

## Curriculum for Paediatric Cardiology Training

# Implementation August 2021

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## **1. Introduction**

The purpose of the Paediatric Cardiology curriculum is to produce doctors with the generic professional and specialty specific capabilities needed to manage children with acquired heart disease and patients with congenital heart disease presenting at any age; in-utero, in childhood and throughout their adult lives. This unique and rapidly evolving specialty, while still called 'Paediatric' Cardiology, crosses boundaries with obstetrics, neonatology, interventional and diagnostic radiology, palliative medicine and adult cardiology. After satisfactory completion of training, doctors will be eligible for a CCT (or CESR CP). At this stage they will be regarded as capable of independent unsupervised practice in general Paediatric Cardiology, will be eligible for appointment as an NHS consultant with one or more relevant special interests, and be ready to further develop their expertise post CCT.

The curriculum for Paediatric Cardiology has been developed with input of trainees, consultants actively involved in delivering teaching and training across the UK, service representatives and lay persons. This has been through the work of the JRCPTB, the Paediatric Cardiology Specialist Advisory Committee and the British Congenital Cardiac Association.

## **2. Purpose**

### **2.1 Purpose of the curriculum**

The Shape of Training (SoT) review was a catalyst for reform of postgraduate training of all doctors to ensure more patient focus, more generalism (especially in the early years) and with more flexibility of career structure and indeed the specialty of Paediatric Cardiology has welcomed this.

There were 774,835 live births in the UK in 2016. The UK population in 2016 was 65.6 Million (Reference 1: ONS). As 0.8 % of babies are affected by congenital heart disease (6000 babies a year in the UK), and with others acquiring heart problems in childhood, a workforce with wider and more general skills will be required alongside theme for service skills. With modern therapies available the vast majority of these (even with the most complex disease) are expected to survive. Hence, training doctors to treat these infants, children and adults will be required for the foreseeable future. Many of these patients will have had their cardiac abnormalities detected prenatally and hence paediatric and congenital cardiologists will also be required with expertise in prenatal cardiology. This speciality area therefore requires a deep knowledge of the diagnostic and therapeutic modalities available throughout life. However, it also requires high quality communication skills and an appreciation of the importance of epidemiology, genetics, lifetime care planning and the promotion of patient empowerment with family centred care. This is in line with the outputs from the GMC review of the curricula and assessment standards and the introduction of the GPC framework in which all postgraduate curricula should now be based on higher level learning outcomes and must incorporate the generic professional

capabilities, including ensuring that the patient is at the centre of any consultation and decision making. In addition, the ability to deal with the acutely ill patient with a paediatric or congenital cardiac emergency, including the delivery of emergency therapies, interventions and multidisciplinary working will remain a critical service need. The curriculum aims to deliver a breadth of generalist skills to equip the future workforce to deal with the entire range of acute and emergency presentations, while retaining the ability to develop themed for service expertise in the 2 last years of training.

There are currently around 108 wte UK consultant Paediatric Cardiologists in the UK. There are a further 20 or so who only manage adults with congenital heart disease (ACHD). Current NHS England National commissioning standards require around 2 per million population of 'paediatric' cardiologists and 1 per million ACHD consultants meaning that there is currently almost a one third shortfall in consultants needed. There are also service specific commissioning requirements for provision of particular themed for service areas within each cardiac unit. ACHD consultants can train either via the Adult Cardiology Curriculum or this one but there remains a significant training deficit which this curriculum may help to address. The small specialties review conducted by Health Education England in 2018 suggested that no increase in training numbers was required at the current time making it even more important to ensure generalist training is preserved while closely monitoring the epidemiology of congenital and acquired heart disease.

### **Curriculum purpose**

This curriculum will ensure that the trainee develops the full range of generic professional capabilities and underlying knowledge and skills, specifically their application in the practice of congenital cardiology and paediatric acquired heart disease. It will also ensure that the trainee develops the full range of speciality-specific core capabilities, together with at least one area of advanced practice.

The objectives of the curriculum are:

- To set out a range of specific professional capabilities that encompass all knowledge, skills and activities needed to practice congenital and Paediatric Cardiology at consultant level.
- To set expected standards of knowledge and performance of various professional skills and activities at each stage.
- To suggest indicative training times and experiences needed to achieve the required standards.

Paediatric Cardiology higher specialty training will be an indicative five-year programme that will begin at ST4. Trainees entering following successful progression through indicative three years of core Paediatrics training with successful sign off of ST3 competences at ARCP and full MRCPCH, will not require any additional training prior to

entry. It is anticipated that (as at present) the majority of trainees will enter from Paediatrics. However, entry will also be possible following completion of 2 years of the Internal Medicine stage 1 curriculum having obtained MRCP. Internal Medicine Trainees will have to have demonstrated additional core paediatric and neonatal capabilities (nominal 1 year) prior to commencing the ST4-8 Paediatric Cardiology curriculum. This *paediatric* training would be organised by the employing deanery following appointment to the post, rather than being expected of the trainee at the time of appointment.

All paediatric cardiologists will be equipped to deal with any acute Paediatric Cardiology presentation, whilst also having advanced training in at least one specialty area of practice. This will require participation in speciality specific Paediatric Cardiology on call rotas throughout their training. This will enable the development of teams of cardiologists necessary to deliver the full range of diagnostic and interventional skills in such a broad-based and procedural specialty.

Maintaining general Paediatric Cardiology training alongside special interest training throughout the entire training period will ensure delivery of training encompassing the GMC's Generic Professional Capability framework.

Core training needs to introduce trainees to all areas of congenital and Paediatric Cardiology as there is very little exposure to this in either Core Paediatrics or indeed in Stage 1 IMT. Most trainees will therefore be commencing their formal training in the specialty with little or no previous relevant experience on which to build. This is particularly relevant as Paediatric Cardiology can only be practised in highly specialised Congenital Cardiac Centres (in the UK and Ireland) of which there are 12 Level 1 (surgical and cardiology) and 4 Level 2 (Cardiology only) centres.

Given the lack of previous experience, there is therefore the indicative requirement in this curriculum for a nominal total of 4 years equivalent in-program training experience in general Paediatric Cardiology, to achieve Level 4 capability (independent practice) in this fundamental area. However, given the wide range of the curriculum it is also important all new consultants have established an area of additional expertise to complement the required skill sets of existing teams. Thus, the fourth and final indicative year of general experience will be split across 2 years to allow timely acquisition of special interest skills to Level 3/4 capability (with an expected general/special interest training time split of 50:50). Many of the necessary training opportunities occur relatively infrequently but are of high complexity, hence the need for special interest skill acquisition over two years. It is therefore expected trainees will require five years indicative training in order to satisfy curriculum requirements, although it is recognised some trainees may achieve competence and be assessed as being capable of independent practice earlier than this indicative timescale (and some may take longer).

## **Scope of practice**

The scope of Paediatric Cardiology requires diagnostic reasoning and the ability to manage uncertainty, deal with comorbidities and recognise when specialty opinion or care is required both from colleagues within specialty and from other specialties. Paediatric Cardiologists need the ability to work within, or as leaders of, teams and systems involving other healthcare professionals to effectively provide optimal patient care. Paediatric Cardiologists generally work primarily as hospital-based specialists and need to integrate their work with not only community based colleagues, but with a huge multidisciplinary team of health care professionals. These include nursing staff, cardiac physiologists, radiographers, physiotherapists, dentists, psychologists, dieticians, speech and language therapists, occupational therapists, play specialists and many others. Demonstration of involvement with multidisciplinary and multi-professional working throughout training will be required.

Paediatric Cardiologists will have training across all Paediatric Cardiology capabilities in practice (CiPs) and as such will have flexibility to work in all areas of acute Congenital and Paediatric cardiology as well as specialists in for example imaging or advanced intervention. We would not expect Paediatric Cardiologists to participate in either the acute medical or indeed the general paediatric take. Paediatric Cardiologists have a variety of opportunities for clinical research and quality improvement projects. Increasing opportunities for more formal academic training routes are developing.

Most Paediatric Cardiologists will develop advanced knowledge and skills in a least one area of more specialised service need. This may include independent operator procedural skills, such that they can undertake percutaneous interventions, cardiac pacing or electrophysiology. However, it may also involve the acquisition of advanced imaging skills for example for fetal diagnosis and counselling, complex diagnostic and functional echocardiography or cross-sectional modalities such as CT and MRI. Other areas will involve advanced knowledge skills in therapeutic areas such as intensive care, inherited cardiac conditions, heart failure, transplantation or pulmonary arterial hypertension. Some individuals will particularly choose to focus on adult congenital cardiology and transition care. Other new areas of expertise continue to develop with the evolution of this speciality.

Thus, there will be an important progression point where trainees, with their trainers and Programme Directors, select appropriate areas of advanced modular training. Given the nature of this speciality, in which the rarer conditions occur at a relatively low volume, it is also important that their exposure to the general milieu of congenital and paediatric cardiac conditions throughout the indicative five years of specialty training. The numbers of trainees undertaking each advanced module have been developed historically but have matched service need based on monitoring output and consultant post advertisements. Importantly, this use of modules ensures CCT holders will be using the capabilities they have trained in without training in unnecessary capabilities. It should be noted that over the last 5 years of congenital cardiology consultant appointments, only 2 have been advertised as 'generalist' or 'ward' consultants, without an indication of a need for an individual specialist interest. There has also been no situation in the last several years where a new CCT holder has been

unable to obtain a post appropriate to their special interest skill. Conversely at least at present there remains a significant consultant vacancy burden on the speciality as a whole.

Demonstration of core knowledge by the end of the ST4-6 Core specialist training stage is expected and there has been a speciality specific Knowledge Based Assessment (KBA) running now for more than 5 years; this is a formative assessment in which trainees are encouraged to demonstrate progression over the first 3 years of training, with an expectation that by the end of their 3<sup>rd</sup> year they will be able to evidence sufficient core knowledge to achieve a score of >50%. Trainees will be encouraged to undertake the EACVI certification (in the echocardiography of congenital heart) to evidence their capability in this area but historically this has not been an absolute requirement due to lack of equivalent certifications in other special interest areas. More focused training in their chosen advanced module (s) will then continue alongside completion of core congenital and Paediatric Cardiology capabilities and continued exposure to emergency on call.

More advanced training in highly complex interventional catheter and electrophysiological procedures and imaging modalities may require further training post CCT via additional training routes. As some other speciality areas also become mainstream, they might be incorporated into future curricula.

Doctors in training will learn in a variety of settings using a range of methods, including workplace based experiential learning, formal postgraduate teaching and simulation-based education.

All aspects of the curriculum can be adapted to facilitate less than full time training.

## **2.2 High level learning outcomes – capabilities in practice (CiPs)**

The Paediatric Cardiology capabilities in practice (CiPs) describe the professional tasks or work within the scope of congenital and Paediatric Cardiology. Five core Paediatric Cardiology CiPs describe the essential tasks which must be entrusted to all paediatric cardiologists. There are additional CiPs in each of the (currently) eight themed areas such that each trainee will be expected to demonstrate capability in one specialist area of Paediatric Cardiology practice as required by service need at consultant appointment. These are in addition to the six generic CiPs described within core physician training. Service needs often require a complex balance of skills at consultant level especially in expanding areas of practice, so some flexibility is explained within the eight specialty areas of practice. Additionally, it must be noted that appropriately appointed academic trainees could train in any of the specialist areas with individualised adjustment in their training.

Each CiP has a set of descriptors associated with that activity or task. Descriptors are intended to help trainees and trainers recognise the minimum level of knowledge, skills and behaviours which should be demonstrated for an entrustment decision to be made. By the completion of training and award of a CCT, the doctor must demonstrate that they are capable of unsupervised practice in all core specialty CiPs and one theme for service CiP.



The Paediatric Cardiology CiPs describe the clinical tasks or activities which are essential to the practice of the specialty. They have been mapped to the GPC domains and subsections to reflect the professional generic capabilities required to undertake the clinical tasks. Satisfactory sign off requires demonstration that, for each of the CiPs, the doctor in training's performance meets or exceeds the minimum expected level for completion of training, as defined in the curriculum.

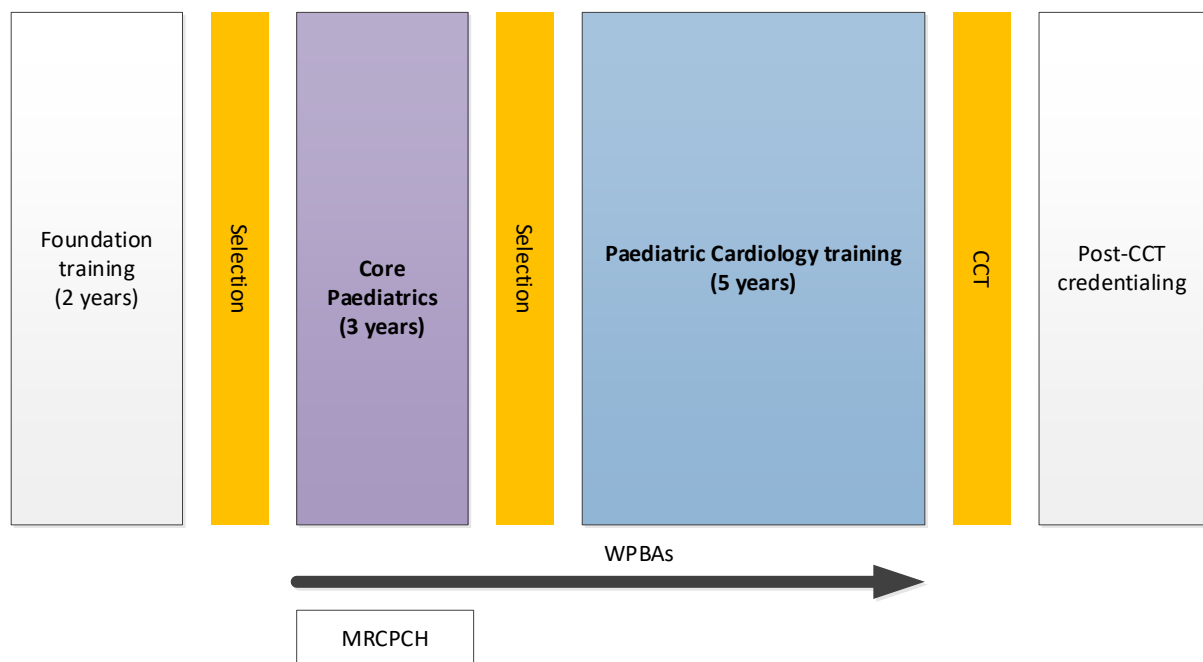
<b>Learning outcomes – capabilities in practice (CiPs)</b>	
Generic CiPs	
1.	Able to successfully function within NHS organisational and management systems
2.	Able to deal with ethical and legal issues related to clinical practice
3.	Communicates effectively and is able to share decision making, while maintaining appropriate situational awareness, professional behaviour and professional judgement
4.	Is focused on patient safety and delivers effective quality improvement in patient care
5.	Carrying out research and managing data appropriately
6.	Acting as a clinical teacher and clinical supervisor
Specialty CiPs (all trainees)	
1.	Diagnoses and manages acute and chronic structural congenital and paediatric heart disease in general, developing knowledge and ability to contribute to the patient / family centred care of this life-long disease process including awareness of comorbidities and end of life care
2.	Diagnose and manage acute and chronic functional and acquired heart disease in fetal life and childhood
3.	Diagnose and manage acute and chronic heart rhythm abnormalities in fetal life, childhood, and in adults with congenital heart disease, including knowledge of pacing
4.	Participate in and contribute to the acute and chronic care of adult patients with congenital heart disease (ACHD) including during pregnancy
5.	Working with a complex multidisciplinary team, including community and network provision of patient centred care
Specialty CiPs Themed for service	
1.	Provide an arrhythmia service including ablation and device therapy for paediatric and CHD patients
2.	Provide a complex structural interventions service for paediatric and CHD patients
3.	Provide a comprehensive imaging service for paediatric and CHD patients (this could be echocardiographic and / or cross-sectional imaging)



