

Curriculum for Cardiology Training

Implementation August 2022

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1. Introduction

The purpose of the Cardiology curriculum is to produce doctors with the generic professional and specialty specific capabilities needed to manage adult patients presenting with the full range of acute and chronic cardiovascular symptoms and conditions. If they have completed training satisfactorily they will be eligible for a CCT (or CESR CP) and can be recommended to the GMC for inclusion on the specialist register. At this stage they will be regarded as capable of independent unsupervised practice and will be eligible for appointment as an NHS consultant.

The curriculum for 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 Cardiology Specialist Advisory Committee and the British Cardiovascular Society Training Committee.

2. Purpose

2.1 Purpose of the curriculum

Population and service need

The Shape of Training (SoT) review was a catalyst for reform of postgraduate training of all doctors to ensure it is more patient focused, more general (especially in the early years) and with more flexibility of career structure. For physician training, the views and recommendations of SoT were similar to those of the Future Hospital Commission and the Francis report. With an ageing population, elderly patients exhibit co-morbidities and increasing complexity so acute medical and palliative medicine services need a revised approach to training the physician of the future in order to meet these needs.

A further driver for change was the GMC review of the curricula and assessment standards and introduction of the GPC framework. From May 2017, all postgraduate curricula should be based on higher level learning outcomes and must incorporate the generic professional capabilities. A fundamental component of the GPCs is ensuring that the patient is at the centre of any consultation and decision making.

JRCPTB, on behalf of the Federation of Royal Colleges of Physicians, developed a model that consists of dual training period leading to CCTs in a specialty plus internal medicine. There will be competitive entry following completion of stage 1 Internal Medicine Training (IMT) or Acute Care Common Stem – Internal Medicine (ACCS-IM), during which there will be increasing responsibility for the acute medical take and the MRCP(UK) Diploma will be achieved.

Cardiovascular disease can present at any age, with a growing population of young adults with congenital heart disease ^[1], and rapidly increasing numbers of older patients with

¹ [Adult Congenital Heart Disease \(ACHD\) Specification](#)

degenerative diseases of the heart [2]. Cardiologists will contribute to the management of acute medical and cardiology emergency admissions in the full range of NHS hospitals, whilst also having more advanced capabilities to ensure expert delivery of acute and chronic cardiac care across in-patient, outpatient and community settings. Care of patients with cardiovascular disorders embraces a wide range of clinical activities and cardiologists need a broad view of the cardiovascular needs of individual patients and the communities in which they live including an understanding of any prevailing health inequalities [3]. This requires knowledge of not only the diagnostic and therapeutic modalities available, but also an appreciation of the importance of the epidemiology and potential for prevention of cardiovascular disease. However, the ability to deal with the acutely ill patient with a cardiac emergency, including the delivery of emergency intervention such as percutaneous coronary intervention [4], cardiac pacing [5] or management of acute heart failure [6] will remain a critical service need.

Curriculum purpose

This curriculum will ensure that the trainee develops the full range of generic professional capabilities and the underlying knowledge and skills, and their application in the practice of internal medicine and cardiovascular medicine. It will also ensure that the trainee develops the full range of specialty specific core capabilities, together with advanced capabilities in one area.

The objectives of the curriculum are:

1. To set out a range of specific professional capabilities that encompass all knowledge, skills and behaviours needed to practice cardiology and internal medicine at consultant level.
2. To set expected standards of knowledge and performance of various professional skills and activities at each stage.
3. To suggest indicative training times and experiences needed to achieve the required standards.

Cardiology higher specialty training will normally be a five year programme that will begin following completion of the Internal Medicine stage 1 curriculum. It will incorporate continued training in internal medicine (in line with the IM stage 2 curriculum) throughout this period. All cardiologists will be equipped to deal with any acute cardiology presentation, whilst also having advanced training in one specialty area of practice. This will require participation in speciality specific on call rotas as well as involvement in the general medical take. 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. These teams may be on one or multiple sites or within 'hub and spoke' arrangements and

² [Care Quality Commission. National study – Closing the gap](#)

³ [NICE Guidance. Acute coronary syndromes in adults. Quality standard \[QS68\]](#)

⁴ [British Cardiovascular Society Working Group Report: Out-of-hours Cardiovascular Care: Management of Cardiac Emergencies and Hospital In-patients. September 2016](#)

⁵ [NICE Guidance. Acute heart failure. Quality standard \[QS103\]](#)

members will each have a necessary and complementary capability so the full range is available in addition to the core capabilities, as required for service delivery.

Training in Internal Medicine (IM) will ensure they are able to contribute to triage of acute medical presentations and identify those requiring on-going cardiology input and ensure they can recognise and manage the common co-morbidities seen in this patient cohort. Following the IM curriculum will also ensure delivery of training encompassing the GMC's Generic Professional Capability framework.

Scope of practice

The scope of 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. Cardiologists need the ability to work within, or as leaders of, teams and systems involving other healthcare professionals to effectively provide optimal patient care. Cardiologists mainly work as hospital-based specialists but need to integrate their work with not only community based primary care colleagues, but also other hospital-based physicians, including diabetologists or nephrologists, as well as working closely with cardiothoracic surgeons and intensivists and imaging colleagues within radiology and nuclear medicine. Demonstration of involvement with multidisciplinary and multi-professional working throughout training will therefore be required.

Cardiologists will have training across all IM capabilities in practice (CiPs) and as such will have flexibility to work within acute internal medicine teams, as participants of the general medical take, or as specialists in imaging or advanced intervention, supporting the take. Cardiologists have a wide variety of opportunities for research and the training is designed to facilitate opportunities for academic careers. It can also be adapted to support less than full time training.

