – (i) Care is evidence-based, (ii) Care is patient-centred, (iii) Care is right-sited, (iv) Care is integrated and coordinated, and (v) Care is cost-effective and sustainable. This EPA contains the following elements: • Gather information: take structured history and perform focused physical examination • Generate working and differential diagnosis • Prioritise and interpret relevant investigations • Formulate appropriate surgical management plan including recommendation, options, and risk-to-benefit assessment • Communicate and counsel patient to obtain informed consent for procedure • Escalate to a senior surgeon appropriately • Manage associated medical co-morbidities and complications • Make referrals to other specialities and allied health as appropriate • Schedule operative cases with appropriate urgency, duration, and patient preparation • Completes all required documentation
	Limitations: - Nil
EPA Entrustment Level to be Attained by Exit	Level 4

CTS EPA 2

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Title	Managing Ward Rounds
Specifications and limitations	The practice of the EPA should align with Appropriate and Value-based Care (AVBC) principles where relevant - (i) Care is evidence-based, (ii) Care is patient-centred, (iii) Care is right-sited, (iv) Care is integrated and coordinated, and (v) Care is cost-effective and sustainable. This EPA is applicable to cardio-thoracic patients in the inpatient setting, including in the general ward, high dependency unit, and cardio-thoracic intensive care unit. This EPA contains the following elements: • Identify at the start of a ward round if there are acutely unwell patients who require immediate attention and escalate the necessary care appropriately • Review all relevant documentations, including those from the multi-disciplinary and allied health teams • Make a proper assessment of patients by taking a structured history and by performing a focused clinical examination • Request, interpret and discuss appropriate investigations to synthesise findings into an overall impression, working diagnosis, and management plan • Identify when the clinical course is progressing as expected and when medical or surgical complications are developing, and recognise when operative intervention or re-intervention is required and ensure this is carried out • Manage co-morbidities and complications safely, referring to other specialties or senior surgeon as appropriate • Make good use of time, ensuring all necessary assessments are made and discussions held, while continuing to make progress with the overall workload of the ward round • Understand and apply relevant Enhanced Recovery After Surgery (ERAS) protocols • Complete all documentation, administrative tasks, and clinical procedure required for ongoing patient care • Right-site and transfer patients to the appropriate care setting • Summarise important points at the end of the ward rounds and ensure all members of the multi-disciplinary team understand the management plans and their roles within them • Communicate with patient and family members appropriately to ensure good understanding of clinical course and ongoing management plan • Formulate discharge plans to home or to community step-down care. Give appropriate advice for ongoing care and follow-up when patients are ready for discharge
	Limitations: - Nil
EPA Entrustment Level to be Attained by Exit	Level 4

CTS EPA 3

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Title	Managing Emergency Calls
Specifications and limitations	The practice of the EPA should align with Appropriate and Value-based Care (AVBC) principles where relevant - (i) Care is evidence-based, (ii) Care is patient-centred, (iii) Care is right-sited, (iv) Care is integrated and coordinated, and (v) Care is cost-effective and sustainable. This EPA contains the following elements: • Assess acutely unwell and deteriorating patients promptly • Deliver resuscitative treatment and initial management, and ensure airway difficulty, respiratory distress, cardiovascular shock, sepsis, and injuries are recognised and treated in compliance with protocol • Make a full assessment of patients by taking a structured history and by performing a focused clinical examination • Request, interpret and discuss appropriate investigations to synthesise findings into an overall impression, management plan and diagnosis • Identify, account for, and manage co-morbidity in the context of the surgical presentation, referring for specialist advice when necessary • Select patients for conservative and operative treatment plans as appropriate, explaining these to the patient, and carrying them out • Demonstrate effective communication with colleagues, patients and relatives • Consider urgency and potential for deterioration, in advocating for the timely execution of a procedure or therapy • Make appropriate peri- and post-operative management plans in conjunction with anaesthetic colleagues • Deliver ongoing post-operative surgical care in ward and critical care settings, recognising and appropriately managing medical and surgical complications, and referring for specialist care when necessary • Make appropriate discharge and follow up arrangements • Give and receive appropriate handover
	Limitations: - Nil
EPA Entrustment Level to be Attained by Exit	Level 4