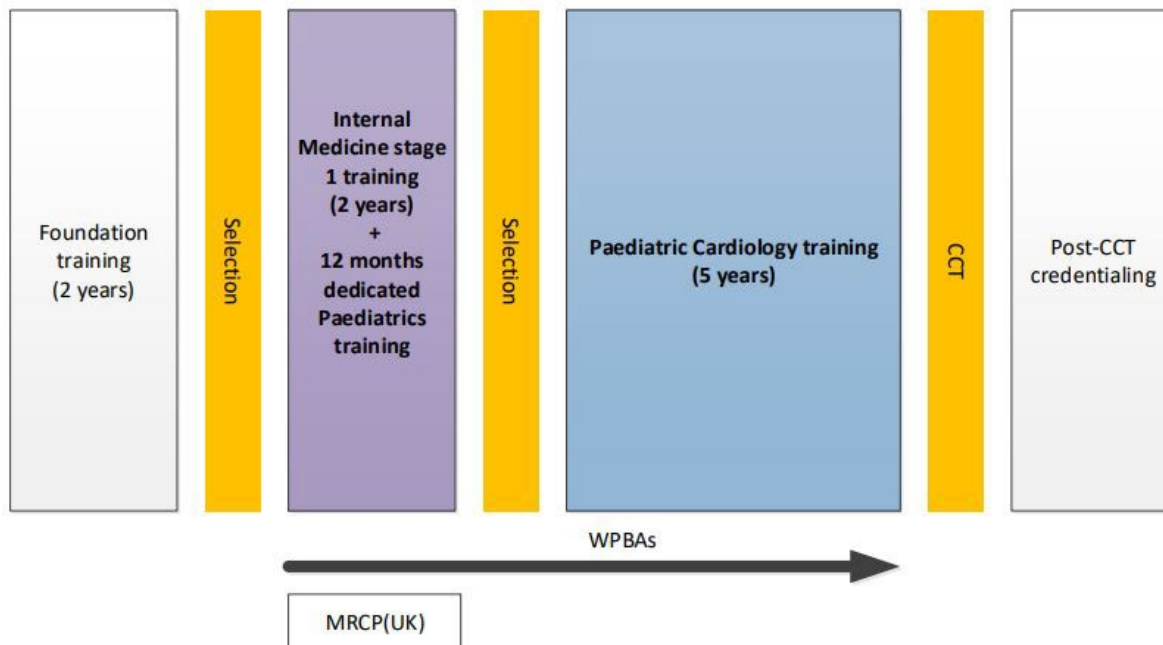
4. Provide a fetal diagnostic and management service for pregnancies affected by CHD
5. Manage all aspects of the heart failure service, including transplant assessment and on-going follow up
6. Provide a comprehensive diagnosis and treatment service for patients with pulmonary hypertension
7. Provide a comprehensive adult congenital heart disease service
8. Provide a comprehensive inherited cardiac conditions service

## 2.3 Training pathway

### Main entry pathway



### Alternative entry pathway



Recruitment into Paediatric Cardiology training is possible from two UK feeding programs, these being Core Paediatrics (Progress) and Adult Medicine (IMT). The dual entry points reflect the frequency at which paediatric cardiologists provide care to adults with congenital heart disease. Whilst the majority of trainees currently enter from a paediatric background, the pathway for those trainees joining from IMT is also clearly defined.

For applicants approaching training from Progress an ARCP Outcome 1 is required at the end of Level 1 training (ST3) as well as full MRCPCH; this ensures all training eligibility criteria have been met. Given it is possible to accelerate training and attain ST3 in a minimum of 24 months, entry into Paediatric Cardiology training from Progress may occur after 24 months; 36 months training is not mandatory. For applicants with paediatric training accreditation not acquired in the UK, many will have attained a qualification in Europe and will be listed on the GMC Specialist Register. These applicants are regarded as holding the equivalent of CCT in paediatrics by the GMC and are eligible to apply directly to Paediatric Cardiology training.

It is necessary for an applicant to either enter paediatric run-through training or to enrol with the RCPCH, arrange Educational Supervision of posts which offer sufficient training exposure and use the College's ePortfolio platform ("Kaizen") as a non-trainee, which is available at cost, to evidence training progression. However, for those applicants who are not in paediatric run-through training and who are working in posts that can deliver the requisite training exposure, a schedule of requirements is as follows:

- Educational/Clinical Supervisor's report which specifically comments on adherence to a personal development plan geared to deliver the required paediatric competencies for entry into PC training. This should also comment specifically on evidence for having shown achievement of the Progress Learning Outcomes, for example through a skills log and reflective pieces
- Multi-source feedback

- Current APLS and NLS certification
- MRPCH all three parts
- At least one safeguarding CbD and certification of at least Level 2 intercollegiate safeguarding competencies
- Mandatory SLEs: One HAT and at one DOPS in the five mandatory procedures (peripheral IV line insertion, lumbar puncture, bag and mask ventilation, neonatal intubation, umbilical vein catheterisation).

For applications from individuals taking this route there will be significant heterogeneity in experience. A final decision whether to allow an application will be made on a case by case basis by the recruitment team.

For applicants entering Paediatric Cardiology training from IMT an ARCP Outcome 1 is required at IMY3 as well as full MRCP. This ensures training eligibility criteria are met. It is recognised that applicants from IMT are less likely to have previous paediatric experience. It is also impractical to expect the necessary skills to be acquired prior to application, as this would require resignation of NTN. However, having accepted a paediatric cardiology NTN, it is expected a trainee in IMT will exit the IMT program and spend 12 months in paediatric rotations. This must include six months neonatal medicine and six months paediatrics delivering acute care exposure. Whilst the rotations will not be in a paediatric NTN post, trainees are advised to contact the RCPCH to set up a Kaizen account, which will allow documentation of work place assessments, a skills log (in particular the five mandatory skills pertaining to ST1 paediatric training) and Educational Supervision (or at very least, Clinical Supervision). Trainees entering Paediatric Cardiology training from IMT are not required to fulfil the full criteria for Progress Level 1, having satisfied the alternative adult medicine Stage I criteria.

## **2.4 Duration of training**

Whilst most trainees enter Paediatric Cardiology training from core paediatric training, for trainees undertaking initial training in CMT it is necessary for them to obtain basic paediatric competencies. It is anticipated that level 1 paediatric competencies can be achieved during a 12-month period of paediatric training after completion of CMT. For trainees where it has not been possible to acquire these competencies before application for training in Paediatric Cardiology then this experience should be arranged by the deanery as fixed term training upon entry into specialist training in Paediatric Cardiology (resulting in an extension of the overall period of training). This period of paediatric training is likely to be achieved in 12 months and should include training in neonatal paediatrics, perhaps for a nominal 6-month period ideally in a tertiary centre.

This will remain unchanged in the new pathway with Paediatric Cardiology. Paediatric Cardiology will be a group 2 specialty and will comprise an indicative 2 years of Internal Medicine Training followed by 12 months of paediatric training then 5 years of specialty training. The overall training duration will be 8 years.

There will be options for those trainees who demonstrate exceptionally rapid development and acquisition of capabilities to complete training more rapidly than the current indicative time although it is recognised that clinical experience is a fundamental aspect of development as a good physician (guidance on completing training early will be available on the [JRCPTB website](#)). There may also be a small number of trainees who develop more slowly and will require an extension of training in line the Reference Guide for Postgraduate Specialty Training in the UK (The Gold Guide).

## **2.5 Flexibility and accreditation of transferable capabilities**

The curriculum incorporates and emphasises the importance of the generic professional capabilities (GPCs). GPCs will promote flexibility in postgraduate training as these common capabilities can be transferred from specialty to specialty. In addition, the generic CiPs will be shared across all physicianly curricula supporting flexibility for trainees to move between these specialties without needing to repeat aspects of training. The curriculum supports the accreditation of transferable competencies (using the Academy framework).

## **2.6 Less than full time training**

Trainees are entitled to opt for less than full time training programmes. Less than full time trainees should undertake a pro rata share of the out-of-hours duties (including on-call and other out-of-hours commitments) required of their full-time colleagues in the same programme and at the equivalent stage.

Less than full time trainees should assume that their clinical training will be of a duration pro-rata with the time indicated/recommended, but this should be reviewed in accordance with the Gold Guide.

## **2.7 Generic Professional Capabilities and Good Medical Practice**

The GMC has developed the Generic professional capabilities (GPC) framework<sup>1</sup> with the Academy of Medical Royal Colleges (AoMRC) to describe the fundamental, career-long, generic capabilities required of every doctor. The framework describes the requirement to develop and maintain key professional values and behaviours, knowledge, and skills, using a common language. GPCs also represent a system-wide, regulatory response to the most common contemporary concerns about patient safety and fitness to practise within the medical profession. The framework will be relevant at all stages of medical education, training and practice.

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<sup>1</sup> [Generic professional capabilities framework](#)

## The nine domains of the GMC's Generic Professional Capabilities



Good medical practice (GMP)<sup>2</sup> is embedded at the heart of the GPC framework. In describing the principles, duties and responsibilities of doctors the GPC framework articulates GMP as a series of achievable educational outcomes to enable curriculum design and assessment.

The GPC framework describes nine domains with associated descriptor outlining the 'minimum common regulatory requirement' of performance and professional behaviour for those completing a CCT or its equivalent. These attributes are common, minimum and generic standards expected of all medical practitioners achieving a CCT or its equivalent.

The nine domains and subsections of the GPC framework are directly identifiable in the curriculum. They are mapped to each of the generic and specialty CiPs, which are in turn mapped to the assessment blueprints. This is to emphasise those core professional capabilities that are essential to safe clinical practice and that they must be demonstrated at every stage of training as part of the holistic development of responsible professionals.

This approach will allow early detection of issues most likely to be associated with fitness to practise and to minimise the possibility that any deficit is identified during the final phases of training.

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<sup>2</sup> [Good Medical Practice](#)

### 3. Content of Learning

The curriculum is spiral and topics and themes will be revisited to expand understanding and expertise. The level of entrustment for capabilities in practice (CiPs) will increase as an individual progresses from needing direct supervision to able to entrusted to act unsupervised.

#### 3.1 Capabilities in practice

CiPs describe the professional tasks or work within the scope of the specialty. CiPs are based on the concept of entrustable professional activities<sup>3</sup> which use the professional judgement of appropriately trained, expert assessors as a defensible way of forming global judgements of professional performance.

Each CiP has a set of descriptors associated with that activity or task. Descriptors are intended to help trainees and trainers recognise the knowledge, skills and attitudes which should be demonstrated. Doctors in training may use these capabilities to provide evidence of how their performance meets or exceeds the minimum expected level of performance for their year of training. The descriptors are not a comprehensive list and there are many more examples that would provide equally valid evidence of performance.

Many of the CiP descriptors refer to patient centred care and shared decision making. This is to emphasise the importance of patients being at the centre of decisions about their own treatment and care, by exploring care or treatment options and their risks and benefits and discussing choices available.

Additionally, the CiPs repeatedly refer to the need to demonstrate professional behaviour with regard to patients, carers, colleagues and others. Good doctors work in partnership with patients and respect their rights to privacy and dignity. They treat each patient as an individual. They do their best to make sure all patients receive good care and treatment that will support them to live as well as possible, whatever their illness or disability. Appropriate professional behaviour should reflect the principles of GMP and the GPC framework.

In order to complete training and be recommended to the GMC for the award of CCT and entry to the specialist register, the doctor must demonstrate that they are capable of unsupervised practice in all generic and specialty CiPs. Once a trainee has achieved level 4 sign off for a CiP it will not be necessary to repeat assessment of that CiP if capability is maintained (in line with standard professional conduct).

This section of the curriculum details the six generic CiPs and the specialty CiPs for Paediatric Cardiology. The expected levels of performance, mapping to relevant GPCs and the evidence that may be used to make an entrustment decision are given for each CiP. The list of evidence for each CiP is not prescriptive and other types of evidence may be equally valid for that CiP.

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<sup>3</sup> [Nuts and bolts of entrustable professional activities](#)

### 3.2 Generic capabilities in practice

The six generic CiPs cover the universal requirements of all specialties as described in GMP and the GPC framework. Assessment of the generic CiPs will be underpinned by the descriptors for the nine GPC domains and evidenced against the performance and behaviour expected at that stage of training. Satisfactory sign off will indicate that there are no concerns. It will not be necessary to assign a level of supervision for these non-clinical CiPs.

In order to ensure consistency and transferability, the generic CiPs have been grouped under the GMP-aligned categories used in the Foundation Programme curriculum plus an additional category for wider professional practice:

- professional behaviour and trust
- communication, team-working and leadership
- safety and quality
- wider professional practice.

For each generic CiP there is a set of descriptors of the observable skills and behaviours which would demonstrate that a trainee has met the minimum level expected. The descriptors are not a comprehensive list and there may be more examples that would provide equally valid evidence of performance.