Many Cardiologists develop advanced procedural skills, such that they can undertake acute coronary intervention, cardiac pacing or electrophysiology. The wide range of conditions from adolescents with congenital heart disease to the older patient with advanced valvular disease and/or heart failure means cardiologists also require training in additional diagnostic modalities or disease management strategies, whilst precluding the development of the full range of capabilities for all. Thus, there will be an important progression point where trainees, with their trainers and Programme Directors, select an appropriate area of advanced training. The numbers undertaking training in each area can be matched to service need. This involves workforce planning and service providers to predict the numbers of consultants needed with each skill set while maintaining flexibility as future service evolves. Importantly this process ensures CCT holders will be using the capabilities they have trained in without training in unnecessary capabilities.

Demonstration of core knowledge at this stage, typically after two (or three) years of specialty training, via the European Exam in Core Cardiology (EECC), will be expected. More focused training in the agreed specialty area will then continue alongside completion of core cardiology capabilities and continued training in emergency general cardiology and internal medicine.

A cardiologist completing training in any of the advanced themes would be competent to perform cardiology or unselected internal medicine on call in settings from small hospitals as the sole cardiologist on-site through to tertiary centres. The roles most suited to services with one or two on-site cardiologists will be heart failure and echo/CT based imaging as these will be able to support integrated care with the community and provide cardiology support to a general hospital population. Larger district and tertiary hospitals will aspire to have all the five advanced themes represented as well as some specialists in areas such as ICC, pregnancy and extensions of the existing themes which go beyond the curriculum. These super-specialists will be responsible for leading services to a network, not just their local catchment. Patients in all geographies and services will need arrangements to access specialists from all the advanced themes, large and small hospitals will need to arrange MDTs, referral pathways and possibly visiting expertise in networks to facilitate this.

More advanced training in procedures such as congenital heart disease intervention, structural and valvular heart disease intervention, or pacemaker lead extraction, will require additional training post CCT via appropriate training routes, including credentialing. As some of these become mainstream they might be incorporated into future curricular. Some detail of these is included in appropriate sections.

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.

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

The Cardiology capabilities in practice (CiPs) describe the professional tasks or work within the scope of cardiovascular medicine. Five core cardiology CiPs describe the essential tasks which must be entrusted to all cardiologists. There are additional cardiology CiPs in each of the five themed areas such that each trainee will be expected to demonstrate capability in one specialist area of cardiology practice as required by service need at consultant appointment. These are in addition to the six generic CiPs and eight Internal Medicine clinical CiPs described within the IM curriculum. 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 five 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 specialty CiPs and one theme for service CiP.

The 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.

Learning outcomes – capabilities in practice (CiPs)
Generic CiPs
<ol style="list-style-type: none"> 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
Clinical CiPs
<ol style="list-style-type: none"> 1. Managing an acute unselected take 2. Managing the acute care of patients within a medical specialty service 3. Providing continuity of care to medical in-patients, including management of comorbidities and cognitive impairment 4. Managing patients in an outpatient clinic, ambulatory or community setting, including management of long term conditions 5. Managing medical problems in patients in other specialties and special cases 6. Managing a multidisciplinary team including effective discharge planning 7. Delivering effective resuscitation and managing the acutely deteriorating patient 8. Managing end of life and applying palliative care skills
Specialty CiPs (all trainees)
<ol style="list-style-type: none"> 1. Coronary disease and Intervention: Manage coronary artery disease and associated conditions 2. Imaging: Management of valvular heart disease, aortopathy and cardiac tumours 3. Electrophysiology and Devices: Management of cardiac arrhythmias and cardiac implantable electronic devices 4. Adult Congenital Heart Disease: Management of adult congenital heart disease and heart disease in pregnancy 5. Heart Failure: Managing disorders of the heart muscle, pericardium and pulmonary vasculature

Specialty CiPs (themed for service)

Trainees will undertake **one** of the following higher level outcomes themed to service needs

1. Lead a Coronary Intervention service
2. Lead a Cardiac Imaging service
3. Lead an Arrhythmia Management service
4. Lead an Adult Congenital Heart Disease service
5. Lead a Heart Failure service

Output

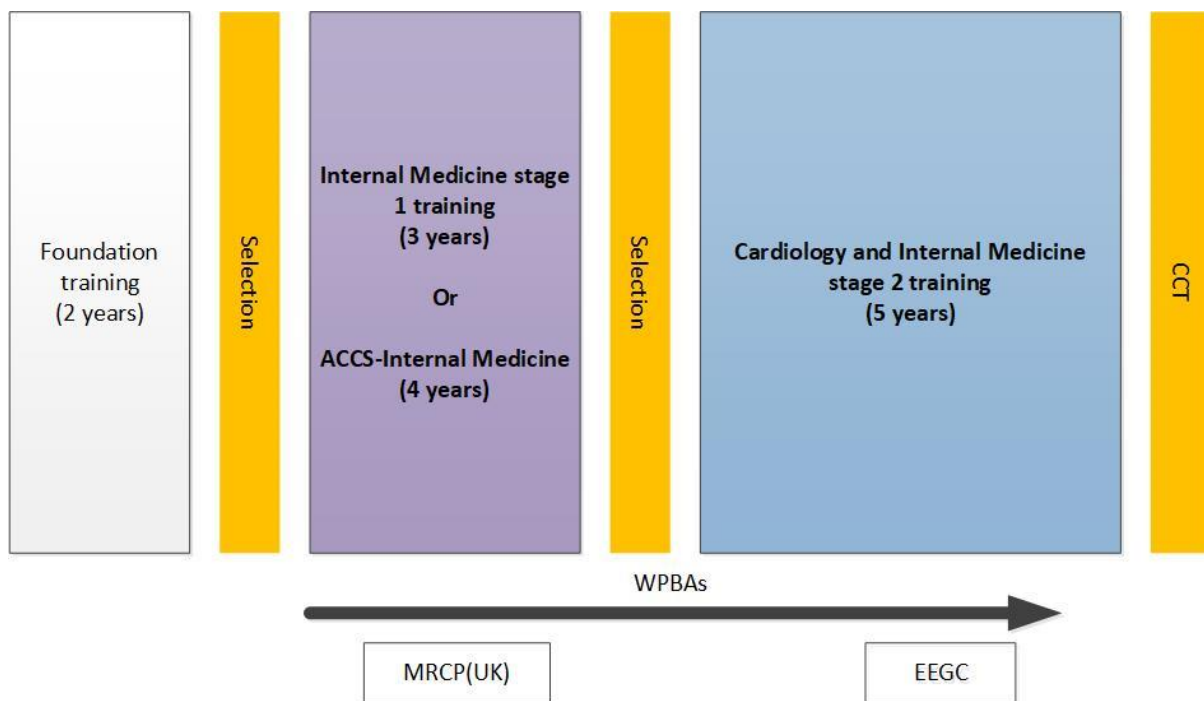
At the end of training, the trainee should be able to:

