

Entrustable Professional Activities (EPAs)

List of EPAs for Paediatric Cardiology

EPA Title	EPA Entrustment Level to be Attained by Exit
EPA 1: Performing and Interpreting Echocardiography	Level 4
EPA 2: Managing Structural Heart Diseases	Level 4
EPA 3: Managing Cardiac Arrhythmias	Level 4
EPA 4: Managing Acquired Heart Disease	Level 4
EPA 5: Managing Disorders of Cardiac Function	Level 4
EPA 6: Managing Acute Paediatric Cardiac Emergencies	Level 4
EPA 7: Performing Cardiac Catheterisation	Level 4

Entrustment Scale

Entrustment Level	Description
1	Not allowed to practise EPA, allowed to observe.
2	Allowed to practise EPA only under proactive, full supervision.
3	Allowed to practise EPA only under reactive/on-demand supervision.
4	Allowed to practise EPA unsupervised.
5	Allowed to supervise others in practice of EPA independently.

Paediatric Cardiology EPA 1

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

Title	Performing and Interpreting Echocardiography
Specification and limitations	This EPA applies to all paediatric echocardiography (including Transthoracic (TTE), Transoesophageal (TEE) and epicardial echocardiography). This EPA is applicable to Paediatric patients aged 18 and under. 1. Ordering echocardiography for the appropriate clinical indications. 2. Reviewing indications and contraindications for indicated echocardiographic study. 3. Assessing patient suitability and indication for sedation/anaesthesia for echocardiography. 4. Obtaining consent as needed for echocardiographic study. 5. Performing basic and functional echocardiographic studies. 6. Reviewing echocardiographic studies performed by cardiac technologists. 7. Interpreting of data from echocardiographic studies. 8. Communicating of echocardiographic study findings to patients and/or parents/caregivers. 9. Communicating of echocardiographic study findings to colleagues including fellow Cardiologists and Cardiothoracic surgeons. 10. Identifying limitations of echocardiographic study and propose appropriate alternatives if necessary. Limitations: • This EPA does not apply for Fetal Echocardiography.
EPA Entrustment Level to be Attained by Exit	Level 4

EPA 1 Performing and Interpreting Echocardiography Conditions

1) Acyanotic Congenital Heart Defects • Atrial Septal Defect • Ventricular Septal Defect • Patent Ductus Arteriosus • Aortopulmonary window • Atrioventricular Septal Defect • Coarctation of the Aorta • Interrupted aortic arch • Anomalous coronary artery anatomy/connections/fistulae • Partial Anomalous Pulmonary Venous Return • Cor-Triatriatum • Bicuspid aortic valve • Aortic stenosis/regurgitation • Pulmonary stenosis/regurgitation • Mitral valve prolapse • Mitral valve stenosis/regurgitation • Tricuspid valve stenosis/regurgitation	2) Cyanotic Heart Defects • Tetralogy of Fallot • Pulmonary Atresia (with and without Ventricular Septal Defect) • Double-Outlet Right Ventricle • D-Transposition of the Great Arteries • Congenitally Corrected Transposition of the Great Arteries • Truncus Arteriosus • Tricuspid Atresia • Total Anomalous Pulmonary Venous Return • Ebstein's Anomaly • Hypoplastic Left Heart Syndrome • Hypoplastic Right Heart Syndrome • Visceral Heterotaxy syndrome
3) Acquired heart Disease • Myocarditis • Acute pericarditis • Pericardial effusion • Restrictive Pericarditis • Pericardial Tamponade • Kawasaki Disease with/without Coronary Aneurysm • Infective Endocarditis • Rheumatic heart disease • Drug induced cardiomyopathy	4) Congenital Myocardial Disease • Dilated Cardiomyopathy • Hypertrophic Cardiomyopathy (with/without obstruction) • Restrictive Cardiomyopathy
5) Pulmonary hypertension • Idiopathic pulmonary hypertension • Pulmonary hypertension secondary to chronic lung disease • Portopulmonary hypertension • Pulmonary embolus	

Paediatric Cardiology EPA 2

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

Title	Managing Structural Heart Diseases
Specification and limitations	This EPA includes management of patients with cyanotic and acyanotic structural heart diseases (attached list). This EPA is applicable to patients aged 18 and under managed by the Paediatric Cardiology unit. 1. Gathering information through history and physical examination. 2. Ordering and interpreting first line investigations including electrocardiogram (ECG), X-rays. 3. Managing patients with structural heart diseases in both outpatient and inpatient settings. 4. Initiating and adjusting medical interventions appropriate to the cardiac conditions, individual patients' specifics and care environment. 5. Consulting with a senior colleague and initiate discussion for percutaneous/surgical interventions when needed. 6. Communicating diagnosis and management plans to patient and/or caregiver. 7. Communicating with interdisciplinary teams and other healthcare providers involved in care plans.
	Limitations: NIL
EPA Entrustment Level to be Attained by Exit	Level 4