CTS EPA 4

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Title	Managing a Thoracic Operating List		
Specifications and limitations	The practice of the EPA should align with Appropriate and Value-based Care (AVBC) principles where relevant - (i) Care is evidence-based, (ii) Care is patient-centred, (iii) Care is right-sited, (iv) Care is integrated and coordinated, and (v) Care is cost-effective and sustainable.		
	This EPA contains the following elements: - Review the operating list, accounting for case mix, skill mix, operating time, clinical priorities, and patient co-morbidity - Ensure the “Time-Out” / safety checklist (or equivalent) is completed for each patient - Understand when prophylactic antibiotics should be prescribed and follow local protocol - Synthesise the patient’s surgical condition, the technical details of the operation, comorbidities, and medication into an appropriate operative plan for the patient - Carry out and/or assist the operative procedures to the required level for the phase of training:		
	<table><tr><td>Lung and airway diseases</td><td> Assist or perform lung and airway surgeries including wedge resection, segmentectomy, lobectomy, pneumonectomy, sleeve resection, flexible/rigid bronchoscopy, airway dilatation/stenting. </td></tr></table>	Lung and airway diseases	Assist or perform lung and airway surgeries including wedge resection, segmentectomy, lobectomy, pneumonectomy, sleeve resection, flexible/rigid bronchoscopy, airway dilatation/stenting.
	Lung and airway diseases	Assist or perform lung and airway surgeries including wedge resection, segmentectomy, lobectomy, pneumonectomy, sleeve resection, flexible/rigid bronchoscopy, airway dilatation/stenting.	
	<table><tr><td>Mediastinal diseases</td><td> Assist or perform thymectomy, drainage of mediastinal collection, dissection of lymph nodes, and biopsy/resection of mediastinal mass </td></tr></table>	Mediastinal diseases	Assist or perform thymectomy, drainage of mediastinal collection, dissection of lymph nodes, and biopsy/resection of mediastinal mass
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<table><tr><td>Chest wall, pleura, diaphragm diseases</td><td> - Assist or perform chest wall surgeries including biopsy, resection, and reconstruction - Assist or perform pleural surgeries including mechanical/chemical pleurodesis, pleurectomy, pleural biopsy, and decortication - Assist or perform diaphragm surgeries including plication, repair, resection, and reconstruction </td></tr></table>	Chest wall, pleura, diaphragm diseases	- Assist or perform chest wall surgeries including biopsy, resection, and reconstruction - Assist or perform pleural surgeries including mechanical/chemical pleurodesis, pleurectomy, pleural biopsy, and decortication - Assist or perform diaphragm surgeries including plication, repair, resection, and reconstruction	
Chest wall, pleura, diaphragm diseases	- Assist or perform chest wall surgeries including biopsy, resection, and reconstruction - Assist or perform pleural surgeries including mechanical/chemical pleurodesis, pleurectomy, pleural biopsy, and decortication - Assist or perform diaphragm surgeries including plication, repair, resection, and reconstruction		
	- Adapt operative strategy to take account of pathological findings and any changes in clinical condition - Undertake and/or assist the operation in a technically safe manner, using time efficiently - Demonstrate application of knowledge and non-technical skills in the operating theatre, including situation awareness, decision-making, communication, leadership, and teamwork - Manage unexpected findings and intraoperative complications appropriately and safely, including proper escalation to senior surgeon as required - Write a full operation note for each patient, ensuring inclusion of all post-operative instructions - Review all patients post-operatively		
	Limitations: Complex and advanced malignancies are excluded		

EPA Entrustment Level to be Attained by Exit	Level 4 for the following procedures: [1] Bronchoscopy [2] Video-Assisted Thoracoscopic Surgery (VATS) and thoracotomy [3] Wedge resection of lung and bullectomy [4] Mediastinal biopsy/dissection [5] Pleurectomy/pleurodesis, pleural biopsy, and decortication Level 3 for the following procedures: [1] Segmentectomy, lobectomy, pneumonectomy, sleeve resection [2] Resection of mediastinal masses and thymectomy [3] Pericardial window creation [4] Chest wall and diaphragm resection and reconstruction
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CTS EPA 5

[Click here to return to the list of EPA titles](#)