#### KEY

CbD	Case-based discussion	DOPS	Direct observation of procedural skills
GCP	Good Clinical Practice	KBA	Knowledge based assessment
Mini-CEX	Mini-clinical evaluation exercise	MCR	Multiple consultant report
MSF	Multi source feedback	PS	Patient/parent survey
QIPAT	Quality improvement project assessment tool	TO	Teaching observation

Generic capabilities in practice (CiPs)	
Category 1: Professional behaviour and trust	
1. Able to function successfully within NHS organisational and management systems	
Descriptors	<ul style="list-style-type: none"><li>• Aware of and adheres to the GMC professional requirements</li><li>• Aware of public health issues including population health, social detriments of health and global health perspectives</li><li>• Demonstrates effective clinical leadership</li><li>• Demonstrates promotion of an open and transparent culture</li><li>• Keeps practice up to date through learning and teaching</li><li>• Demonstrates engagement in career planning</li><li>• Demonstrates capabilities in dealing with complexity and uncertainty</li></ul>



	<ul style="list-style-type: none"> <li>• Aware of the role of and processes for commissioning</li> <li>• Aware of the need to use resources wisely</li> </ul>
<b>GPCs</b>	Domain 1: Professional values and behaviours Domain 3: Professional knowledge <ul style="list-style-type: none"> <li>• professional requirements</li> <li>• national legislative requirements</li> <li>• the health service and healthcare systems in the four countries</li> </ul> Domain 9: Capabilities in research and scholarship
<b>Evidence to inform decision</b>	MCR MSF Active role in governance structures Management course End of placement reports
<b>2. Able to deal with ethical and legal issues related to clinical practice</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>• Aware of national legislation and legal responsibilities, including safeguarding vulnerable groups</li> <li>• Behaves in accordance with ethical and legal requirements</li> <li>• Demonstrates ability to offer apology or explanation when appropriate</li> <li>• Demonstrates ability to lead the clinical team in ensuring that medical legal factors are considered openly and consistently</li> </ul>
<b>GPCs</b>	Domain 3: Professional knowledge <ul style="list-style-type: none"> <li>• professional requirements</li> <li>• national legislative requirements</li> <li>• the health service and healthcare systems in the four countries</li> </ul> Domain 4: Capabilities in health promotion and illness prevention Domain 7: Capabilities in safeguarding vulnerable groups Domain 8: Capabilities in education and training Domain 9: Capabilities in research and scholarship
<b>Evidence to inform decision</b>	MCR MSF CbD DOPS Mini-CEX ALS certificate End of life care and capacity assessment End of placement reports
<b>Category 2: Communication, teamworking and leadership</b>	
<b>3. Communicates effectively and is able to share decision making, while maintaining appropriate situational awareness, professional behaviour and professional judgement</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>• Communicates clearly with patients and carers in a variety of settings</li> <li>• Communicates effectively with clinical and other professional colleagues</li> </ul>

	<ul style="list-style-type: none"> <li>• Identifies and manages barriers to communication (e.g. cognitive impairment, speech and hearing problems, capacity issues)</li> <li>• Demonstrates effective consultation skills including effective verbal and nonverbal interpersonal skills</li> <li>• Shares decision making by informing the patient, prioritising the patient's wishes, and respecting the patient's beliefs, concerns and expectations</li> <li>• Shares decision making with children and young people</li> <li>• Applies management and team working skills appropriately, including influencing, negotiating, re-assessing priorities and effectively managing complex, dynamic situations</li> </ul>
<b>GPCs</b>	<p>Domain 2: Professional skills</p> <ul style="list-style-type: none"> <li>• practical skills</li> <li>• communication and interpersonal skills</li> <li>• dealing with complexity and uncertainty</li> <li>• clinical skills (<i>history taking, diagnosis and medical management; consent; humane interventions; prescribing medicines safely; using medical devices safely; infection control and communicable disease</i>)</li> </ul> <p>Domain 5: Capabilities in leadership and teamworking</p>
<b>Evidence to inform decision</b>	<p>MCR MSF PS End of placement reports ES report</p>
<b>Category 3: Safety and quality</b>	
<b>4. Is focused on patient safety and delivers effective quality improvement in patient care</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>• Makes patient safety a priority in clinical practice</li> <li>• Raises and escalates concerns where there is an issue with patient safety or quality of care</li> <li>• Demonstrates commitment to learning from patient safety investigations and complaints</li> <li>• Shares good practice appropriately</li> <li>• Contributes to and delivers quality improvement</li> <li>• Understands basic Human Factors principles and practice at individual, team, organisational and system levels</li> <li>• Understands the importance of non-technical skills and crisis resource management</li> <li>• Recognises and works within limit of personal competence</li> <li>• Avoids organising unnecessary investigations or prescribing poorly evidenced treatments</li> </ul>
<b>GPCs</b>	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills</p> <ul style="list-style-type: none"> <li>• practical skills</li> <li>• communication and interpersonal skills</li> </ul>

	<ul style="list-style-type: none"> <li>• dealing with complexity and uncertainty</li> <li>• clinical skills (<i>history taking, diagnosis and medical management; consent; humane interventions; prescribing medicines safely; using medical devices safely; infection control and communicable disease</i>)</li> </ul> <p>Domain 3: Professional knowledge</p> <ul style="list-style-type: none"> <li>• professional requirements</li> <li>• national legislative requirements</li> <li>• the health service and healthcare systems in the four countries</li> </ul> <p>Domain 4: Capabilities in health promotion and illness prevention</p> <p>Domain 5: Capabilities in leadership and teamworking</p> <p>Domain 6: Capabilities in patient safety and quality improvement</p> <ul style="list-style-type: none"> <li>• patient safety</li> <li>• quality improvement</li> </ul>
<b>Evidence to inform decision</b>	<p>MCR</p> <p>MSF</p> <p>QIPAT</p> <p>End of placement reports</p>
<b>Category 4: Wider professional practice</b>	
<b>5. Carrying out research and managing data appropriately</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>• Manages clinical information/data appropriately</li> <li>• Understands principles of research and academic writing</li> <li>• Demonstrates ability to carry out critical appraisal of the literature</li> <li>• Understands the role of evidence in clinical practice and demonstrates shared decision making with patients</li> <li>• Demonstrates appropriate knowledge of research methods, including qualitative and quantitative approaches in scientific enquiry</li> <li>• Demonstrates appropriate knowledge of research principles and concepts and the translation of research into practice</li> <li>• Follows guidelines on ethical conduct in research and consent for research</li> <li>• Understands public health epidemiology and global health patterns</li> <li>• Recognises potential of applied informatics, genomics, stratified risk and personalised medicine and seeks advice for patient benefit when appropriate</li> </ul>
<b>GPCs</b>	<p>Domain 3: Professional knowledge</p> <ul style="list-style-type: none"> <li>• professional requirements</li> <li>• national legislative requirements</li> <li>• the health service and healthcare systems in the four countries</li> </ul> <p>Domain 7: Capabilities in safeguarding vulnerable groups</p> <p>Domain 9: Capabilities in research and scholarship</p>
<b>Evidence to inform decision</b>	<p>MCR</p> <p>MSF</p> <p>GCP certificate (if involved in clinical research)</p> <p>Evidence of literature search and critical appraisal of research</p>

	Use of clinical guidelines Quality improvement and audit Evidence of research activity End of placement reports
<b>6. Acting as a clinical teacher and clinical supervisor</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>• Delivers effective teaching and training to medical students, junior doctors and other health care professionals</li> <li>• Delivers effective feedback with action plan</li> <li>• Able to supervise less experienced trainees in their clinical assessment and management of patients</li> <li>• Able to supervise less experienced trainees in carrying out appropriate practical procedures</li> <li>• Able to act a clinical supervisor to doctors in earlier stages of training</li> </ul>
<b>GPCs</b>	Domain 1: Professional values and behaviours Domain 8: Capabilities in education and training
<b>Evidence to inform decision</b>	MCR MSF TO Relevant training course End of placement reports

### 3.3 Specialty capabilities in practice

The specialty CiPs describe the clinical tasks or activities which are essential to the practice of Paediatric Cardiology. The CiPs have been mapped to the nine GPC domains to reflect the professional generic capabilities required to undertake the clinical tasks.

Satisfactory sign off will require educational supervisors to make entrustment decisions on the level of supervision required for each CiP and if this is satisfactory for the stage of training, the trainee can progress. More detail is provided in the programme of assessment section of the curriculum.

#### KEY

CbD	Case-based discussion	DOPS	Direct observation of procedural skills
GCP	Good Clinical Practice	KBA	Knowledge based assessment
Mini-CEX	Mini-clinical evaluation exercise	MCR	Multiple consultant report
MSF	Multi source feedback	PS	Patient / parent survey
QIPAT	Quality improvement project assessment tool	TO	Teaching observation
ACAT	Acute care assessment tool		

## Paediatric Cardiology Specialty CiPs

### 1. Diagnose and manage acute and chronic structural congenital and paediatric heart disease in general, developing knowledge and ability to contribute to the patient / family centred care of this life-long disease process including awareness of comorbidities and end of life care

#### Descriptors

- Demonstrates theoretical knowledge of morphology, genetics/genomics, pathophysiology and natural history across the spectrum of congenital heart disease
- Applies knowledge of the wide range of conditions and comorbidities that can be found in conjunction with congenital heart disease to practise.
- Recognises the signs and symptoms suggestive of congenital heart disease in children
- Able to assess, investigate and instigate appropriate management in patients presenting with signs and symptoms of congenital heart disease
- Able to assess, investigate and instigate appropriate management in critically ill children with cardiovascular collapse
- Able to conduct paediatric cardiac outpatient reviews
- Demonstrates ability to counsel patients and families about specific congenital cardiac defects, explaining possible treatment options and prognosis
- Appropriately manages patients pre and post cardiac surgery and cardiac catheterisation
- Provides cardiology input and advice on patients under the care of other specialities including patients in intensive care
- Provides cardiology advice to referring teams transferring patients to cardiac centres
- Provides advice on patients with congenital heart disease undergoing non cardiac treatment
- Able to perform and report echocardiograms to diagnose abnormalities in cardiac structure or function
- Demonstrates appropriate use and interpretation of ECG based investigations
- Refers patients appropriately for TOE, cardiac MRI and CT
- Able to perform cardiac catheterisation and angiography under supervision
- Able to prepare and present patients at congenital heart disease MDT discussions
- Safely prescribes drugs commonly used in patients with congenital heart disease

	<ul style="list-style-type: none"> <li>• Appropriately advises and refers children with congenital heart disease for support with feeding and nutrition.</li> <li>• Appropriately advises on lifestyle factors and promotes healthy behaviours to minimise risk of future comorbidities</li> <li>• Able to identify patients with indications for cardiac transplantation and initiate appropriate investigations.</li> <li>• Identifies when ongoing treatment may not be in the patient's best interest. Able to counsel and refer patients to the palliative care service appropriately</li> <li>• Supports patients transitioning from paediatric to young adult services</li> </ul>
<b>GPCs</b>	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills</p> <p>Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills</p> <p>Domain 3: Professional knowledge</p> <p>Professional requirements, National legislative requirements, The health service and healthcare system in the four countries</p> <p>Domain 4: Capabilities in health promotion and illness prevention</p> <p>Domain 5: Capabilities in leadership and team working</p> <p>Domain 6: Capabilities in patient safety and quality improvement</p> <p>Patient safety, Quality improvement</p> <p>Domain 7: Capabilities in safeguarding vulnerable groups</p> <p>Domain 8: Capabilities in education and training</p> <p>Domain 9: Capabilities in research and scholarship</p>
<b>Evidence to inform decision</b>	<p>mini CEX</p> <p>DOPS</p> <p>MCR</p> <p>MSF</p> <p>CBD</p> <p>Attendance at learning events and/or relevant certification</p> <p>Logbook of procedures</p>
<b>2. Diagnose and manage acute and chronic functional and acquired heart disease in childhood and in fetal life</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>• Demonstrates theoretical knowledge of pathophysiology and natural history across the spectrum of acquired heart disease in children (including Kawasaki disease, rheumatic heart disease, endocarditis and cardiomyopathy)</li> <li>• Recognises the signs and symptoms of chronic and acute heart failure in children</li> <li>• Able to assess, investigate and instigate management of children presenting with signs and symptoms of acquired heart disease</li> </ul>

	<ul style="list-style-type: none"> <li>• Demonstrates knowledge of the natural history of functional heart disease in utero and how this differs from postnatal disease.</li> <li>• Able to advise patients with CHD on precautions to reduce the risk of acquired heart disease</li> <li>• Manages patients with acquired heart disease in clinic</li> <li>• Provides cardiology input and advice to patients under shared care and patients in intensive care with acquired heart disease</li> <li>• Provides cardiology advice to referring teams transferring patients to cardiac centres</li> <li>• Able to perform and report echocardiograms to diagnose abnormalities in cardiac function and coronary abnormalities associated with acquired heart disease in children</li> <li>• Demonstrates knowledge of the role of advanced echo techniques including tissue Doppler imaging, speckle tracking, myocardial deformation imaging and dysynchrony studies to serially assess cardiac function in children with functional heart disease</li> <li>• Refers patients appropriately for TOE, cardiac MRI and CT</li> <li>• Safely prescribes drugs commonly used in children with acquired heart disease</li> <li>• Able to advise and refer children with chronic functional heart disease for support with feeding and nutrition.</li> <li>• Able to identify patients with indications for cardiac transplantation and initiate appropriate investigations.</li> <li>• Demonstrates understanding of the indications for ECMO and VAD support in patients with severely impaired cardiac function</li> <li>• Identifies when ongoing treatment may not be in the patient's best interest. Able to counsel and refer patients to the palliative care service appropriately</li> <li>• Supports patients transitioning from paediatric to young adult services</li> </ul>
<b>GPCs</b>	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills</p> <p>Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills</p> <p>Domain 3: Professional knowledge</p> <p>Professional requirements, National legislative requirements, The health service and healthcare system in the four countries</p> <p>Domain 4: Capabilities in health promotion and illness prevention</p> <p>Domain 5: Capabilities in leadership and team working</p> <p>Domain 6: Capabilities in patient safety and quality improvement</p> <p>Patient safety, Quality improvement</p>



	Domain 7: Capabilities in safeguarding vulnerable groups Domain 8: Capabilities in education and training Domain 9: Capabilities in research and scholarship
<b>Evidence to inform decision</b>	Mini CeX ACAT DOPS MCR MSF CBD Attendance at learning events Logbook of procedures
<b>3 Diagnose and manage acute and chronic heart rhythm abnormalities in fetal life, childhood, and in adults with congenital heart disease, including knowledge of pacing</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>• Able to review patients with suspected heart rhythm disease in the outpatient setting</li> <li>• Demonstrates theoretical knowledge of pathophysiology of arrhythmias</li> <li>• Demonstrates instigation of appropriate investigations (including non-invasive and invasive cardiac event recorders) to determine the cause of symptoms of heart rhythm disease</li> <li>• Able to interpret non-invasive ECG monitoring including ambulatory monitors and exercise tests</li> <li>• Able to identify major abnormalities on invasive cardiac event recorders</li> <li>• Conducts discussions with young people and families on the options available to manage paediatric arrhythmia</li> <li>• Instigates treatment for arrhythmias including DC Cardioversion</li> <li>• Demonstrates theoretical knowledge of pharmacotherapy of arrhythmia including side effects and appropriate monitoring in both children and adults with CHD</li> <li>• Safely prescribes rhythm control drugs</li> <li>• Refers appropriately to Electro-Physiology services for invasive event recorders, pacemakers and EP or ablation therapy</li> <li>• Demonstrates knowledge of invasive investigation and treatment options for paediatric arrhythmia including procedural risk</li> <li>• Able to manage arrhythmias in the acutely unwell patient (including referral for ECMO when appropriate)</li> <li>• Able to assess, investigate and instigate management in patients with arrhythmias following cardiac surgery, including the use of postoperative pacing</li> <li>• Identifies and is able to instigate management in patients with complications of Implantable Cardiac Devices</li> </ul>