EPA 2 Structural Heart Disease Conditions

1) Acyanotic Congenital Heart Defects • Atrial Septal Defect • Ventricular Septal Defect • Patent Ductus Arteriosus • Aortopulmonary window • Atrioventricular Septal Defect • Coarctation of the Aorta • Interrupted aortic arch • Anomalous coronary artery natomy/connections/fistulae • Partial Anomalous Pulmonary Venous Return • Cor-Triatriatum • Bicuspid aortic valve • Aortic stenosis/regurgitation • Pulmonary stenosis/regurgitation • Mitral valve prolapse • Mitral valve stenosis/regurgitation • Tricuspid valve stenosis/regurgitation	2) Cyanotic Heart Defects • Tetralogy of Fallot • Pulmonary Atresia (with and without Ventricular Septal Defect) • Double-Outlet Right Ventricle • D-Transposition of the Great Arteries • Congenitally Corrected Transposition of the Great Arteries • Truncus Arteriosus • Tricuspid Atresia • Total Anomalous Pulmonary Venous Return • Ebstein's Anomaly • Hypoplastic Left Heart Syndrome • Hypoplastic Right Heart Syndrome • Visceral Heterotaxy syndrome
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Paediatric Cardiology EPA 3

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

Title	Managing Cardiac Arrhythmias
Specification and limitations	This EPA includes management of cardiac arrhythmias in the acute emergency setting and inpatient settings. This EPA is applicable to patients aged 18 and under managed by the Paediatric Cardiology unit. 1. Gathering information through history and physical examination. 2. Ordering electrocardiography (ECG), Holter ECG and Treadmill ECG based on indications and interpreting their results. 3. Managing patients with cardiac arrhythmias in inpatient and emergency settings. 4. Initiating and adjusting medical interventions appropriate to the cardiac arrhythmias, individual patient's specifics and care environment. 5. Consulting with a senior and initiating discussion for electrophysiology studies and consideration for radio frequency ablation (RFA). 6. Performing basic pacemaker interrogation, adjustment of settings and basic troubleshooting for pacemakers. 7. Communicating diagnosis and management plans to patient and/or caregiver. 8. Communicating with interdisciplinary teams and other healthcare providers involved in care plans. Limitations: NIL
EPA Entrustment Level to be Attained by Exit	Level 4

Paediatric Cardiology EPA 4

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

Title	Managing Acquired Heart Disease
Specification and limitations	This EPA includes managing patients with acquired heart diseases including Kawasaki disease, Pericarditis, Acute/fulminant Myocarditis, Infective Endocarditis and Rheumatic heart disease. This EPA is applicable to patients aged 18 and under managed by the Paediatric Cardiology unit. 1. Gathering information through history and physical examination. 2. Ordering and interpreting first line investigations relevant to acquired heart disease. 3. Managing patients with acquired heart diseases in inpatient setting. 4. Follow-up of patients with acquired heart diseases in the outpatient setting including ordering of appropriate long-term investigations. 5. Initiating and adjusting medical interventions appropriate to the cardiac conditions, individual patient's specifics and care environment. 6. Consulting with a senior and initiating discussion of advanced cardiac support/surgical interventions when necessary. 7. Communicating diagnosis and management plans to patient and/or caregiver. 8. Communicating with interdisciplinary teams and other healthcare providers involved in care plans e.g. Rheumatology, Infectious disease. Limitations: NIL
EPA Entrustment Level to be Attained by Exit	Level 4