- Provide safe emergency and acute cardiac care
- Participate fully in the acute medical take
- Demonstrate a range of essential capabilities for managing patients with both acute and long-term cardiovascular conditions.
- Demonstrate advanced capabilities in one of: coronary intervention, cardiac imaging, rhythm management, adult congenital heart disease or heart failure management.
- Deliver care in the setting of contemporary multidisciplinary and multi-professional teams.
- Participate actively in the multidisciplinary team, not only clinically, but also contributing to team education and quality improvement.
- Demonstrate all the GMC mandated GPCs including communication skills.
- Demonstrate the attributes of professionalism, particularly recognition of the primacy of patient welfare that is required for safe and effective care of those with both acute and long-term conditions, ensuring patients' views are central to all decision making.
- Continue personal professional development and to help train and educate not only doctors and medical students, but students and qualified staff from the full range of related professions
- Contribute to service quality control and quality improvement activities both within their employing NHS organisation and also more broadly linking in with local statutory and non- statutory organisations. They should also be able to facilitate research and, in some cases, be able to contribute and lead it.

This purpose statement has been endorsed by the GMC's Curriculum Oversight Group and confirmed as meeting the needs of the health services of the countries of the UK.

2.3 Training pathway

Cardiology is a group 1 specialty and recruitment into the Cardiology pathway will be after completion of three years of Internal Medicine stage 1 training or four years of Acute Care Common Stem Medicine – Internal Medicine with full MRCP(UK).



2.4 Duration of training

The cardiology curriculum will be delivered alongside Internal Medicine stage two as a dual CCT programme which will be an indicative five years in duration.

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 supports flexibility and transferability of outcomes across related specialties and disciplines, reflecting key interdependencies between this curriculum and other training programmes, outlined below.

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. Additionally, all group 1 specialties share the internal medicine clinical capabilities.

The curriculum will allow trainees to train in academic medicine alongside their acquisition of clinical and generic capabilities, and these skills will be transferable

across other specialties.

The key interdependency will be with Acute and Internal Medicine, with Cardiology being a major contributor to the acute take, and many of the clinical skills learnt will be transferable to these curricula. Advanced training in cardiac imaging will increasingly involve detailed use of cross-sectional imaging with the skills learnt transferable to, or imported from, radiology training.

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) framework⁶ 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.

⁶ [Generic professional capabilities framework](#)



Good medical practice (GMP)⁷ 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 IM curriculum. They are mapped to each of the generic and clinical 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.

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 be entrusted to act unsupervised.

⁷ [Good Medical Practice](#)

Trainees will develop capabilities in internal medicine, core cardiology and an advanced theme for service (see diagram below). The core cardiology capabilities are organised in five themes with a concentration on the capabilities required to deliver safe emergency care at the outset of training building up through elective and strategic skills. All trainees will be able to manage patients across the range of emergency presentations and plan the care of outpatients with ongoing conditions. In discharging care trainees will coordinate with primary and intermediate care.

Trainees will be required to acquire capabilities in one of the five themes to an advanced level, training in the advanced theme will commence in the third year of training and run alongside IM and core cardiology training until completion of training.



Advanced Themes

At the outset of training cardiologists will be appointed with the possibility of pursuing any of the five advanced themes. Advanced training will begin in the third year of Cardiology/IM stage 2 and trainees will need to demonstrate they have met the levels expected for completion of year 2 in all areas. In order to continue their chosen area trainees will need to demonstrate aptitude which may include requirements over and above those for satisfactory progression of trainees pursuing other advanced themes.

Coronary disease and intervention:

All CCT holders will be capable in managing acute and chronic presentations and manifestations of coronary artery disease and associated conditions. Specific competencies will be acquired in investigating potential ischaemic presentations, managing the acute episode, optimising medication and lifestyle for symptomatic and prognostic benefit and liaising with rehabilitation, primary and intermediate care. All trainees will have experience of invasive angiography and be skilled in the referral for, and management of, patients around the time of Percutaneous Coronary Intervention.

To enter advanced training in coronary intervention trainees will be competent to perform diagnostic angiography unsupervised.

Advanced intervention trainees will develop capabilities in the performance of Percutaneous Coronary Intervention in elective, emergent and ST elevation Myocardial Infarction patients. Skills will be gained in radial and femoral access and adjunctive techniques, CCT holders will make balanced judgements on the relative benefits of medical therapy, percutaneous and surgical revascularisation. On completion of this advanced theme CCT holders will be skilled in the selection of patients for, and performance of, Percutaneous Coronary Intervention including participation in the primary Percutaneous Coronary Intervention rota.