	<ul style="list-style-type: none"> <li>• Demonstrates knowledge of the diagnosis and principles of management of fetal arrhythmia</li> <li>• Demonstrates knowledge and application of national guidance and evidence-based medicine in arrhythmia treatment</li> <li>• Able to assess, investigate and instigate management in patients at risk of arrhythmic events due to family history of Inherited Cardiac Conditions</li> <li>• Able to prepare and present patients at cardiac genetics MDT discussions</li> </ul>
<b>GPCs</b>	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills</p> <p>Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills</p> <p>Domain 3: Professional knowledge</p> <p>Professional requirements, National legislative requirements, The health service and healthcare system in the four countries</p> <p>Domain 4: Capabilities in health promotion and illness prevention</p> <p>Domain 5: Capabilities in leadership and team working</p> <p>Domain 6: Capabilities in patient safety and quality improvement</p> <p>Patient safety, Quality improvement</p> <p>Domain 7: Capabilities in safeguarding vulnerable groups</p> <p>Domain 8: Capabilities in education and training</p> <p>Domain 9: Capabilities in research and scholarship</p>
<b>Evidence to inform decision</b>	<p>APLS/EPLS</p> <p>Mini CEX</p> <p>DOPS</p> <p>MCR</p> <p>MSF</p> <p>CBD</p> <p>Attendance at learning events and/or relevant certification</p> <p>Logbook of procedures</p>
<b>4. Participate in and contribute to the acute and chronic care of adult patients with congenital heart disease (ACHD) including during pregnancy</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>• Recognise signs and symptoms suggestive of congenital heart disease in adults</li> <li>• Instigate appropriate investigation and management in patients with signs and symptoms of congenital heart disease</li> <li>• Appropriately refer newly diagnosed adults with congenital heart disease to specialist services including inherited cardiac conditions/cardio-genetics where appropriate</li> <li>• Initiate management in patients with known congenital heart disease during acute cardiac presentations</li> </ul>

	<ul style="list-style-type: none"> <li>• Provide advice on patients with congenital heart disease undergoing non cardiac treatment</li> <li>• Manage patients in adult congenital heart disease clinics under supervision</li> <li>• Prepare and present patients at congenital heart disease multidisciplinary team meetings</li> <li>• Apply knowledge of the epidemiology, anatomy and pathophysiology of common congenital heart abnormalities to practice</li> <li>• Support patients transitioning from paediatric to young adult services under supervision</li> <li>• Provide contraceptive advice and pre-pregnancy counselling for patients with congenital cardiac conditions under supervision</li> <li>• Manage patients with congenital heart disease during pregnancy under supervision</li> <li>• Investigate and instigate management in pregnant patients presenting with cardiac symptoms</li> <li>• Safely prescribe in pregnant and breast-feeding patients</li> </ul>
<b>GPCs</b>	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills</p> <p>Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills</p> <p>Domain 3: Professional knowledge</p> <p>Professional requirements, National legislative requirements, The health service and healthcare system in the four countries</p> <p>Domain 4: Capabilities in health promotion and illness prevention</p> <p>Domain 5: Capabilities in leadership and team working</p> <p>Domain 6: Capabilities in patient safety and quality improvement</p> <p>Patient safety, Quality improvement</p> <p>Domain 7: Capabilities in safeguarding vulnerable groups</p> <p>Domain 8: Capabilities in education and training</p> <p>Domain 9: Capabilities in research and scholarship</p>
<b>Evidence to inform decision</b>	<p>Mini CEX</p> <p>DOPS</p> <p>MCR</p> <p>MSF</p> <p>CBD</p> <p>Attendance at learning events and/or relevant certification</p> <p>ACHD curriculum tool</p>
<b>5. Working with a complex multidisciplinary team, including community and network provision of patient centred care.</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>• Demonstrates engagement in discharge planning</li> <li>• Understands the role of the paediatric cardiologist in congenital heart disease management including presentation of evidence</li> </ul>

	<p>for decision making and the requirement for accurate documentation and communication</p> <ul style="list-style-type: none"> <li>• Demonstrates participation in the wider network MDT including working with paediatricians with expertise in cardiology, other referring paediatricians including community paediatrics</li> <li>• Demonstrates high quality verbal and written communication</li> <li>• Demonstrates the ability to manage appropriate technology for presentation of multi modal cardiac imaging, including the use of remote technology</li> </ul>
<b>GPCs</b>	<p>Domain 1: Professional values and behaviours  Domain 2: Professional skills  Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills  Domain 3: Professional knowledge  Professional requirements, National legislative requirements, The health service and healthcare system in the four countries  Domain 4: Capabilities in health promotion and illness prevention  Domain 5: Capabilities in leadership and team working  Domain 6: Capabilities in patient safety and quality improvement  Patient safety, Quality improvement  Domain 7: Capabilities in safeguarding vulnerable groups  Domain 8: Capabilities in education and training  Domain 9: Capabilities in research and scholarship</p>
<b>Evidence to inform decision</b>	<p>Mini CEX  DOPS  MCR  MSF  CBD  Attendance at learning events and/or relevant certification</p>

### **Paediatric Cardiology Themed for service CiPs (ST7-ST8)**

These will be integrated into the completion of congenital and Paediatric Cardiology training over the final two years of training. This part of training is designed to ensure our training produces 'paediatric cardiologists' with the appropriate capabilities to meet growing service need, with some flexibility as that evolves. This output also aligns with our assessment of current and anticipated service needs as well as recent consultant post advertisements. Trainees will undertake at least one identifiable special interest modules in each of their final two years training, to achieve level 3 or level 4 capabilities in their chosen areas. More focused training in the agreed specialty areas continues alongside completion of core paediatric and congenital cardiology capabilities as well as continued training in emergency congenital and Paediatric Cardiology. As a small (but growing) speciality, it is usual (and indeed expected in our Service Specifications (References 2 & 3)) that themed for service areas will have a Clinical Lead for that area of expertise (and would be expected to have taken 2 years in the same themed for service area and achieved level 4). However, some

additional cardiologists at each centre must also have specialised skills in other areas to avoid single handed practice. In some specialist fields, skills are complementary and therefore some trainees will need to be able to provide more than one themed for service skill (and hence would be expected to achieve a minimum of level 3 capability in each by CCT). Examples of this would be training in for example advanced echo imaging or CT and MRI. These services are required in all centres, but demand is unlikely be high enough to fuel enough sessions for the requisite two to three full time specialists for each of these areas without overlap. Hence for those trainees studying two complementary areas, during ST7 and ST8, the capability levels of each will be assessed as per the current (2018) decision grid for ST7 in that area. A valid IRMER certificate is required for cardiac catheterisation, pacing and electrophysiology and specialist imaging.

<b>Paediatric Cardiology Themed for Service CiPs (ST7-ST8)</b>	
<b>1. Provide an arrhythmia service including ablation and device therapy for paediatric and CHD patients</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>Accept electrophysiology referrals from the general paediatric cardiology service, and review patients and / or non-invasive monitoring in order to <ul style="list-style-type: none"> <li>Perform appropriate further invasive investigation</li> <li>Medically manage with pharmacotherapy where appropriate</li> <li>Discuss in cardiac genetics MDT for management</li> </ul> </li> <li>Understand when to consider, and to perform, an electrophysiology study +/- ablation including <ul style="list-style-type: none"> <li>Routine EPS and ablation for AVRT/AVNRT</li> <li>Trans-septal puncture in adults and older children</li> <li>Focal Cryotherapy</li> <li>Understand when to perform VT ablation in children</li> <li>Understand strengths and weaknesses of electro-anatomic (3D) and magnetic mapping systems</li> </ul> </li> <li>Manage a paediatric implantable device service including <ul style="list-style-type: none"> <li>Being able to manage basic interrogation and programming of devices in children and adults with CHD</li> <li>Understand indications for and complications of, device implantation including epicardial and transvenous, both temporary and permanent</li> <li>Understand the issues specific to device use in the growing infant and child</li> </ul> </li> </ul>

	<p>Understand indications for lead extractions</p> <p>Implant a standard trans-venous pacemaker device in an adult or older child</p> <p>Be a competent second operator at Implantable Cardioverter Defibrillator implantation in an adult or older child</p>
<b>GPCs</b>	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills</p> <p>Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills</p> <p>Domain 3: Professional knowledge</p> <p>Professional requirements, National legislative requirements, The health service and healthcare system in the four countries</p> <p>Domain 4: Capabilities in health promotion and illness prevention</p> <p>Domain 5: Capabilities in leadership and team working</p> <p>Domain 6: Capabilities in patient safety and quality improvement</p> <p>Patient safety, Quality improvement</p> <p>Domain 7: Capabilities in safeguarding vulnerable groups</p> <p>Domain 8: Capabilities in education and training</p> <p>Domain 9: Capabilities in research and scholarship</p>
<b>Evidence to inform decision</b>	<p>Mini CEX</p> <p>DOPS</p> <p>MCR</p> <p>MSF</p> <p>CBD</p> <p>Attendance at learning events and/or relevant certification</p> <p>Logbook of procedures</p>
<b>2. Provide a complex structural interventions service for paediatric and CHD patients</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>• Demonstrates knowledge of the indication, risks / benefits of the full range of diagnostic and therapeutic paediatric and adult congenital cardiac catheterisation procedures</li> <li>• Holds valid IRMER accreditation and practices in a way that minimises radiation exposure to the patient and staff at all times.</li> <li>• Ensures appropriate patient listing, pre-procedural assessment and obtain fully informed consent using a suitable level of language</li> <li>• Able to undertake diagnostic and less complex interventional procedures (e.g. angioplasty, valvoplasty, ASD, PDA and collateral occlusion) including balloon atrial septostomy and pericardiocentesis in an emergency setting</li> </ul>

	<ul style="list-style-type: none"> <li>• Able to lead or assist in more complex interventional procedures (e.g. stenting, percutaneous valve implantation and hybrid procedures) with senior supervision</li> <li>• Correctly interprets complementary intra-procedural imaging investigations such as TOE</li> <li>• Recognises potentially serious complications during cardiac catheterisation (eg device embolisation, vascular perforation) and know standard approaches to urgently address these.</li> <li>• Communicates effectively with the multi-professional team – lead comprehensive pre-procedural brief, communicate clearly during the procedure, concisely document procedure findings and lead team debrief</li> <li>• Provides appropriate post-procedural care, including identification and management of potential complications, explanation of catheter findings to the patient / family and appropriate discharge / follow-up recommendations</li> </ul>
<b>GPCs</b>	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills</p> <p>Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills</p> <p>Domain 3: Professional knowledge</p> <p>Professional requirements, National legislative requirements, The health service and healthcare system in the four countries</p> <p>Domain 4: Capabilities in health promotion and illness prevention</p> <p>Domain 5: Capabilities in leadership and team working</p> <p>Domain 6: Capabilities in patient safety and quality improvement</p> <p>Patient safety, Quality improvement</p> <p>Domain 7: Capabilities in safeguarding vulnerable groups</p> <p>Domain 8: Capabilities in education and training</p>
<b>Evidence to inform decision</b>	<p>DOPS</p> <p>MCR</p> <p>MSF</p> <p>CBD</p> <p>Attendance at learning events and/or relevant certification</p> <p>Logbook of procedures</p> <p>IRMER Certificate</p>
<b>3. Provide a comprehensive imaging service for paediatric and CHD patients (this could be echocardiographic and / or cross-sectional imaging)</b>	
<b>Descriptors</b>	<p>Advanced Echocardiography;</p> <ul style="list-style-type: none"> <li>• Able to perform and report transthoracic and transoesophageal echocardiography independently across a full range of congenital cardiac pathology and recommend further investigation and management</li> </ul>



	<ul style="list-style-type: none"> <li>• Provides expert advice on the use of echo imaging techniques to plan surgical and intervention approaches in patients with complex CHD</li> <li>• Able to acquire and post-process 3D echo data-sets to diagnose and plan the management of children with CHD</li> <li>• Provides expert advice on the use of, advanced echo imaging techniques (e.g. Speckle tracking myocardial deformation imaging) to diagnose and manage patients with cardiomyopathies</li> <li>• Identifies patients in need of additional cross-sectional imaging with MRI and CT</li> <li>• Demonstrates knowledge and understanding of the advantages and disadvantages of different imaging modalities (CMR, CT, TOE) and utilises them appropriately in the clinical setting</li> <li>• Able to perform and interpret intra-operative imaging for children undergoing cardiac surgery and plan further management in collaboration with surgical colleagues</li> <li>• Able to perform 2D TTE and TOE echocardiography to guide catheter interventions</li> <li>• Recognises indications for, perform and report bubble contrast studies, strain imaging and dyssynchrony studies</li> <li>• Is able to confidently demonstrate transthoracic and transoesophageal echo imaging at cardiac MDTs</li> <li>• Prepares children to safely undergo transoesophageal echocardiography under GA</li> <li>• Utilises novel imaging techniques, emerging evidence base and established guidelines appropriately</li> <li>• Able to lead an imaging service through full competence to perform, supervise and teach techniques in transthoracic and TOE</li> <li>• Supervise an echo service encompassing TOE, 3D echo techniques, LV strain assessment, stress echocardiography and contrast echo techniques</li> </ul> <p>Cardiac MRI (CMR) and congenital CT (may comprise 2 years of training or be combined with 1 year of advanced echocardiography imaging);</p> <ul style="list-style-type: none"> <li>• Demonstrates knowledge of basic MR physics</li> <li>• Refers appropriately for CMR and congenital CT</li> <li>• Able to triage referrals for cardiac MRI and Congenital CT</li> <li>• Is able to perform, report and utilise congenital CT to plan the management of children with CHD</li> <li>• Is able to perform, report, and utilise cardiac MRI to diagnose and risk stratify patients followed up after surgery for CHD</li> <li>• Is able to perform, report and utilise CMR to assess ventricular function and diagnose children with acquired heart disease</li> </ul>
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	<ul style="list-style-type: none"> <li>Provides advice on MR safety to referring clinicians</li> <li>Is able to confidently demonstrate CMR and Congenital CT data at cardiac MDTs</li> </ul>
<b>GPCs</b>	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills</p> <p>Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills</p> <p>Domain 3: Professional knowledge</p> <p>Professional requirements, National legislative requirements, The health service and healthcare system in the four countries</p> <p>Domain 4: Capabilities in health promotion and illness prevention</p> <p>Domain 5: Capabilities in leadership and team working</p> <p>Domain 6: Capabilities in patient safety and quality improvement</p> <p>Patient safety, Quality improvement</p> <p>Domain 7: Capabilities in safeguarding vulnerable groups</p> <p>Domain 8: Capabilities in education and training</p> <p>Domain 9: Capabilities in research and scholarship</p>
<b>Evidence to inform decision</b>	<p>Mini CEX</p> <p>ACAT</p> <p>DOPS</p> <p>MCR</p> <p>MSF</p> <p>CBD</p> <p>Attendance at learning events</p> <p>EACVI certification (for Level 4 Advanced ECHO)</p> <p>Logbook of procedures</p> <p>Accreditation in congenital CT</p> <p>Accreditation in CMR</p>
<b>4. Provide a fetal diagnostic and management service for pregnancies affected by CHD</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>Able to perform detailed fetal echocardiography and diagnosis congenital heart disease in utero</li> <li>Demonstrates understanding of the limitations of fetal echocardiography</li> <li>Complies with national safety standards for ultrasound in pregnancy</li> <li>Able to perform detailed echocardiographic assessment of fetal arrhythmias to allow appropriate treatment</li> <li>Demonstrates knowledge of the risk factors for congenital heart disease, the indications for referral to fetal cardiology and appropriate timing of fetal echo</li> <li>Demonstrates knowledge of the natural history of congenital heart defects in utero understands how this differs from postnatal lesions and communicates this appropriately</li> <li>Understands the risks and natural history of fetal arrhythmias, demonstrates knowledge of the drugs used to treat fetal</li> </ul>