Paediatric Cardiology EPA 5

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

Title	Managing Disorders of Cardiac Function
Specification and limitations	This EPA includes management of patients with acute or chronic heart failure, cardiomyopathy and/or pulmonary hypertension. This EPA is applicable to patients aged 18 and under managed by the Paediatric Cardiology unit. 1. Gathering information through history and physical examination to identify underlying etiology of heart failure and/or pulmonary hypertension. 2. Performing relevant genetic counselling and testing for patients with cardiomyopathy and/or idiopathic pulmonary hypertension. 3. Initiating targeted treatment for in-patients with acute heart failure. 4. Reviewing and managing patients with chronic heart failure and/or pulmonary hypertension in the outpatient setting. 5. Initiating and consulting with senior with regards to referral to advanced heart failure specialists when necessary for advanced therapies including assist devices and heart/lung transplantation. 6. Communicating diagnosis, prognosis and management plans to patient and/or caregiver. 7. Coordinating care with multidisciplinary team including intensive care, cardio thoracic surgery, neonatal, genetics, social work, dietician, psychology. Limitations: This EPA does not include management of patients with advanced heart failure requiring assist devices or care of patient with heart or lung transplantation.
EPA Entrustment Level to be Attained by Exit	Level 4

Paediatric Cardiology EPA 6

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

Title	Managing Acute Paediatric Cardiac Emergencies
Specification and limitations	This EPA includes management of acute paediatric cardiac emergencies including that of unstable cardiac arrhythmias, cardiogenic shock, cardiac tamponade and unstable critical congenital heart defects. This EPA is applicable to patients aged 18 and under managed by the Paediatric Cardiology unit. 1. Identifying the critically unwell cardiac patient. 2. Undertaking prompt assessment of an unwell cardiac patient through timely history and/or physical examination. 3. Identification of potential underlying etiologies for the critical situation. 4. Ordering and interpreting appropriate investigations based on the clinical needs (including lab investigations, radiological investigations, electrocardiography (ECG) and echocardiography (Echo)). 5. Initiating appropriate care plan for the critically unwell cardiac patient. 6. Performing and overseeing basic and advanced cardiac life support (BCLS/ACLS) measures. 7. Engaging in multi-disciplinary team meeting for joint decision and management of the critically ill patient. 8. Initiating appropriate anti-arrhythmic therapy as necessary. 9. Initiating appropriate prostaglandin therapy as necessary for ductal dependant lesions. 10. Performing appropriate electrical cardioversion or defibrillation. 11. Performing appropriate transcutaneous and transvenous cardiac pacing. 12. Performing and/or assisting in pericardiocentesis. 13. Performing and/or assisting in Balloon Atrial Septostomy (BAS). 14. Recognising indication for mechanical circulatory support measures. 15. Participating in multi-disciplinary team efforts in extra-corporeal mechanical oxygenation (ECMO) initiation. 16. Communicating diagnosis and management plans to patient and/or caregiver. 17. Communicating with interdisciplinary teams and other healthcare providers involved in care plans. Limitations: All acute cardiac emergencies encountered in the General Paediatric Units, Neonatal Units, Paediatric Cardiology unit and Paediatric Emergency department.

	Direct Observation of Procedural Skills (DOPS)	8 in total during 2-year training period	Ability to assist in interventions, intra-procedural and post-procedural discussion of technique and procedure Grading by senior cardiologist Should include at least • any 2 of cardioversion / defibrillation / transcutaneous pacing (residents are expected to be able to perform independently once they attained Level 4 for this EPA), • 1 pericardiocentesis (residents are expected to be able to assist this procedure as part of a team once they attained Level 4 for this EPA) and • 1 balloon atrial septostomy (residents are expected to be able to assist this procedure as part of a team once they attained Level 4 for this EPA) • 1 transvenous pacing (residents are expected to be able to perform or assist this procedure as part of a team once they attained Level 4 for this EPA)
EPA Entrustment Level to be Attained by Exit	Level 4		

Paediatric Cardiology EPA 7

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

Title	Performing Cardiac Catheterisation
Specification and limitations	This EPA applies to all cardiac catheter studies performed for diagnostic purposes or prior to percutaneous interventions. This EPA is applicable to patients aged 18 and under managed by the Paediatric Cardiology unit. 1. Reviewing indications for diagnostic cardiac catheter study. 2. Assessing patient history, condition, suitability and potential complications for cardiac catheter study. 3. Counselling and obtaining consent for diagnostic cardiac catheter study. 4. Preparing equipment required for diagnostic cardiac catheter study. 5. Performing vascular cannulation for cardiac catheter study. 6. Performing a right heart cardiac catheter study. 7. Obtaining and interpretation of haemodynamic and angiographic data. 8. Assisting in atrial septal defect device closure. 9. Assisting in patent ductus arteriosus closure. 10. Identify limitations of findings. 11. Communicating of cardiac catheter study findings to patients and/or parents/caregivers. 12. Presenting of findings at inter-disciplinary meeting. Limitations: NIL
EPA Entrustment Level to be Attained by Exit	Level 3