Imaging:

All CCT holders will be capable in the assessment of structural heart disease through imaging techniques. Competencies will be required in the evaluation of presentations consistent with structural heart disease through clinical assessment and appropriate use and interpretation of imaging techniques. In patients with established diagnosis of structural heart disease and associated conditions all trainees will be required to plan follow up, and where appropriate, arrange onward referral communicating and sharing decision making with the patient. Trainees will appreciate the contribution of inherited conditions. Competency in transthoracic echo will be required by all trainees with an expectation that emergency echo can be safely delivered by six months and full competence documented on entry to advanced training. All trainees will have experience of CT coronary angiography and have contributed to reports under supervision by CCT. All trainees will have a working

knowledge of the practicalities, indications, risks and limitations of nuclear imaging of the heart and cardiac MRI.

Advanced imaging trainees will develop the expertise to lead and teach in at least one modality and the ability to deliver service in a second. They will be able to advise on the relevant merits of other modalities they do not themselves offer to recommend onward referral.

Electrophysiology and Devices:

All CCT holders will have the knowledge and skills manage acute arrhythmia presentations as well as manage patients with ongoing arrhythmias or at arrhythmic risk in the in-patient, elective and outpatient settings. Trainees will be assessed on their ability to evaluate symptoms and risk then formulate and communicate treatment recommendations.

All CCT holders will be competent in selecting and interpreting appropriate ECG based investigations. Competence will be required in selecting patients for referral for cardiac implantable electronic devices as well as identifying and instigating treatment for common complications, all trainees will have experience of attending and contributing to arrhythmia multidisciplinary team meetings.

All trainees will have basic competency in implantable device interrogation and programming will acquire this skill before entering advanced training. All CCT holders will be competent in DC cardioversion, temporary wire insertion and have experience of permanent pacemaker implantation. They will have attended the electrophysiology/device lab to observe and discuss a range of commonly performed diagnostic, ablation and implant procedures.

Advanced electrophysiology and devices trainees will be able to lead an arrhythmia referral and device follow up service and have competency to implant permanent pacemakers. They will lead arrhythmia/device multidisciplinary team meetings and provide arrhythmia input to inherited cardiac condition multidisciplinary teams, CCT holders with arrhythmia specialisation will be able to lead and teach a service in at least one of electrophysiological ablation or complex device implantation with extensive experience of both.

Adult Congenital Heart Disease:

All CCT holders will have the specialist expertise to recognise the signs and symptoms of Adult Congenital Heart Disease, request appropriate investigations, instigate initial care for new and acute presentations and liaise with experts to plan ongoing care. They will develop knowledge and skills to counsel cardiac patients regarding risks of pregnancy and liaise with midwives, obstetricians and cardiology pregnancy specialists to plan and deliver care.

Advanced Adult Congenital Heart Disease trainees will be able to lead an Adult Congenital Heart Disease service in surgical or non-surgical centres with advanced knowledge and skills to coordinate the management of Adult Congenital Heart Disease. Trainees will be capable of interpreting results of investigations in Adult Congenital Heart Disease including multimodality imaging, cardiac catheter data and cardiopulmonary exercise testing. They

will lead multidisciplinary meetings involving surgeons, cardiac anaesthetists, obstetricians, Inherited Cardiac Conditions/genetics and imaging specialists. CCT holders will understand the process of transition and transfer from paediatric to adult services.

Advanced Adult Congenital Heart Disease trainees will acquire the skills and knowledge to contribute at consultant level to a pregnancy cardiology service.

Adult Congenital Heart Disease specialised CCT holders will be required to diagnose and manage the long term sequelae of native, repaired and palliated Adult Congenital Heart Disease lesions.

Heart Failure:

All CCT holders will be competent to assess patients with presentations suggestive of heart failure, myocardial disease, pericardial disease and pulmonary hypertension. They will be able provide initial assessment and advice on patients with, or at risk of, cardiac complications of oncological disease and treatment. Trainees will develop the skills and knowledge to investigate and treat heart failure syndromes participating in multidisciplinary team meetings, requesting appropriate investigations. They will be skilled at creating treatment plan with patients integrating involvement of primary, intermediate and palliative care, cardiac rehabilitation and specialist services. They will liaise appropriately with other medical and cardiology sub-specialities and to plan and deliver care.

Advanced Heart Failure trainees will have particular skills to lead an integrated heart failure service involving primary care, community services, hospital-based care and delivery of, or referral to, tertiary and quaternary services. They will be capable in managing heart failure syndromes, myocardial disease, pericardial disease, pulmonary hypertension and cardio oncology. CCT holders in this advanced theme will have extensive knowledge of transplant and pulmonary hypertension tertiary and quaternary services. It is anticipated many heart failure specialists will have additional expertise in areas such as advanced ICC, device management, imaging modalities or quaternary services such as transplant or pulmonary hypertension. These will not be required to achieve CCT and are likely to require a period of post CCT training

3.1 Capabilities in practice

CiPs describe the professional tasks or work within the scope of the specialty and internal medicine. CiPs are based on the concept of entrustable professional activities⁸ 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

⁸ [Nuts and bolts of entrustable professional activities](#)

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 clinical 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 clinical 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 CiPs for Cardiology which comprise six generic CiPs, eight clinical CiPs for internal medicine (stage 2), five specialty CiPs plus five advanced themed for service CiPs for 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.