	<p>arrhythmias and their safe use in pregnancy and communicates this appropriately</p> <ul style="list-style-type: none"> <li>• Demonstrates knowledge of the postnatal management and outcome of cardiac lesions</li> <li>• Able to provide evidence-based counselling with clear explanation of diagnosis, management and pregnancy options for patients with prenatal diagnosis of CHD</li> <li>• In collaboration with obstetric and fetal medicine and neonatal teams formulates plans for delivery and immediate postnatal care of babies with prenatal diagnosis of CHD and fetal arrhythmias.</li> <li>• Able to lead multidisciplinary team meetings to discuss cases including those in which postnatal outcome is uncertain</li> <li>• Demonstrates knowledge of the legal framework around termination of pregnancy</li> <li>• Demonstrates understanding of the associations between fetal cardiac abnormalities and chromosomal and genetic abnormalities and refers to other specialists such as clinical genetics as necessary</li> <li>• Demonstrates an awareness of the psychological impact of prenatal diagnosis of CHD and difficulties for patients in decision making, facilitating additional support from within team, awareness of available parent support groups and referral to psychology as appropriate</li> </ul>
<b>GPCs</b>	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills</p> <p>Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills</p> <p>Domain 3: Professional knowledge</p> <p>Professional requirements, National legislative requirements, The health service and healthcare system in the four countries</p> <p>Domain 4: Capabilities in health promotion and illness prevention</p> <p>Domain 5: Capabilities in leadership and team working</p> <p>Domain 6: Capabilities in patient safety and quality improvement</p> <p>Patient safety, Quality improvement</p> <p>Domain 7: Capabilities in safeguarding vulnerable groups</p> <p>Domain 8: Capabilities in education and training</p> <p>Domain 9: Capabilities in research and scholarship</p>
<b>Evidence to inform decision</b>	<p>ALS</p> <p>Mini CeX</p> <p>ACAT</p> <p>DOPS</p> <p>MCR</p> <p>MSF</p> <p>CBD</p> <p>Attendance at learning events and/or relevant certification</p> <p>Logbook of procedures</p>

5. Manage all aspects of the heart failure service, including transplant assessment and on-going follow up	
Descriptors	<p><b>Heart failure (HF) and Mechanical Circulatory Support (MCS)</b></p> <ul style="list-style-type: none"> <li>• Recognises the signs and symptoms of HF in children</li> <li>• Able to generate a differential diagnosis for heart failure in children and initiate medical management</li> <li>• Is able to appropriately adjust medical treatment in children with established HF</li> <li>• Demonstrates knowledge of the pathophysiology of HF through its application to treatment</li> <li>• Utilises investigations appropriately to establish an accurate diagnosis (including imaging, genetic evaluation, metabolic assessment, endomyocardial biopsy, and cardiac catheterisation)</li> <li>• Is able to interpret the results of arrhythmia testing, exercise testing, biomarker levels, non-invasive imaging, and cardiac catheterisation to plan treatment</li> <li>• Safely prescribes diuretics, antiarrhythmics, inotropic and lusitropic agents, anticoagulation, angiotensin-converting enzyme inhibitors, beta-blockers in children with HF</li> <li>• Demonstrates knowledge and understanding of the utility of non-medical therapies in the HF management, including the creation of an interatrial communication in patients supported by extracorporeal membrane oxygenation (ECMO), cardiac resynchronization therapy and arrhythmia management</li> <li>• Demonstrates knowledge of MCS application including ECMO, ventricular assist device (VAD) support in the treatment of end-stage HF as a bridge to transplantation and potentially as a bridge to recovery or as destination therapy in selected groups</li> <li>• Demonstrates knowledge of the evidence base as it relates to HF in children. Applies the emerging evidence base and guidelines to develop heart failure service</li> <li>• Has observed surgical procedures for organ procurement and implantation, ventricular assist device implantation and extracorporeal membrane oxygenation deployment</li> <li>• Provides evidence-based counselling with a clear explanation of diagnosis and management options for patients with heart failure</li> </ul> <p><b>Heart transplantation (HTx)</b></p> <ul style="list-style-type: none"> <li>• Demonstrates knowledge of the indications and contraindications for heart transplantation</li> <li>• Understands the process of assessment of donor suitability including matching criteria, importance of human leucocyte antibodies and blood group status</li> </ul>

	<ul style="list-style-type: none"> <li>• Demonstrates knowledge of outcomes of heart transplantation including complications</li> <li>• Demonstrates knowledge of the physiology of the denervated, transplanted heart</li> <li>• Safely prescribes immunosuppressive medications and demonstrates knowledge of side effects and interactions</li> <li>• Demonstrates knowledge of Blood group (ABO) and Human leucocyte antibodies mismatch transplantation and complications</li> <li>• Is able to recognise and initiate investigation and treatment for post-transplant rejection</li> <li>• Demonstrates knowledge of the evidence base as it relates to heart transplant in children.</li> </ul>
<b>GPCs</b>	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills</p> <p>Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills</p> <p>Domain 3: Professional knowledge</p> <p>Professional requirements, National legislative requirements, The health service and healthcare system in the four countries</p> <p>Domain 4: Capabilities in health promotion and illness prevention</p> <p>Domain 5: Capabilities in leadership and team working</p> <p>Domain 6: Capabilities in patient safety and quality improvement</p> <p>Patient safety, Quality improvement</p> <p>Domain 7: Capabilities in safeguarding vulnerable groups</p> <p>Domain 8: Capabilities in education and training</p> <p>Domain 9: Capabilities in research and scholarship</p>
<b>Evidence to inform decision</b>	<p>Mini CEX</p> <p>DOPS</p> <p>MCR</p> <p>MSF</p> <p>CBD</p> <p>Attendance at learning events and/or relevant certification such as The International Society for Heart and Lung Transplantation or International Paediatric Transplant Association</p> <p>Logbook of procedures</p>
<b>6. Provide a comprehensive diagnosis and treatment service for patients with pulmonary hypertension</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>• Demonstrates theoretical knowledge of the pathophysiology of pulmonary hypertension</li> <li>• Demonstrates knowledge and application of international guidance and evidence-based medicine in pulmonary hypertension investigation and treatment</li> <li>• Is able to identify patients at risk of developing pulmonary hypertension</li> <li>• Understands the clinical utility and limitations of genetic testing and the principles of family screening</li> </ul>

	<ul style="list-style-type: none"> <li>• Recognises the signs and symptoms suggestive of pulmonary hypertension in children and adolescents</li> <li>• Instigates appropriate investigations to establish causes and contributors in children with pulmonary hypertension</li> <li>• Utilises imaging (Echo, MRI, CT, Angiography) to diagnose and risk stratify patients with known and suspected pulmonary hypertension</li> <li>• Refers patients with known or suspected pulmonary hypertension appropriately for right heart catheterisation</li> <li>• Is able to interpret and interrogate data obtained from right heart catheterisation in patients with known or suspected pulmonary hypertension</li> <li>• Demonstrates knowledge of the potential sources of error when calculating PVR from data obtained by cardiac catheterisation</li> <li>• Instigates appropriate management of children with pulmonary hypertension during acute presentations</li> <li>• Is able to conduct outpatient consultations for children with known or suspected pulmonary hypertension</li> <li>• Provides management advice to other specialities caring for patients with pulmonary hypertension including on the ITU and in cooperation with primary and intermediate care</li> <li>• Provides advice on patients with pulmonary hypertension undergoing non-cardiac procedures under general anaesthesia</li> <li>• Manages patients with pulmonary hypertension in cooperation with primary and intermediate care</li> <li>• Is able to identify patients for referral to transplant services</li> <li>• Demonstrate theoretical knowledge of pharmacology of targeted therapy for pulmonary hypertension</li> <li>• Safely prescribes oral, subcutaneous and IV pulmonary arterial hypertension medication</li> <li>• Able to confidently present haemodynamic and imaging data of with pulmonary hypertension at cardiac MDTs</li> <li>• Demonstrates knowledge of the evidence base as it relates to pulmonary hypertension in children.</li> <li>• Able to Supports patients transitioning from paediatric to adult pulmonary hypertension services</li> </ul>
<b>GPCs</b>	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills</p> <p>Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills</p> <p>Domain 3: Professional knowledge</p> <p>Professional requirements, National legislative requirements, The health service and healthcare system in the four countries</p> <p>Domain 4: Capabilities in health promotion and illness prevention</p> <p>Domain 5: Capabilities in leadership and team working</p>

	<p>Domain 6: Capabilities in patient safety and quality improvement</p> <p>Patient safety, Quality improvement</p> <p>Domain 7: Capabilities in safeguarding vulnerable groups</p> <p>Domain 8: Capabilities in education and training</p> <p>Domain 9: Capabilities in research and scholarship</p>
<b>Evidence to inform decision</b>	<p>Mini CeX</p> <p>DOPS</p> <p>MCR</p> <p>MSF</p> <p>CBD</p> <p>Attendance at learning events and/or relevant certification</p> <p>Logbook of procedures</p>
<b>7. Provide a comprehensive adult congenital heart disease service</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>• Diagnose, assess and manage adults presenting with new diagnoses of Adult Congenital Heart Disease</li> <li>• Manage patients with known congenital heart disease transitioning from paediatric to adult care</li> <li>• Diagnose and manage the long-term sequelae of native, repaired and palliated Adult Congenital Heart Disease lesions</li> <li>• Perform transthoracic echocardiography in Adult Congenital Heart Disease patients and interpret results to manage care</li> <li>• Perform transoesophageal echocardiography in Adult Congenital Heart Disease patients and interpret results to manage care</li> <li>• Understand indications and interpret MRI to investigate Adult Congenital Heart Disease patients in conjunction with imaging specialists</li> <li>• Understand indications and interpret CT to investigate Adult Congenital Heart Disease patients in conjunction with imaging specialists</li> <li>• Manage heart failure in Adult Congenital Heart Disease patients</li> <li>• Manage <b>acute</b> arrhythmias in Adult Congenital Heart Disease patients</li> <li>• Manage pulmonary hypertension in Adult Congenital Heart Disease patients in collaboration with National PH Centres</li> <li>• Lead the Adult Congenital Heart Disease Multidisciplinary Team</li> <li>• Identify, investigate, counsel and refer patients appropriately for surgical and catheter interventions</li> <li>• Contribute to the care of the peri-operative Adult Congenital Heart Disease patient in theatre, intensive care and the ward</li> <li>• Manage Adult Congenital Heart Disease patients post procedure in conjunction with the procedural team</li> <li>• Identify Adult Congenital Heart Disease patients with indications for cardiac transplantation. Investigate, counsel and refer patients appropriately</li> <li>• Identify Adult Congenital Heart Disease patients who would benefit from supportive and palliative care, refer and share care appropriately</li> </ul>



	<ul style="list-style-type: none"> <li>• Manage services for pregnant patients with congenital heart disease in cooperation with general cardiologists, obstetricians, obstetric anaesthetists, haematologists, midwives and Inherited Cardiac Conditions/genetic specialists</li> <li>• Undertake pre-pregnancy counselling in patients with pre-existing or newly diagnosed congenital heart disease including risks to mother and fetus and risk of recurrence</li> <li>• Coordinate care plans for pregnant patients with established or newly diagnosed congenital cardiac conditions in conjunction with maternity services and general cardiology</li> <li>• Supervise the management of congenital cardiac patients in the postpartum period</li> <li>• Assist with diagnostic catheterisation and intervention in the Adult Congenital Heart Disease patient if appropriately trained to do so</li> </ul>
<b>GPCs</b>	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills</p> <p>Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills</p> <p>Domain 3: Professional knowledge</p> <p>Professional requirements, National legislative requirements, The health service and healthcare system in the four countries</p> <p>Domain 4: Capabilities in health promotion and illness prevention</p> <p>Domain 5: Capabilities in leadership and team working</p> <p>Domain 6: Capabilities in patient safety and quality improvement</p> <p>Patient safety, Quality improvement</p> <p>Domain 7: Capabilities in safeguarding vulnerable groups</p> <p>Domain 8: Capabilities in education and training</p> <p>Domain 9: Capabilities in research and scholarship</p>
<b>Evidence to inform decision</b>	<p>Mini CEX</p> <p>ACAT</p> <p>DOPS</p> <p>MCR</p> <p>MSF</p> <p>CBD</p> <p>Attendance at learning events and/or relevant certification</p>
<b>8. Manage inherited cardiac conditions (including cardiomyopathies, inherited arrhythmia syndromes and aortopathy syndromes)</b>	
<b>Descriptors</b>	<ul style="list-style-type: none"> <li>• Demonstrates knowledge and application of international guidance and evidence-based medicine in ICC investigation and treatment, including family screening</li> <li>• Understands clinical utility and limitation of genetic testing and the principles of family screening</li> <li>• Recognise signs and symptoms suggestive of ICC in children and adolescents</li> </ul>

	<ul style="list-style-type: none"> <li>• Able to assess and instigate appropriate investigation and management in patients with signs and symptoms of ICC</li> <li>• Appropriately refers newly diagnosed children with ICC to specialist services</li> <li>• Initiates management in patients with ICC during acute cardiac presentations</li> <li>• Provides advice on patients with ICC undergoing non cardiac treatment</li> <li>• Manages patients in specialist ICC clinics under supervision</li> <li>• Able to prepare and present patients at ICC MDTs</li> <li>• Applies knowledge of the epidemiology, anatomy and pathophysiology of common ICC to practice</li> <li>• Supports patients transitioning from paediatric to young adult ICC services under supervision</li> <li>• Appropriately requests and interprets ECG and imaging based investigations</li> <li>• Able to assess, investigate and instigate management in patients at risk of arrhythmic events including identifying patients who may be indicated cardiovascular implanted electronic devices (CIEDs)</li> <li>• Able to identify and instigate management in ICC patients with complications of CIEDs</li> <li>• Demonstrates safe prescribing of rhythm control, heart failure and anticoagulant drugs</li> <li>• Able to advise patients with ICC on safety and legality of driving</li> </ul>
<b>GPCs</b>	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills</p> <p>Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills</p> <p>Domain 3: Professional knowledge</p> <p>Professional requirements, National legislative requirements, The health service and healthcare system in the four countries</p> <p>Domain 4: Capabilities in health promotion and illness prevention</p> <p>Domain 5: Capabilities in leadership and team working</p> <p>Domain 6: Capabilities in patient safety and quality improvement</p> <p>Patient safety, Quality improvement</p> <p>Domain 7: Capabilities in safeguarding vulnerable groups</p> <p>Domain 8: Capabilities in education and training</p> <p>Domain 9: Capabilities in research and scholarship</p>
<b>Evidence to inform decision</b>	<p>ALS</p> <p>Mini CeX</p> <p>ACAT</p> <p>DOPS</p> <p>MCR</p> <p>MSF</p> <p>CBD</p>

	Attendance at learning events and/or relevant certification Logbook of procedures EEGC ICC Curriculum tool
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### 3.4 Presentations and conditions

The table below details the key presentations and conditions of Paediatric Cardiology. Each of these should be regarded as a clinical context in which trainees should be able to demonstrate CiPs and GPCs. In this spiral curriculum, trainees will expand and develop the knowledge, skills and attitudes around managing patients with these conditions and presentations. The patient should always be at the centre of knowledge, learning and care.