Title	Managing a Cardiac Operating List						
Specifications and limitations	The practice of the EPA should align with Appropriate and Value-based Care (AVBC) principles where relevant - (i) Care is evidence-based, (ii) Care is patient-centred, (iii) Care is right-sited, (iv) Care is integrated and coordinated, and (v) Care is cost-effective and sustainable. This EPA contains the following elements: - Review the operating list, accounting for case mix, skill mix, operating time, clinical priorities, and patient co-morbidity - Ensure the “Time-Out” / safety checklist (or equivalent) is completed for each patient - Understand when prophylactic antibiotics should be prescribed and follow local protocol - Synthesise the patient’s surgical condition, the technical details of the operation, comorbidities, and medication into an appropriate operative plan for the patient - Carry out and/or assist the operative procedures to the required level for the phase of training: <table border="1"> <tr> <td>Ischaemic heart disease</td><td> - Perform sternotomy and thoracotomy for surgical access - Harvest conduit for CABG (left and right internal mammary artery, left radial artery (open), long saphenous vein (open & endoscopic) - Manage cardiopulmonary bypass: preparation, cannulation options, initiation, weaning, myocardial protection - Assist or perform coronary graft anastomosis </td></tr> <tr> <td>Valvular heart disease</td><td> - Perform sternotomy, central cannulation, and peripheral cannulation for valve surgery - Apply myocardial preservation and protection technique in valve surgery - Assist or perform aortic valve replacement - Assist or perform mitral valve replacement/repair - Assist or perform tricuspid valve replacement/repair </td></tr> <tr> <td>Great vessel disease</td><td> - Assist or perform routine aortic valve replacement and simple vascular anastomosis - Assist or perform ascending aorta replacement, arch vessel debranching, total arch replacement, and redo aortic surgery - Assist or perform endovascular aortic repair surgery </td></tr> </table> - Adapt operative strategy to take account of pathological findings and any changes in clinical condition - Undertake and/or assist the operation in a technically safe manner, using time efficiently - Demonstrate application of knowledge and non-technical skills in the operating theatre, including situation awareness, decision-making, communication, leadership, and teamwork - Manage unexpected findings and intraoperative complications appropriately and safely, including proper escalation to senior surgeon as required - Write a full operation note for each patient, ensuring inclusion of all post-operative instructions - Review all patients post-operatively	Ischaemic heart disease	- Perform sternotomy and thoracotomy for surgical access - Harvest conduit for CABG (left and right internal mammary artery, left radial artery (open), long saphenous vein (open & endoscopic) - Manage cardiopulmonary bypass: preparation, cannulation options, initiation, weaning, myocardial protection - Assist or perform coronary graft anastomosis	Valvular heart disease	- Perform sternotomy, central cannulation, and peripheral cannulation for valve surgery - Apply myocardial preservation and protection technique in valve surgery - Assist or perform aortic valve replacement - Assist or perform mitral valve replacement/repair - Assist or perform tricuspid valve replacement/repair	Great vessel disease	- Assist or perform routine aortic valve replacement and simple vascular anastomosis - Assist or perform ascending aorta replacement, arch vessel debranching, total arch replacement, and redo aortic surgery - Assist or perform endovascular aortic repair surgery
Ischaemic heart disease	- Perform sternotomy and thoracotomy for surgical access - Harvest conduit for CABG (left and right internal mammary artery, left radial artery (open), long saphenous vein (open & endoscopic) - Manage cardiopulmonary bypass: preparation, cannulation options, initiation, weaning, myocardial protection - Assist or perform coronary graft anastomosis						
Valvular heart disease	- Perform sternotomy, central cannulation, and peripheral cannulation for valve surgery - Apply myocardial preservation and protection technique in valve surgery - Assist or perform aortic valve replacement - Assist or perform mitral valve replacement/repair - Assist or perform tricuspid valve replacement/repair						
Great vessel disease	- Assist or perform routine aortic valve replacement and simple vascular anastomosis - Assist or perform ascending aorta replacement, arch vessel debranching, total arch replacement, and redo aortic surgery - Assist or perform endovascular aortic repair surgery						

	Limitations: • Congenital valvular diseases are excluded
EPA Entrustment Level to be Attained by Exit	Level 4 for the following procedures: [1] Sternotomy and thoracotomy for surgical access [2] Harvest conduit for CABG [3] Central and peripheral cannulation for cardiopulmonary bypass (CPB) and extracorporeal membrane oxygenation (ECMO) [4] Manage cardiopulmonary bypass: preparation, cannulation options, initiation, weaning, myocardial protection Level 3 for the following procedures: [1] Perform coronary graft anastomosis [2] Aortic valve replacement [3] Mitral valve replacement/repair [4] Tricuspid valve replacement/repair

CTS EPA 6

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Title	Managing Multi-Disciplinary Care		
Specifications and limitations	The practice of the EPA should align with Appropriate and Value-based Care (AVBC) principles where relevant - (i) Care is evidence-based, (ii) Care is patient-centred, (iii) Care is right-sited, (iv) Care is integrated and coordinated, and (v) Care is cost-effective and sustainable. This EPA contains the following elements: • Engage with the various multi-disciplinary teams relevant to the personalised care of each patient • Select and prioritise appropriate referrals for discussion with the multi-disciplinary team • Gather and organise the necessary information for discussion • Present relevant case history, recognising important clinical features, co-morbidities and investigations • Identify and prioritise patients with unusual, serious or urgent conditions • Engage with all members of the multi-disciplinary team to reach consensus • Manage potentially challenging situations such as conflicting opinions • Formulate and document a clear management plan • Communicate relevant discussion outcomes to patient and relevant stakeholders • Manage time well to discuss cases in the allotted time • Arrange follow up care appropriately		
	Limitations: - Nil		
	End of Posting evaluation	1 per posting	Faculty
EPA Entrustment Level to be Attained by Exit	Level 4		