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

ACAT	Acute care assessment tool	ALS	Advanced Life Support
CbD	Case-based discussion	DOPS	Direct observation of procedural skills
EECC	European Examination in Core Cardiology	GPC	Good Clinical Practice
Mini-CEX	Mini-clinical evaluation exercise	MCR	Multiple consultant report
MSF	Multi source feedback	PS	Patient 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"> • Aware of and adheres to the GMC professional requirements • Aware of public health issues including population health, social detriments of health and global health perspectives • Demonstrates effective clinical leadership • Demonstrates promotion of an open and transparent culture • Keeps practice up to date through learning and teaching • Demonstrates engagement in career planning • Demonstrates capabilities in dealing with complexity and uncertainty • Aware of the role of and processes for operational structures within the NHS • Aware of the need to use resources wisely
GPCs	Domain 1: Professional values and behaviours Domain 3: Professional knowledge <ul style="list-style-type: none"> • professional requirements • national legislative requirements • the health service and healthcare systems in the four countries Domain 9: Capabilities in research and scholarship
Evidence to inform decision	MCR MSF Active role in governance structures Management course End of placement reports
2. Able to deal with ethical and legal issues related to clinical practice	

Descriptors	<ul style="list-style-type: none"> • Aware of national legislation and legal responsibilities, including safeguarding vulnerable groups • Behaves in accordance with ethical and legal requirements • Demonstrates ability to offer apology or explanation when appropriate • Demonstrates ability to lead the clinical team in ensuring that medical legal factors are considered openly and consistently
GPCs	<p>Domain 3: Professional knowledge</p> <ul style="list-style-type: none"> • professional requirements • national legislative requirements • the health service and healthcare systems in the four countries <p>Domain 4: Capabilities in health promotion and illness prevention</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>
Evidence to inform decision	<p>MCR</p> <p>MSF</p> <p>CbD</p> <p>DOPS</p> <p>Mini-CEX</p> <p>ALS certificate</p> <p>End of life care and capacity assessment</p> <p>End of placement reports</p>
Category 2: Communication, teamworking and leadership	
3. Communicates effectively and is able to share decision making, while maintaining appropriate situational awareness, professional behaviour and professional judgement	
Descriptors	<ul style="list-style-type: none"> • Communicates clearly with patients and carers in a variety of settings • Communicates effectively with clinical and other professional colleagues • Identifies and manages barriers to communication (eg cognitive impairment, speech and hearing problems, capacity issues) • Demonstrates effective consultation skills including effective verbal and nonverbal interpersonal skills • Shares decision making by informing the patient, prioritising the patient's wishes, and respecting the patient's beliefs, concerns and expectations • Shares decision making with children and young people • Applies management and team working skills appropriately, including influencing, negotiating, re-assessing priorities and effectively managing complex, dynamic situations
GPCs	<p>Domain 2: Professional skills</p> <ul style="list-style-type: none"> • practical skills • communication and interpersonal skills • dealing with complexity and uncertainty

	<ul style="list-style-type: none"> 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>) <p>Domain 5: Capabilities in leadership and teamworking</p>
Evidence to inform decision	<p>MCR MSF PS End of placement reports ES report</p>
Category 3: Safety and quality	
4. Is focused on patient safety and delivers effective quality improvement in patient care	
Descriptors	<ul style="list-style-type: none"> Makes patient safety a priority in clinical practice Raises and escalates concerns where there is an issue with patient safety or quality of care Demonstrates commitment to learning from patient safety investigations and complaints Shares good practice appropriately Contributes to and delivers quality improvement Understands basic Human Factors principles and practice at individual, team, organisational and system levels Understands the importance of non-technical skills and crisis resource management Recognises and works within limit of personal competence Avoids organising unnecessary investigations or prescribing poorly evidenced treatments
GPCs	<p>Domain 1: Professional values and behaviours Domain 2: Professional skills</p> <ul style="list-style-type: none"> practical skills communication and interpersonal skills dealing with complexity and uncertainty 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>) <p>Domain 3: Professional knowledge</p> <ul style="list-style-type: none"> professional requirements national legislative requirements the health service and healthcare systems in the four countries <p>Domain 4: Capabilities in health promotion and illness prevention Domain 5: Capabilities in leadership and teamworking Domain 6: Capabilities in patient safety and quality improvement</p> <ul style="list-style-type: none"> patient safety quality improvement

Evidence to inform decision	MCR MSF QIPAT End of placement reports
Category 4: Wider professional practice	
5. Carrying out research and managing data appropriately	
Descriptors	<ul style="list-style-type: none"> • Manages clinical information/data appropriately • Understands principles of research and academic writing • Demonstrates ability to carry out critical appraisal of the literature • Understands the role of evidence in clinical practice and demonstrates shared decision making with patients • Demonstrates appropriate knowledge of research methods, including qualitative and quantitative approaches in scientific enquiry • Demonstrates appropriate knowledge of research principles and concepts and the translation of research into practice • Follows guidelines on ethical conduct in research and consent for research • Understands public health epidemiology and global health patterns • Recognises potential of applied informatics, genomics, stratified risk and personalised medicine and seeks advice for patient benefit when appropriate
GPCs	Domain 3: Professional knowledge <ul style="list-style-type: none"> • professional requirements • national legislative requirements • the health service and healthcare systems in the four countries Domain 7: Capabilities in safeguarding vulnerable groups Domain 9: Capabilities in research and scholarship
Evidence to inform decision	MCR MSF GCP certificate (if involved in clinical research) Evidence of literature search and critical appraisal of research Use of clinical guidelines Quality improvement and audit Evidence of research activity End of placement reports
6. Acting as a clinical teacher and clinical supervisor	
Descriptors	<ul style="list-style-type: none"> • Delivers effective teaching and training to medical students, junior doctors and other health care professionals • Delivers effective feedback with action plan • Able to supervise less experienced trainees in their clinical assessment and management of patients • Able to supervise less experienced trainees in carrying out appropriate practical procedures • Able to act as clinical supervisor to doctors in earlier stages of training

GPCs	Domain 1: Professional values and behaviours Domain 8: Capabilities in education and training
Evidence to inform decision	MCR MSF TO Relevant training course End of placement reports

3.3 Clinical capabilities in practice

The eight IM clinical CiPs describe the clinical tasks or activities which are essential to the practice of Internal Medicine. The clinical 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.