Trainees must demonstrate core bedside skills, including information gathering through history and physical examination and information sharing with patients, families and colleagues.

Treatment care and strategy covers how a doctor selects drug treatments or interventions for a patient. It includes discussions and decisions as to whether care is focused mainly on curative intent or whether the main focus is on symptomatic relief. It also covers broader aspects of care, including involvement of other professionals or services.

Particular presentations, conditions and issues are listed either because they are common or serious (having high morbidity, mortality and/or serious implications for treatment or public health).

For each condition/presentation, trainees will need to be familiar with such aspects as aetiology, epidemiology, clinical features, investigation, management and prognosis. Our approach is to provide general guidance and not exhaustive detail, which would inevitably become out of date.

Part 1 – Common Learning objectives
<ol style="list-style-type: none"> <li>1. Good Clinical Care</li> <li>2. Communication Skills</li> <li>3. Maintaining Good Medical Practice</li> <li>4. Maintaining Trust - Professional Behaviour</li> <li>5. Maintaining Trust - Ethics and Legal Issues</li> <li>6. Maintaining Trust - Patient Education and Disease Prevention</li> <li>7. Working with Colleagues</li> <li>8. Teamwork and Leadership Skills</li> <li>9. Teaching and Educational Supervision</li> <li>10. Research</li> <li>11. Structure of the NHS and Principles of Management</li> <li>12. Information Use and Management</li> <li>13. Cross-Specialty Skills - Admissions and Discharges</li> <li>14. Cross-Specialty Skills - Discharge Planning</li> </ol>

15. Cross-Specialty Skills - Resuscitation
16. Cross-Specialty Skills - Nutrition

## Part 2 – Clinical Learning Objectives

1. Cardiovascular Collapse in Infancy
2. Cardiac Failure in Infants and Children
3. Cyanosis in the Newborn Period
4. Cyanosis Beyond the Newborn Period
5. Evaluation of a Child with a Cardiac Murmur
6. Evaluation of Children and Adolescents with Chest Pain, Palpitations or Syncope
7. Acyanotic Congenital Heart Disease
8. Cyanotic Congenital Heart Disease
9. Pulmonary Hypertension
10. Fontan Circulation
11. Inflammatory Cardiovascular Disease
12. Cardiomyopathy and Myocarditis
13. Prevention and Management of Infective Endocarditis
14. Cardiovascular Abnormalities in Neonatal Intensive Care
15. Cardiovascular Evaluation of Children with Genetic Disorders and Syndromes
16. Cardiac Evaluation of a Child with Stridor
17. Detection and Management of Fetal Cardiac Abnormalities
18. Adolescent and Adult Congenital Heart Disease
19. Arrhythmias
20. Paediatric Cardiac and Cardiopulmonary Transplantation
21. Nutrition and Growth in Congenital Heart Disease
22. Assessment of Children Prior to Cardiac Surgery
23. Care of Children Following Cardiac Surgery
24. Assessment of Children with Cardiac Disease Prior to Non-Cardiac Surgery
25. Management of Critically Ill Children with Cardiovascular Compromise
26. Genetic basis of CHD and role of genomics

## Part 3 - Investigations and Procedures

1. 12 Lead ECG
2. Ambulatory ECG, Exercise Testing and Cardiac Event Recording
3. ECG with Adenosine Challenge

4. Chest X-Ray 5. Tilt Testing 6. DC Cardioversion 7. Basic Cardiac Pacing 8. Pericardiocentesis 9. Balloon Atrial Septostomy 10. Transthoracic Echocardiography 11. Transoesophageal Echocardiography 12. Advanced Echocardiatic techniques 13. Cardiac Catheterisation 14. Cardiac MRI and Thoracic CT 15. Radiation Use and Safety
<b>Part 4 – Medical Leadership</b>
1. Personal qualities 2. Managing Services 3. Improving Services 4. Setting Direction
<b>Part 5 – Specialist Area Training</b>
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1. Fetal Cardiology 2. Specialist Imaging - Cardiac MRI and Thoracic CT 3. Cardiac Catheterisation 4. Cardiac Pacing and Electrophysiology 5. Adolescent and Adult Congenital Heart Disease 6. Pulmonary Hypertension 7. Transplantation Cardiology 8. Inherited cardiac conditions

### 3.5 Practical procedures

There are a number of fundamental procedural skills in which a trainee must become proficient.

Trainees must be able to outline the indications for these procedures and recognise the importance of valid consent, aseptic technique, safe use of analgesia and local anaesthetics, minimisation of patient discomfort, and requesting help when appropriate. For all practical procedures the trainee must be able to recognise complications and respond appropriately if they arise, including calling for help from colleagues in other specialties when necessary.

Trainees should receive training in procedural skills in a clinical skills lab if required. Assessment of procedural skills will be made using the direct observation of procedural skills (DOPS) tool. The table below sets out the minimum competency level expected for each of the practical procedures.

When a trainee has been signed off as being able to perform a procedure independently, they are not required to have any further assessment (DOPS) of that procedure, unless they or their educational supervisor think that this is required (in line with standard professional conduct).

CORE PROCEDURES			
	Core curriculum requirements for ALL trainees		
	ST4	ST5	ST6
<b>Transthoracic echo</b>	Able to perform the procedure under direct supervision	Able to perform the procedure with limited supervision	Competent to perform the procedure unsupervised
<b>Trans-oesophageal &amp; epicardial echo</b>	Able to perform the procedure under direct supervision	Maintain	Able to perform the procedure with limited supervision
<b>Emergency pericardiocentesis*</b>	Able to perform the procedure under direct supervision	Maintain	Competent to perform the procedure unsupervised
<b>Cardioversion</b>	Able to perform the procedure under direct supervision	Able to perform the procedure with limited supervision	Competent to perform the procedure unsupervised
<b>Pacing</b>	Able to perform the procedure under direct supervision	Able to perform the procedure under direct supervision	Able to perform the procedure with limited supervision Insertion of temporary pacing wire (DOPS) Management of post-op pacing (CbD)
<b>12 lead ECG/CXR</b>	Able to perform the procedure under direct supervision	Able to perform the procedure with limited supervision	Competent to perform the procedure unsupervised
<b>Ambulatory ECG/event recorder/exercise tolerance test</b>	Able to perform the procedure under direct supervision	Able to perform the procedure with limited supervision	Competent to perform the procedure unsupervised
<b>Balloon atrial septostomy (echo guidance only)</b>	Able to perform the procedure under direct supervision	Able to perform the procedure with limited supervision	Competent to perform the procedure unsupervised
<b>Cardiac catheterisation</b>	Able to perform the procedure under direct supervision	Maintain	Maintain

<b>SPECIALIST TRAINING REQUIREMENTS</b> <b>NB If 2 modules are being undertaken, then the level specified for ST7 must be achieved in both modules</b>		
	ST7	ST8
<b>Fetal Cardiology</b>	Able to perform the procedure with limited supervision scanning/reporting/counselling	Competent to perform the procedure unsupervised scanning/reporting/counselling
<b>Advanced Echo</b>	Able to perform the procedure with limited supervision for intra-operative echo Able to perform the procedure with limited supervision for advanced functional assessment	Competent to perform the procedure unsupervised for intra-operative echo Competent to perform the procedure unsupervised for advanced functional assessment
<b>Specialist Imaging (MRI ± CT)</b>	Able to perform the procedure with limited supervision scanning/reporting	Competent to perform the procedure unsupervised scanning/reporting
<b>Cardiac Catheterisation</b>	Competent to perform the procedure unsupervised as second operator  Able to perform the procedure with limited supervision as first operator for less complex procedures	Competent to perform the procedure unsupervised as first operator for less complex procedures  Able to perform the procedure with limited supervision for complex procedures (eg PPVI, Ductal stenting)
<b>Pacing and Electrophysiology</b>	Able to perform the procedure with limited supervision for pacemaker implantation Level 4 as second operator for EP studies	6 months experience in adult EP department Competent to perform the procedure unsupervised for pacemaker implantation Competent to perform the procedure unsupervised as first operator for less complex EP studies (eg. Accessory pathway, AVNRT) Able to perform the procedure with limited supervision for complex EP studies (eg 3D mapping in structurally abnormal hearts)

## 4 Learning and Teaching

### 4.1 The training programme

The organisation and delivery of postgraduate training is the responsibility of the Health Education England (HEE), NHS Education for Scotland (NES), Health Education and



Improvement Wales (HEIW) and the Northern Ireland Medical and Dental Training Agency (NIMDTA) – referred to from this point as ‘deaneries’. A training programme director (TPD) will be responsible for coordinating the specialty training programme. In England, the local organisation and delivery of training is overseen by a school of medicine.

Progression through the programme will be determined by the Annual Review of Competency Progression (ARCP) process and the training requirements for each indicative year of training are summarised in the ARCP decision aid (available on the [JRCPTB website](#)).

The sequence of training should ensure appropriate progression in experience and responsibility. The training to be provided at each training site is defined to ensure that, during the programme, the curriculum requirements are met and also that unnecessary duplication and educationally unrewarding experiences are avoided.

The following provides a guide on how training programmes should be focused in each training year in order for trainees to gain the experience and develop the capabilities to the level required.

Trainees will have an appropriate clinical supervisor and a named educational supervisor. The clinical supervisor and educational supervisor may be the same person.

## 4.2 Teaching and learning methods

The curriculum will be delivered through a variety of learning experiences and will achieve the capabilities described in the syllabus through a variety of learning methods. There will be a balance of different modes of learning from formal teaching programmes to experiential learning ‘on the job’. The proportion of time allocated to different learning methods may vary depending on the nature of the attachment within a rotation.

This section identifies the types of situations in which a trainee will learn.

**Work-based experiential learning** - The content of work-based experiential learning is decided by the local faculty for education but includes active participation in:

### **Congenital and Paediatric Cardiology Clinics including ‘specialist’ clinics**

The educational objectives of attending clinics are:

- To understand the management of suspected, newly detected and long term congenital heart disease
- To be able to confidently differentiate significant and non-significant cardiac presentations and reassure patients and parents accordingly
- Be able to assess a patient in a defined time-frame
- To interpret and act on the referral letter to clinic
- To propose an investigation and management plan in a setting different from the acute medical situation

- To review and amend existing investigation plans
- To write an acceptable letter back to the referrer
- To communicate with the patient and where necessary relatives and other health care professionals.

After initial induction, trainees will review patients in clinic settings, under direct supervision. The degree of responsibility taken by the trainee will increase as competency increases. Trainees should see a range of new and follow-up patients and present their findings to their clinical supervisor. Clinic letters written by the trainee should also be reviewed and feedback given.

The number of patients that a trainee should see in each clinic is not defined, neither is the time that should be spent in clinic, but as a guide this should be a minimum of two hours.

Clinic experience should be used as an opportunity to undertake supervised learning events and reflection.

### **Reviewing patients with consultants**

It is important that trainees have an opportunity to present at least a proportion of the patients whom they have admitted to their consultant for senior review in order to obtain immediate feedback into their performance (that may be supplemented by an appropriate WBA such as an ACAT, mini-CEX or CBD). This may be accomplished when working on a take shift along with a consultant, or on a post-take ward round with a consultant.

### **Personal ward rounds and provision of ongoing clinical care on specialist medical ward attachments**

Every patient seen, on the ward or in outpatients, provides a learning opportunity, which will be enhanced by following the patient through the course of their illness. The experience of the evolution of patients' problems over time is a critical part both of the diagnostic process as well as management. Patients seen should provide the basis for critical reading and reflection on clinical problems.

### **Ward rounds by more senior doctors**

Every time a trainee observes another doctor seeing a patient or their relatives there is an opportunity for learning. Ward rounds (including post-take) should be led by a more senior doctor and include feedback on clinical and decision-making skills.

### **Multidisciplinary team meetings**

There are many situations where clinical problems are discussed with clinicians in other disciplines. These provide excellent opportunities for observation of clinical reasoning, and as the trainee becomes more senior and more self-confident, opportunities for presentation of patients and participation in discussion.

Trainees have supervised responsibility for the care of inpatients. This includes day-to-day review of clinical conditions, note keeping, and the initial management of the acutely ill patient with referral to and liaison with clinical colleagues as necessary. The degree of responsibility taken by the trainee will increase as competency increases. There should be

appropriate levels of clinical supervision throughout training, with increasing clinical independence and responsibility.

### **Formal postgraduate teaching**

The content of these sessions are determined by the local faculty of medical education and will be based on the curriculum. There are many opportunities throughout the year for formal teaching in the local postgraduate teaching sessions and at regional, national and international meetings. Many of these are organised by the Royal Colleges of Physicians.

Suggested activities include:

- a programme of formal bleep-free regular teaching sessions to cohorts of trainees (e.g. a weekly training hour for IM teaching within a training site)
- case presentations
- research, audit and quality improvement projects
- lectures and small group teaching
- Grand Rounds
- clinical skills demonstrations and teaching
- critical appraisal and evidence based medicine and journal clubs
- joint specialty meetings
- attendance at training programmes organised on a deanery or regional basis, which are designed to cover aspects of the training programme outlined in this curriculum.

**Learning with peers** - There are many opportunities for trainees to learn with their peers. Local postgraduate teaching opportunities allow trainees of varied levels of experience to come together for small group sessions.

### **Independent self-directed learning**

Trainees will use this time in a variety of ways depending upon their stage of learning.

Suggested activities include:

- reading, including web-based material such as e-Learning for Healthcare (e-LfH)
- maintenance of personal portfolio (self-assessment, reflective learning, personal development plan)
- webinars, remote learning opportunities
- audit, quality improvement and research projects
- reading journals
- achieving personal learning goals beyond the essential, core curriculum

### **Formal study courses**

Time to be made available for formal courses is encouraged, subject to local conditions of service. Examples include management and leadership courses and communication courses, which are particularly relevant to patient safety and experience.

## **4.3 Academic training**

The four nations have different arrangements for academic training and doctors in training should consult the local deanery for further guidance.

Trainees may train in academic medicine as an academic clinical fellow (ACF), academic clinical lecturer (ACL) or equivalent.

Some trainees may opt to do research leading to a higher degree without being appointed to a formal academic programme. This new curriculum should not impact in any way on the facility to take time out of programme for research (OOPR) but as now, such time requires discussion between the trainee, the TPD and the Deanery as to what is appropriate together with guidance from the appropriate SAC that the proposed period and scope of study is sensible.

#### **4.4 Taking time out of programme**

There are a number of circumstances when a trainee may seek to spend some time out of specialty training, such as undertaking a period of research or taking up a fellowship post. All such requests must be agreed by the postgraduate dean in advance and trainees are advised to discuss their proposals as early as possible. Full guidance on taking time out of programme can be found in the Gold Guide.

#### **4.5 Acting up as a consultant**

A trainee coming towards the end of their training may spend up to three months “acting-up” as a consultant, provided that a consultant supervisor is identified for the post and satisfactory progress is made. As long as the trainee remains within an approved training programme, the GMC does not need to approve this period of “acting up” and their original CCT date will not be affected. More information on acting up as a consultant can be found in the Gold Guide.