Clinical CiPs – Internal Medicine	
1. Managing an acute unselected take	
Descriptors	<ul style="list-style-type: none"> • Demonstrates professional behaviour with regard to patients, carers, colleagues and others • Delivers patient centred care including shared decision making • Takes a relevant patient history including patient symptoms, concerns, priorities and preferences • Performs accurate clinical examinations • Shows appropriate clinical reasoning by analysing physical and psychological findings • Formulates an appropriate differential diagnosis • Formulates an appropriate diagnostic and management plan, taking into account patient preferences, and the urgency required • Explains clinical reasoning behind diagnostic and clinical management decisions to patients/carers/guardians and other colleagues • Appropriately selects, manages and interprets investigations • Recognises need to liaise with specialty services and refers where appropriate
GPCs	Domain 1: Professional values and behaviours Domain 2: Professional skills <ul style="list-style-type: none"> • practical skills • communication and interpersonal skills

	<ul style="list-style-type: none"> dealing with complexity and uncertainty 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>) <p>Domain 3: Professional knowledge</p> <ul style="list-style-type: none"> professional requirements national legislation the health service and healthcare systems in the four countries <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"> patient safety quality improvement
Evidence to inform decision	<p>MCR MSF CbD ACAT Logbook of cases Simulation training with assessment</p>
2. Managing the acute care of patients within a medical specialty service	
Descriptors	<ul style="list-style-type: none"> Able to manage patients who have been referred acutely to a specialised medical service as opposed to the acute unselected take (eg cardiology and respiratory medicine acute admissions) Demonstrates professional behaviour with regard to patients, carers, colleagues and others Delivers patient centred care including shared decision making Takes a relevant patient history including patient symptoms, concerns, priorities and preferences Performs accurate clinical examinations Shows appropriate clinical reasoning by analysing physical and psychological findings Formulates an appropriate differential diagnosis Formulates an appropriate diagnostic and management plan, taking into account patient preferences, and the urgency required Explains clinical reasoning behind diagnostic and clinical management decisions to patients/carers/guardians and other colleagues Appropriately selects, manages and interprets investigations Demonstrates appropriate continuing management of acute medical illness in a medical specialty setting Refers patients appropriately to other specialties as required
GPCs	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills:</p> <ul style="list-style-type: none"> practical skills communication and interpersonal skills

	<ul style="list-style-type: none"> dealing with complexity and uncertainty 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>) <p>Domain 3: Professional knowledge</p> <ul style="list-style-type: none"> professional requirements national legislation the health service and healthcare systems in the four countries <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"> patient safety quality improvement
Evidence to inform decision	<p>MCR</p> <p>MSF</p> <p>CbD</p> <p>ACAT</p> <p>Logbook of cases</p> <p>Simulation training with assessment</p>
3. Providing continuity of care to medical inpatients, including management of comorbidities and cognitive impairment	
Descriptors	<ul style="list-style-type: none"> Demonstrates professional behaviour with regard to patients, carers, colleagues and others Delivers patient centred care including shared decision making Demonstrates effective consultation skills Formulates an appropriate diagnostic and management plan, taking into account patient preferences, and the urgency required Explains clinical reasoning behind diagnostic and clinical management decisions to patients/carers/guardians and other colleagues Demonstrates appropriate continuing management of acute medical illness inpatients admitted to hospital on an acute unselected take or selected take Recognises need to liaise with specialty services and refers where appropriate Appropriately manages comorbidities in medial inpatients (unselected take, selected acute take or specialty admissions) Demonstrates awareness of the quality of patient experience
GPCs	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills</p> <ul style="list-style-type: none"> practical skills communication and interpersonal skills dealing with complexity and uncertainty 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>)

	<p>Domain 3: Professional knowledge</p> <ul style="list-style-type: none"> • professional requirements • national legislation • the health service and healthcare systems in the four countries <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"> • patient safety • quality improvement
Evidence to inform decision	<p>MCR</p> <p>MSF</p> <p>ACAT</p> <p>Mini-CEX</p> <p>DOPS</p>
4. Managing patients in an outpatient clinic, ambulatory or community setting (including management of long term conditions)	
Descriptors	<ul style="list-style-type: none"> • Demonstrates professional behaviour with regard to patients, carers, colleagues and others • Delivers patient centred care including shared decision making • Demonstrates effective consultation skills • Formulates an appropriate diagnostic and management plan, taking into account patient preferences • Explains clinical reasoning behind diagnostic and clinical management decisions to patients/carers/guardians and other colleagues • Appropriately manages comorbidities in outpatient clinic, ambulatory or community setting • Demonstrates awareness of the quality of patient experience
GPCs	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills</p> <ul style="list-style-type: none"> • practical skills • communication and interpersonal skills • dealing with complexity and uncertainty • 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>) <p>Domain 3: Professional knowledge</p> <ul style="list-style-type: none"> • professional requirements • national legislation • the health service and healthcare systems in the four countries <p>Domain 5: Capabilities in leadership and teamworking</p>
Evidence to inform decision	<p>MCR</p> <p>ACAT</p> <p>mini-CEX</p> <p>PS</p> <p>Letters generated at outpatient clinics</p>