## **5 Programme of Assessment**

### **5.1 Purpose of assessment**

The purpose of the programme of assessment is to:

- assess trainees’ actual performance in the workplace
- enhance learning by providing formative assessment, enabling trainees to receive immediate feedback, understand their own performance and identify areas for development
- drive learning and enhance the training process by making it clear what is required of trainees and motivating them to ensure they receive suitable training and experience
- demonstrate trainees have acquired the GPCs and meet the requirements of GMP
- ensure that trainees possess the essential underlying knowledge required for their specialty
- provide robust, summative evidence that trainees are meeting the curriculum standards during the training programme;

- inform the ARCP, identifying any requirements for targeted or additional training where necessary and facilitating decisions regarding progression through the training programme;
- identify trainees who should be advised to consider changes of career direction.

## 5.2 Programme of Assessment

Our programme of assessment refers to the integrated framework of, assessments in the workplace and judgements made about a learner during their approved programme of training and a formative knowledge based assessment which needs to have been completed (*or some other word*) by the end of core training. The purpose of the programme of assessment is to robustly evidence, ensure and clearly communicate the expected levels of performance at critical progression points in, and to demonstrate satisfactory completion of training as required by the curriculum.

The programme of assessment is comprised of several different individual types of assessment. A range of assessments is needed to generate the necessary evidence required for global judgements to be made about satisfactory performance, progression in, and completion of, training. All assessments, including those conducted in the workplace, are linked to the relevant curricular learning outcomes (e.g. through the blueprinting of assessment system to the stated curricular outcomes).

The programme of assessment emphasises the importance and centrality of professional judgement in making sure learners have met the learning outcomes and expected levels of performance set out in the approved curricula. Assessors will make accountable, professional judgements. The programme of assessment includes how professional judgements are used and collated to support decisions on progression and satisfactory completion of training.

The assessments will be supported by structured feedback for trainees. Assessment tools will be both formative and summative and have been selected on the basis of their fitness for purpose.

Assessment will take place throughout the training programme to allow trainees continually to gather evidence of learning and to provide formative feedback. Those assessment tools which are not identified individually as summative will contribute to summative judgements about a trainee's progress as part of the programme of assessment. The number and range of these will ensure a reliable assessment of the training relevant to their stage of training and achieve coverage of the curriculum.

Reflection and feedback should be an integral component to all SLEs and WBPAs. In order for trainees to maximise benefit, reflection and feedback should take place as soon as possible after an event. Every clinical encounter can provide a unique opportunity for reflection and feedback and this process should occur frequently. Feedback should be of high quality and should include an action plan for future development for the trainee. Both trainees and trainers should recognise and respect cultural differences when giving and receiving feedback.

### 5.3 Assessment of CiPs

Assessment of CiPs involves looking across a range of different skills and behaviours to make global decisions about a learner's suitability to take on particular responsibilities or tasks.

Clinical supervisors and others contributing to assessment will provide formative feedback to the trainee on their performance throughout the training year. This feedback will include a global rating in order to indicate to the trainee and their educational supervisor how they are progressing at that stage of training. To support this, workplace based assessments and multiple consultant reports will include global assessment anchor statements.

#### Global assessment anchor statements

- Below expectations for this year of training; may not meet the requirements for critical progression point
- Meeting expectations for this year of training; expected to progress to next stage of training
- Above expectations for this year of training; expected to progress to next stage of training

Towards the end of the training year, trainees will make a self-assessment of their progression for each CiP and record this in the ePortfolio with signposting to the evidence to support their rating.

The educational supervisor (ES) will review the evidence in the ePortfolio including workplace based assessments, feedback received from clinical supervisors (via the Multiple Consultant Report) and the trainee's self-assessment and record their judgement on the trainee's performance in the ES report, with commentary.

For **generic CiPs**, the ES will indicate whether the trainee is meeting expectations or not using the global anchor statements above. Trainees will need to be meeting expectations for the stage of training as a minimum to be judged satisfactory to progress to the next training year.

For **specialty CiPs**, the ES will make an entrustment decision for each CiP and record the indicative level of supervision required with detailed comments to justify their entrustment decision. The ES will also indicate the most appropriate global anchor statement (see above) for overall performance.

#### Level descriptors for specialty CiPs

Level	Descriptor
Level 1	<b>Entrusted to observe only</b> – no provision of clinical care
Level 2	<b>Entrusted to act with direct supervision:</b> The trainee may provide clinical care, but the supervising physician is physically within the hospital or other site of patient care and is immediately available if required to provide direct bedside supervision

Level 3	<b>Entrusted to act with indirect supervision:</b> The trainee may provide clinical care when the supervising physician is not physically present within the hospital or other site of patient care, but is available by means of telephone and/or electronic media to provide advice, and can attend at the bedside if required to provide direct supervision
Level 4	<b>Entrusted to act unsupervised</b>

The ARCP will be informed by the ES report and the evidence presented in the ePortfolio. The ARCP panel will make the final summative judgement on whether the trainee has achieved the generic outcomes and the appropriate level of supervision for each CiP. The ARCP panel will determine whether the trainee can progress to the next year/level of training in accordance with the Gold Guide. ARCPs will be held for each training year. The final ARCP will ensure trainees have achieved the appropriate levels in all CiPs for the critical progression point at completion of training.

#### 5.4 Critical progression points

There will be a key progression point on completion of specialty training. Trainees will be required to be entrusted at level 4 in all CiPs by the end of training in order to achieve an ARCP outcome 6 and be recommended for a CCT.

The educational supervisor report will make a recommendation to the ARCP panel as to whether the trainee has met the defined levels for the CiPs and acquired the procedural competence required for each year of training. The ARCP panel will make the final decision on whether the trainee can be signed off and progress to the next year/level of training [see section 5.6].

The outline grid below sets out the expected level of supervision and entrustment for the specialty CiPs and includes the critical progression points across the whole training programme.

**Table 1: Outline grid of levels expected for Paediatric Cardiology specialty CiPs**

**Levels to be achieved by the end of each training year for specialty CiPs** NB If 2 themed for service modules are being undertaken, then the level specified for ST7 must be achieved in both modules

**Level descriptors**

Level 1: Entrusted to observe only – no clinical care

Level 2: Entrusted to act with direct supervision

Level 3: Entrusted to act with indirect supervision

Level 4: Entrusted to act unsupervised

Specialty CiP	ST4	ST5	ST6	ST7	ST8	CRITICAL PROGRESSION POINT
1. Diagnose and manage acute and chronic structural congenital and paediatric heart disease in general, developing knowledge and ability to contribute to the patient / family centred care of this life-long disease process including awareness of comorbidities and end of life care	2		3		4	
2. Diagnose and manage acute and chronic functional and acquired heart disease in fetal life and childhood	2		3		4	
3. Diagnose and manage acute and chronic heart rhythm abnormalities in fetal life, childhood, and in adults with congenital heart disease, including knowledge of pacing	2		3		4	
4. Participate in and contribute to the acute and chronic care of adult patients with congenital heart disease (ACHD) including during	2		3		4	
5. Working with a complex multidisciplinary team, including community and network provision of patient centred care	2		3		4	
<b>Specialty CiPs themed for service</b>						
1. Provide an arrhythmia service including ablation and device therapy for paediatric and CHD patients				3	4	
2. Provide a complex structural interventions service for paediatric and CHD patients				3	4	



3. Provide a comprehensive imaging service for paediatric and CHD patients (this could be echocardiographic and / or cross-sectional imaging)				3	4	
4. Provide a fetal diagnostic and management service for pregnancies affected by CHD				3	4	
5. Manage all aspects of the heart failure service, including transplant assessment and on-going follow up				3	4	
6. Provide a comprehensive diagnosis and treatment service for patients with pulmonary hypertension				3	4	
7. Provide a comprehensive adult congenital heart disease service				3	4	
8. Provide a comprehensive inherited cardiac conditions service				3	4	

## 5.5 Evidence of progress

The following methods of assessment will provide evidence of progress in the integrated programme of assessment. The requirements for each training year/level are stipulated in the ARCP decision aid ([www.jrcptb.org.uk](http://www.jrcptb.org.uk)).

### *Summative assessment*

#### **Workplace based assessment (WPBA)**

- Direct Observation of Procedural Skills (DOPS) – summative

### *Formative assessment*

#### **Knowledge Based Assessment**

#### **Supervised Learning Events (SLEs)**

- Acute Care Assessment Tool (ACAT)
- Case-Based Discussions (CbD)
- mini-Clinical Evaluation Exercise (mini-CEX)

#### **WPBA**

- Direct Observation of Procedural Skills (DOPS) – formative
- Multi-Source Feedback (MSF)
- Patient/Parent Survey (PS)
- Quality Improvement Project Assessment Tool (QIPAT)
- Teaching Observation (TO)

#### **Supervisor reports**

- Multiple Consultant Report (MCR)
- Educational Supervisor Report (ESR)

These methods are described briefly below. More information and guidance for trainees and assessors are available in the ePortfolio and on the JRCPTB website ([www.jrcptb.org.uk](http://www.jrcptb.org.uk)).

Assessment should be recorded in the trainee's ePortfolio. These methods include feedback opportunities as an integral part of the programme of assessment.

#### **Acute Care Assessment Tool (ACAT)**

The ACAT is designed to assess and facilitate feedback on a doctor's performance during their practice on the acute medical take. It is primarily for assessment of their ability to prioritise, to work efficiently, to work with and lead a team, and to interact effectively with nursing and other colleagues. It can also be used for assessment and feedback in relation to

care of individual patients. Any doctor who has been responsible for the supervision of the acute medical take can be the assessor for an ACAT.

### **Case-based Discussion (CbD)**

The CbD assesses the performance of a trainee in their management of a patient to provide an indication of competence in areas such as clinical reasoning, decision-making and application of medical knowledge in relation to patient care. It also serves as a method to document conversations about, and presentations of, cases by trainees. The CbD should focus on a written record (such as written case notes, out-patient letter, and discharge summary). A typical encounter might be when presenting newly referred patients in the out-patient department.

### **mini-Clinical Evaluation Exercise (mini-CEX)**

This tool evaluates a clinical encounter with a patient to provide an indication of competence in skills essential for good clinical care such as history taking, examination and clinical reasoning. The trainee receives immediate feedback to aid learning. The mini-CEX can be used at any time and in any setting when there is a trainee and patient interaction and an assessor is available.

### **Direct Observation of Procedural Skills (DOPS)**

A DOPS is an assessment tool designed to evaluate the performance of a trainee in undertaking a practical procedure, against a structured checklist. The trainee receives immediate feedback to identify strengths and areas for development. DOPS can be undertaken as many times as the trainee and their supervisor feel is necessary (formative). A trainee can be regarded as competent to perform a procedure independently after they are signed off as such by an appropriate assessor (summative).

### **Multi-source feedback (MSF)**

This tool is a method of assessing generic skills such as communication, leadership, team working, reliability etc, across the domains of Good Medical Practice. This provides systematic collection and feedback of performance data on a trainee, derived from a number of colleagues. 'Raters' are individuals with whom the trainee works, and includes doctors, administrative staff, and other allied professionals. Raters should be agreed with the educational supervisor at the start of the training year. The trainee will not see the individual responses by raters. Feedback is given to the trainee by the Educational Supervisor.

### **Patient/Parent Survey (PS)**

A trainee's interaction with patients should be continually observed and assessed. The Patient Survey provides a tool to assess a trainee during a consultation period. The Patient Survey assesses the trainee's performance in areas such as interpersonal skills, communication skills and professionalism.

### **Quality Improvement Project Assessment Tool (QIPAT)**

The QIPAT is designed to assess a trainee's competence in completing a quality improvement project. The QIPAT can be based on review of quality improvement project

documentation or on a presentation of the quality improvement project at a meeting. If possible the trainee should be assessed on the same quality improvement project by more than one assessor.

### **Teaching Observation (TO)**

The TO form is designed to provide structured, formative feedback to trainees on their competence at teaching. The TO can be based on any instance of formalised teaching by the trainee which has been observed by the assessor. The process should be trainee-led (identifying appropriate teaching sessions and assessors).

### ***Supervisor reports***

#### **Multiple Consultant Report (MCR)**

The MCR captures the views of consultant supervisors based on observation on a trainee's performance in practice. The MCR feedback and comments received give valuable insight into how well the trainee is performing, highlighting areas of excellence and areas of support required. MCR feedback will be available to the trainee and contribute to the educational supervisor's report.

#### **Educational supervisors report (ESR)**

The ES will periodically (at least annually) record a longitudinal, global report of a trainee's progress based on a range of assessment, potentially including observations in practice or reflection on behaviour by those who have appropriate expertise and experience. The ESR will include the ES's summative judgement of the trainee's performance and the entrustment decisions given for the learning outcomes (CiPs). The ESR can incorporate commentary or reports from longitudinal observations, such as from supervisors (MCRs) and formative assessments demonstrating progress over time.

### **5.6 Decisions on progress (ARCP)**

The decisions made at critical progression points and upon completion of training should be clear and defensible. They must be fair and robust and make use of evidence from a range of assessments, potentially including exams and observations in practice or reflection on behaviour by those who have appropriate expertise or experience. They can also incorporate commentary or reports from longitudinal observations, such as from supervisors or formative assessments demonstrating progress over time.

Periodic (at least annual) review should be used to collate and systematically review evidence about a doctor's performance and progress in a holistic way and make decisions about their progression in training. The annual review of progression (ARCP) process supports the collation and integration of evidence to make decisions about the achievement of expected outcomes.

Assessment of CiPs involves looking across a range of different skills and behaviours to make global decisions about a learner's suitability to take on particular responsibilities or tasks, as do decisions about the satisfactory completion of presentations/conditions and procedural skills set out in this curriculum. The outline grid in section 5.4 sets out the level of

supervision expected for each of the clinical and specialty CiPs. The table of practical procedures sets out the minimum level of performance expected at the end of each year or training. The requirements for each year of training are set out in the ARCP decision aid ([www.jrcptb.org.uk](http://www.jrcptb.org.uk)).

The ARCP process is described in the Gold Guide. Deaneries are responsible for organising and conducting ARCPs. The evidence to be reviewed by ARCP panels should be collected in the trainee's ePortfolio.

As a precursor to ARCPs, JRCPTB strongly recommend that trainees have an informal ePortfolio review either with their educational supervisor or arranged by the local school of medicine. These provide opportunities for early detection of trainees who are failing to gather the required evidence for ARCP.

There should be review of the trainee's progress to identify any outstanding targets that the trainee will need to complete to meet all the learning outcomes for completion training approximately 12-18 months before CCT. This should include an external assessor from outside the training programme.

In order to guide trainees, supervisors and the ARCP panel, JRCPTB has produced an ARCP decision aid which sets out the requirements for a satisfactory ARCP outcome at the end of each training year and critical progression point. The ARCP decision aid is available on the JRCPTB website [www.jrcptb.org.uk](http://www.jrcptb.org.uk).

Poor performance should be managed in line with the Gold Guide.

## 5.7 Assessment blueprint

The table below show the possible methods of assessment for each CiP. It is not expected that every method will be used for each competency and additional evidence may be used to help make a judgement on capability.