5. Managing medical problems in patients in other specialties and special cases	
Descriptors	<ul style="list-style-type: none"> • Demonstrates effective consultation skills (including when in challenging circumstances) • Demonstrates management of medical problems in inpatients under the care of other specialties • Demonstrates appropriate and timely liaison with other medical specialty services when required
GPCs	Domain 1: Professional values and behaviours Domain 2: Professional skills <ul style="list-style-type: none"> • practical skills • communication and interpersonal skills • dealing with complexity and uncertainty • 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>) Domain 7: Capabilities in safeguarding vulnerable groups
Evidence to inform decision	MCR ACAT Cbd
6. Managing a multidisciplinary team including effective discharge planning	
Descriptors	<ul style="list-style-type: none"> • Applies management and team working skills appropriately, including influencing, negotiating, continuously re-assessing priorities and effectively managing complex, dynamic situations • Ensures continuity and coordination of patient care through the appropriate transfer of information demonstrating safe and effective handover • Effectively estimates length of stay • Delivers patient centred care including shared decision making • Identifies appropriate discharge plan • Recognises the importance of prompt and accurate information sharing with primary care team following hospital discharge
GPCs	Domain 1: Professional values and behaviours Domain 2: Professional skills <ul style="list-style-type: none"> • practical skills • communication and interpersonal skills • dealing with complexity and uncertainty • 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>) Domain 5: Capabilities in leadership and teamworking

Evidence to inform decision	MCR MSF ACAT Discharge summaries
7. Delivering effective resuscitation and managing the acutely deteriorating patient	
Descriptors	<ul style="list-style-type: none"> • Demonstrates prompt assessment of the acutely deteriorating patient, including those who are shocked or unconscious • Demonstrates the professional requirements and legal processes associated with consent for resuscitation • Participates effectively in decision making with regard to resuscitation decisions, including decisions not to attempt CPR, and involves patients and their families • Demonstrates competence in carrying out resuscitation
GPCs	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills</p> <ul style="list-style-type: none"> • practical skills • communication and interpersonal skills • dealing with complexity and uncertainty • 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>) <p>Domain 3: Professional knowledge</p> <ul style="list-style-type: none"> • professional requirements • national legislation • the health service and healthcare systems in the four countries <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"> • patient safety • quality improvement <p>Domain 7: Capabilities in safeguarding vulnerable groups</p>
Evidence to inform decision	MCR DOPS ACAT MSF ALS certificate Logbook of cases Reflection Simulation training with assessment
8. Managing end of life and applying palliative care skills	
Descriptors	<ul style="list-style-type: none"> • Identifies patients with limited reversibility of their medical condition and determines palliative and end of life care needs • Identifies the dying patient and develops an individualised care plan, including anticipatory prescribing at end of life

	<ul style="list-style-type: none"> • Demonstrates safe and effective use of syringe pumps in the palliative care population • Able to manage non complex symptom control including pain • Facilitates referrals to specialist palliative care across all settings • Demonstrates effective consultation skills in challenging circumstances • Demonstrates compassionate professional behaviour and clinical judgement
GPCs	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills:</p> <ul style="list-style-type: none"> • practical skills • communication and interpersonal skills • dealing with complexity and uncertainty • 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>) <p>Domain 3: Professional knowledge</p> <ul style="list-style-type: none"> • professional requirements • national legislation • the health service and healthcare systems in the four countries
Evidence to inform decision	<p>MCR</p> <p>CbD</p> <p>Mini-CEX</p> <p>MSF</p> <p>Regional teaching</p> <p>Reflection</p>

3.4 Specialty capabilities in practice

The specialty CiPs describe the clinical tasks or activities which are essential to the practice of 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

ACAT	Acute care assessment tool	ALS	Advanced Life Support
CbD	Case-based discussion	DOPS	Direct observation of procedural skills
EECC	European Examination in Core Cardiology	GPC	Good Clinical Practice
Mini-CEX	Mini-clinical evaluation exercise	MCR	Multiple consultant report

MSF	Multi source feedback	PS	Patient survey
QIPAT	Quality improvement project assessment tool	TO	Teaching observation

Specialty CiPs – Core Cardiology

1. Coronary disease and Intervention: Manage coronary artery disease and associated conditions.	
Descriptors	<ul style="list-style-type: none"> • Assess, investigate and instigate management in the patient presenting with symptoms suggestive of acute coronary syndromes including coordinating the primary percutaneous coronary intervention service and managing differential diagnoses • Assess, investigate and instigate management in the patient presenting with symptoms suggestive of stable ischaemia including use of non-invasive investigations and management of differential diagnoses • Appropriately prescribe anti-anginal, anti-platelet and anti-coagulant agents • Appropriately manage patients before and after percutaneous coronary intervention • Manage patients with angina and related conditions refractory to anti anginal medication and revascularisation • Manage presentations consistent with ischaemia with unobstructed coronary arteries • Identify and treat risk factors for primary and secondary prevention of cardiovascular events, appropriately refer to and support the cardiac rehabilitation and inherited cardiac conditions/cardio-genetics services • Provide advice to primary care on management of patients with known or suspected cardiac problems in the community. Recognise the interaction between other forms of physical and mental health and cardiac risk • Provide cardiology advice on management of patients under other specialities including intensive care, cardiac and non-cardiac surgery • Present and discuss patients with coronary artery disease and associated conditions at Heart Team and other multidisciplinary team meetings • Perform invasive coronary angiography under supervision • Insert arterial lines and central venous cannulae independently • Recognise signs and symptoms and initiate treatment of coronary artery disease presenting in pregnancy
GPCs	<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 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 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>
Evidence to inform decision	<p>ALS Mini-CEX ACAT DOPS CbD PS MCR MSF EECC Attendance at learning events and/or relevant certification Logbook of procedures Reflection on clinical and educational events British Association of Cardio Pulmonary Rehabilitation (BACPR) online learning module Inherited Cardiac Conditions curriculum tool</p>
2. Imaging: Management of valvular heart disease, aortopathy and cardiac tumours	
Descriptors	<ul style="list-style-type: none"> • Assess, investigate and instigate management in patients presenting with symptoms or signs suggestive of structural heart disease • Manage the acutely unwell patient with structural heart disease including suspected and proven endocarditis • Plan and conduct clinical follow up of patients with known structural heart disease, provide advice to patients and practitioners peri procedurally for endocarditis prevention and management of anti-coagulation • Manage patients with, or at risk of, aortopathy and recognise the need for pre-conceptual counselling and specialist care in pregnancy • Appropriately refer to and support inherited cardiac conditions/cardio-genetics services for relevant patients with aortic and structural heart disease • Identify, investigate and appropriately refer elective and emergency patients for valve surgery and catheter intervention including discussing patients at multidisciplinary team meetings • Perform and report an echocardiogram independently across a full range of cardiac pathology