### KEY

ACAT	Acute care assessment tool	CbD	Case-based discussion
DOPS	Direct observation of procedural skills	Mini-CEX	Mini-clinical evaluation exercise
MCR	Multiple consultant report	MSF	Multi source feedback
PS	Patient/parent survey	QIPAT	Quality improvement project assessment tool
TO	Teaching observation	KBA	Knowledge based assessment

### Blueprint for WPBAs mapped to CiPs

Learning outcomes	ACAT	CbD	DOPS	MCR	Mini-CEX	MSF	PS	QIPAT	TO	KBA
<b>Generic CiPs</b>										
Able to function successfully within NHS organisational and management systems				✓		✓				
Able to deal with ethical and legal issues related to clinical practice		✓	✓	✓	✓	✓				
Communicates effectively and is able to share decision making, while maintaining appropriate situational awareness, professional behaviour and professional judgement				✓		✓	✓			
Is focused on patient safety and delivers effective quality improvement in patient care				✓		✓		✓		
Carrying out research and managing data appropriately				✓		✓				
Acting as a clinical teacher and clinical supervisor				✓		✓			✓	
<b>Specialty CiPs</b>										
Diagnose and manage acute and chronic structural congenital and paediatric heart disease in general, developing knowledge and ability to contribute to the patient / family centred care of this life-long disease process including awareness of comorbidities and end of life care		✓	✓	✓	✓	✓	✓			✓
Diagnose and manage acute and chronic functional and acquired heart disease in fetal life and childhood	✓	✓	✓	✓	✓	✓	✓			✓
Diagnose and manage acute and chronic heart rhythm abnormalities in fetal life, childhood, and in adults with congenital heart disease, including knowledge of pacing	✓	✓	✓	✓	✓	✓	✓			✓
Participate in and contribute to the acute and chronic care of adult patients with congenital heart disease (ACHD) including during	✓	✓	✓	✓	✓		✓			✓
Working with a complex multidisciplinary team, including community and network provision of patient centred care		✓	✓	✓	✓		✓			✓
<b>Specialty CiPs themed for service</b>										
Provide an arrhythmia service including ablation and device therapy for paediatric and CHD patients		✓	✓	✓	✓	✓	✓			✓
Provide a complex structural interventions service for paediatric and CHD patients		✓	✓		✓	✓	✓			✓
Provide a comprehensive imaging service for paediatric and CHD patients (this could be		✓	✓	✓	✓	✓	✓			✓

Learning outcomes	ACAT	CbD	DOPS	MCR	Mini-CEX	MSF	PS	QIPAT	TO	KBA
echocardiographic and / or cross-sectional imaging)										
Provide a fetal diagnostic and management service for pregnancies affected by CHD Manage all aspects of the heart failure service, including transplant assessment and on-going follow up		√	√	√	√	√	√			√
Provide a comprehensive diagnosis and treatment service for patients with pulmonary hypertension		√	√	√	√	√	√			√
Provide a comprehensive adult congenital heart disease service	√	√	√	√	√	√	√			√
Provide a comprehensive inherited cardiac conditions service	√	√	√	√	√	√	√			√

## 6 Supervision and feedback

This section of the curriculum describes how trainees will be supervised, and how they will receive feedback on performance. For further information please refer to the AoMRC guidance on Improving feedback and reflection to improve learning<sup>4</sup>.

Access to high quality, supportive and constructive feedback is essential for the professional development of the trainee. Trainee reflection is an important part of the feedback process and exploration of that reflection with the trainer should ideally be a two way dialogue. Effective feedback is known to enhance learning and combining self-reflection to feedback promotes deeper learning.

Trainers should be supported to deliver valuable and high quality feedback. This can be by providing face to face training to trainers. Trainees would also benefit from such training as they frequently act as assessors to junior doctors, and all involved could also be shown how best to carry out and record reflection.

### 6.1 Supervision

All elements of work in training posts must be supervised with the level of supervision varying depending on the experience of the trainee and the clinical exposure and case mix undertaken. Outpatient and referral supervision must routinely include the opportunity to

<sup>4</sup> [Improving feedback and reflection to improve learning. A practical guide for trainees and trainers](#)

discuss all cases with a supervisor if appropriate. As training progresses the trainee should have the opportunity for increasing autonomy, consistent with safe and effective care for the patient.

Organisations must make sure that each doctor in training has access to a named clinical supervisor and a named educational supervisor. Depending on local arrangements these roles may be combined into a single role of educational supervisor. However, it is preferred that a trainee has a single named educational supervisor for (at least) a full training year, in which case the clinical supervisor is likely to be a different consultant during some placements.

The role and responsibilities of supervisors have been defined by the GMC in their standards for medical education and training<sup>5</sup>.

### **Educational supervisor**

The educational supervisor is responsible for the overall supervision and management of a doctor's educational progress during a placement or a series of placements. The educational supervisor regularly meets with the doctor in training to help plan their training, review progress and achieve agreed learning outcomes. The educational supervisor is responsible for the educational agreement, and for bringing together all relevant evidence to form a summative judgement about progression at the end of the placement or a series of placements.

### **Clinical supervisor**

Consultants responsible for patients that a trainee looks after provide clinical supervision for that trainee and thereby contribute to their training; they may also contribute to assessment of their performance by completing a 'Multiple Consultant Report (MCR)' and other WPBAs. A trainee may also be allocated (for instance, if they are not working with their educational supervisor in a particular placement) a named clinical supervisor, who is responsible for reviewing the trainee's training and progress during a particular placement. It is expected that a named clinical supervisor will provide a MCR for the trainee to inform the Educational Supervisor's report.

The educational and (if relevant) clinical supervisors, when meeting with the trainee, should discuss issues of clinical governance, risk management and any report of any untoward clinical incidents involving the trainee. If the service lead (clinical director) has any concerns about the performance of the trainee, or there are issues of doctor or patient safety, these would be discussed with the clinical and educational supervisors (as well as the trainee). These processes, which are integral to trainee development, must not detract from the statutory duty of the trust to deliver effective clinical governance through its management systems.

Educational and clinical supervisors need to be formally recognised by the GMC to carry out their roles<sup>6</sup>. It is essential that training in assessment is provided for trainers and trainees in order to ensure that there is complete understanding of the assessment system, assessment

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<sup>5</sup> [Promoting excellence: standards for medical education and training](#)

<sup>6</sup> [Recognition and approval of trainers](#)



methods, their purposes and use. Training will ensure a shared understanding and a consistency in the use of the WPBAs and the application of standards.

Opportunities for feedback to trainees about their performance will arise through the use of the workplace based assessments, regular appraisal meetings with supervisors, other meetings and discussions with supervisors and colleagues, and feedback from ARCP.

### **Trainees**

Trainees should make the safety of patients their first priority and they should not be practising in clinical scenarios which are beyond their experiences and competencies without supervision. Trainees should actively devise individual learning goals in discussion with their trainers and should subsequently identify the appropriate opportunities to achieve said learning goals. Trainees would need to plan their WPBAs accordingly to enable their WPBAs to collectively provide a picture of their development during a training period. Trainees should actively seek guidance from their trainers in order to identify the appropriate learning opportunities and plan the appropriate frequencies and types of WPBAs according to their individual learning needs. It is the responsibility of trainees to seek feedback following learning opportunities and WPBAs. Trainees should self-reflect and self-evaluate regularly with the aid of feedback. Furthermore, trainees should formulate action plans with further learning goals in discussion with their trainers.

## **6.2 Appraisal**

A formal process of appraisals and reviews underpins training. This process ensures adequate supervision during training, provides continuity between posts and different supervisors and is one of the main ways of providing feedback to trainees. All appraisals should be recorded in the ePortfolio

### **Induction Appraisal**

The trainee and educational supervisor should have an appraisal meeting at the beginning of each post to review the trainee's progress so far, agree learning objectives for the post ahead and identify the learning opportunities presented by the post. Reviewing progress through the curriculum will help trainees to compile an effective Personal Development Plan (PDP) of objectives for the upcoming post. This PDP should be agreed during the Induction Appraisal. The trainee and supervisor should also both sign the educational agreement in the e-portfolio at this time, recording their commitment to the training process.

### **Mid-point Review**

This meeting between trainee and educational supervisor is not mandatory (particularly when an attachment is shorter than 6 months) but is encouraged particularly if either the trainee or educational or clinical supervisor has training concerns or the trainee has been set specific targeted training objectives at their ARCP). At this meeting trainees should review their PDP with their supervisor using evidence from the e-portfolio. Workplace based assessments and progress through the curriculum can be reviewed to ensure trainees are progressing satisfactorily, and attendance at educational events should also be reviewed. The PDP can be amended at this review.

### **End of Attachment Appraisal**

Trainees should review the PDP and curriculum progress with their educational supervisor using evidence from the e-portfolio. Specific concerns may be highlighted from this appraisal. The end of attachment appraisal form should record the areas where further work is required to overcome any shortcomings. Further evidence of competence in certain areas may be needed, such as planned workplace based assessments, and this should be recorded. If there are significant concerns following the end of attachment appraisal then the programme director should be informed. Supervisors should also identify areas where a trainee has performed about the level expected and highlight successes.

## **7 Quality Management**

The organisation of training programs is the responsibility of the deaneries. The deaneries will oversee programmes for postgraduate medical training in their regions. The Schools of Medicine in England, Wales and Northern Ireland and the Medical Specialty Training Board in Scotland will undertake the following roles:

- oversee recruitment and induction of trainees into the specialty
- allocate trainees into particular rotations appropriate to their training needs
- oversee the quality of training posts provided locally
- ensure adequate provision of appropriate educational events
- ensure curricula implementation across training programmes
- oversee the workplace based assessment process within programmes
- coordinate the ARCP process for trainees
- provide adequate and appropriate career advice
- provide systems to identify and assist doctors with training difficulties
- provide flexible training.

Educational programmes to train educational supervisors and assessors in workplace based assessment may be delivered by deaneries or by the colleges or both.

Development, implementation, monitoring and review of the curriculum are the responsibility of the JRCPTB and the SAC. The committee will be formally constituted with representatives from each health region in England, from the devolved nations and with trainee and lay representation. It will be the responsibility of the JRCPTB to ensure that curriculum developments are communicated to heads of school, regional specialty training committees and TPDs.

The JRCPTB has a role in quality management by monitoring and driving improvement in the standard of all medical specialties on behalf of the three Royal Colleges of Physicians in Edinburgh, Glasgow and London. The SACs are actively involved in assisting and supporting deaneries to manage and improve the quality of education within each of their approved training locations. They are tasked with activities central to assuring the quality of medical education such as writing the curriculum and assessment systems, reviewing applications for new posts and programmes, provision of external advisors to deaneries and recommending trainees eligible for CCT or Certificate of Eligibility for Specialist Registration (CESR).

JRCPTB uses data from six quality datasets across its specialties and subspecialties to provide meaningful quality management. The datasets include the GMC national Training Survey (NTS) data, ARCP outcomes, examination outcomes, new consultant survey, external advisor reports and the monitoring visit reports.

Quality criteria have been developed to drive up the quality of training environments and ultimately improve patient safety and experience. These are monitored and reviewed by JRCPTB to improve the provision of training and ensure enhanced educational experiences.

## **8 Intended use of curriculum by trainers and trainees**

This curriculum and ARCP decision aid are available from the Joint Royal Colleges of Physicians Training Board (JRCPTB) via the website [www.jrcptb.org.uk](http://www.jrcptb.org.uk).

Clinical and educational supervisors should use the curriculum and decision aid as the basis of their discussion with trainees, particularly during the appraisal process. Both trainers and trainees are expected to have a good knowledge of the curriculum and should use it as a guide for their training programme.

Each trainee will engage with the curriculum by maintaining an ePortfolio. The trainee will use the curriculum to develop learning objectives and reflect on learning experiences.

### **Recording progress in the ePortfolio**

On enrolling with JRCPTB trainees will be given access to the ePortfolio. This allows evidence to be built up to inform decisions on a trainee's progress and provides tools to support trainees' education and development.

The trainee's main responsibilities are to ensure it is kept up to date, arrange assessments and ensure they are recorded, prepare drafts of appraisal forms, maintain their personal development plan, record their reflections on learning and record their progress through the curriculum.

The supervisor's main responsibilities are to use evidence such as outcomes of assessments, reflections and personal development plans to inform appraisal meetings. They are also expected to update the trainee's record of progress through the curriculum, write end-of-attachment appraisals and supervisor's reports.

Deaneries, training programme directors, college tutors and ARCP panels may use it to monitor the progress of trainees for whom they are responsible.

JRCPTB will use summarised, anonymous data to support its work in quality assurance.

All appraisal meetings, personal development plans and workplace based assessments (including MSF) should be recorded. Trainees are encouraged to reflect on their learning experiences and to record these.. Reflections can be kept private or shared with supervisors.

Reflections, assessments and other ePortfolio content should be used to provide evidence towards acquisition of curriculum capabilities. Trainees should add their own self-assessment ratings to record their view of their progress. The aims of the self-assessment are:

- to provide the means for reflection and evaluation of current practice
- to inform discussions with supervisors to help both gain insight and assists in developing personal development plans.
- to identify shortcomings between experience, competency and areas defined in the curriculum so as to guide future clinical exposure and learning.

Supervisors can sign-off and comment on curriculum capabilities to build up a picture of progression and to inform ARCP panels.

## **9 Equality and diversity**

The Royal Colleges of Physicians will comply, and ensure compliance, with the requirements of equality and diversity legislation set out in the Equality Act 2010.

The Federation of the Royal Colleges of Physicians believes that equality of opportunity is fundamental to the many and varied ways in which individuals become involved with the Colleges, either as members of staff and Officers; as advisers from the medical profession; as members of the Colleges' professional bodies or as doctors in training and examination candidates.

Deaneries quality assurance will ensure that each training programme complies with the equality and diversity standards in postgraduate medical training as set by GMC. They should provide access to a professional support unit or equivalent for trainees requiring additional support.

Compliance with anti-discriminatory practice will be assured through:

- monitoring of recruitment processes
- ensuring all College representatives and Programme Directors have attended appropriate training sessions prior to appointment or within 12 months of taking up post
- Deaneries ensuring that educational supervisors have had equality and diversity training (for example, an e-learning module) every three years
- Deaneries ensuring that any specialist participating in trainee interview/appointments committees or processes has had equality and diversity training (at least as an e-module) every three years
- ensuring trainees have an appropriate, confidential and supportive route to report examples of inappropriate behaviour of a discriminatory nature. Deaneries and Programme Directors must ensure that on appointment trainees are made aware of the route in which inappropriate or discriminatory behaviour can be reported and supplied with contact names and numbers. Deaneries must also ensure contingency mechanisms are in place if trainees feel unhappy with the response or uncomfortable with the contact individual

- providing resources to trainees needing support (for example, through the provision of a professional support unit or equivalent)
- monitoring of College Examinations
- ensuring all assessments discriminate on objective and appropriate criteria and do not unfairly advantage or disadvantage a trainee with any of the Equality Act 2010 protected characteristics. All efforts shall be made to ensure the participation of people with a disability in training through reasonable adjustments.