	<ul style="list-style-type: none"> • Understand the indications and limitations of cardiac CT. Report CT coronary angiograms under direct supervision • Refer appropriately for cardiac and vascular imaging modalities to assess structure, function, ischaemia, viability and infection
GPCs	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills</p> <p>Domain 3: Professional knowledge 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 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>
Evidence to inform decision	<p>ALS</p> <p>Mini-CEX</p> <p>ACAT</p> <p>DOPS</p> <p>CbD</p> <p>PS</p> <p>MCR</p> <p>MSF</p> <p>EECC</p> <p>Attendance at learning events and/or relevant certification</p> <p>Logbook of procedures</p> <p>Reflection on clinical and educational events</p> <p>British Association of Cardio Pulmonary Rehabilitation (BACPR) online learning module</p> <p>Inherited Cardiac Conditions curriculum tool</p> <p>British Society of Echocardiography certification or curriculum tool</p> <p>Level 1 accreditation in CT coronary angiography or curriculum tool</p> <p>Attendance at reporting sessions for imaging investigations</p>
3. Electrophysiology and Devices: Management of cardiac arrhythmias and cardiac implantable electronic devices	
Descriptors	<ul style="list-style-type: none"> • Assess, investigate and instigate management in acutely unwell patients with arrhythmias • Assess, investigate and instigate management in patients with suspected arrhythmia including syncope • Appropriately request and interpret non-invasive investigations for suspected arrhythmia • Risk stratify and counsel patients at thrombo-embolic risk from arrhythmias, plan and prescribe anti-coagulation where appropriate

	<ul style="list-style-type: none"> • Demonstrate theoretical knowledge of pathophysiology and pharmacology of arrhythmias, appropriately prescribe rate and rhythm control drugs , including in special circumstances such as pregnancy and breast feeding • Assess, investigate and instigate management in asymptomatic and symptomatic patients at risk of arrhythmic events including identifying patients who may be indicated cardiovascular implanted electronic devices ('implantable devices') and electrophysiological study and ablation • Advise patients with cardiac conditions on lifestyle and occupational considerations including safety and legality of driving and implications of pregnancy • Recognise the psychological and socioeconomic implications of arrhythmias and related conditions on patients and families, act where possible to provide support and mitigate adverse effects • Identify patients with or at risk of arrhythmias who will benefit from inherited cardiac conditions/cardio-genetics referral. • Present and discuss patients at arrhythmia and device multidisciplinary team meetings • Identify and instigate management in patients with complications of devices and ablation • Perform basic interrogation and programming of implantable devices • Implant a loop recorder independently • Implant a transvenous pacemaker under supervision • Perform temporary transvenous pacing independently • Perform electrical cardioversion independently
GPCs	<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>
Evidence to inform decision	<p>ALS</p> <p>Mini-CEX</p> <p>ACAT</p> <p>DOPS</p> <p>CbD</p> <p>PS</p>

	<p>MCR MSF EECC Attendance at learning events and/or relevant certification Logbook of procedures Reflection on clinical and educational events British Association of Cardio Pulmonary Rehabilitation (BACPR) online learning module Basic device programming curriculum tool Inherited Cardiac Conditions curriculum tool</p>
4. Adult Congenital Heart Disease: Management of adult congenital heart disease and heart disease in pregnancy	
Descriptors	<ul style="list-style-type: none"> • Recognise signs and symptoms suggestive of congenital heart disease in adults • Instigate appropriate investigation and management in patients with signs and symptoms of congenital heart disease • Appropriately refer newly diagnosed adults with congenital heart disease to specialist services including inherited cardiac conditions/cardio-genetics where appropriate • Initiate management in patients with known congenital heart disease during acute cardiac presentations • Provide advice on patients with congenital heart disease undergoing non cardiac treatment • Manage patients in adult congenital heart disease clinics under supervision • Prepare and present patients at congenital heart disease multidisciplinary team meetings • Apply knowledge of the epidemiology, anatomy and pathophysiology of common congenital heart abnormalities to practice • Support patients transitioning from paediatric to young adult services under supervision • Provide contraceptive advice and pre-pregnancy counselling for patients with congenital, inherited and acquired cardiac conditions under supervision • Manage patients with congenital, acquired and inherited heart disease during pregnancy under supervision • Investigate and instigate management in pregnant patients presenting with cardiac symptoms • Safely prescribe in pregnant and breast-feeding patients
GPCs	<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</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 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>
Evidence to inform decision	<p>ALS</p> <p>Mini-CEX</p> <p>ACAT</p> <p>DOPS</p> <p>CbD</p> <p>PS</p> <p>MCR</p> <p>MSF</p> <p>EECC</p> <p>Attendance at learning events and/or relevant certification</p> <p>Logbook of procedures</p> <p>Reflection on clinical and educational events</p> <p>British Association of Cardio Pulmonary Rehabilitation (BACPR) online learning module</p> <p>Inherited Cardiac Conditions curriculum tool</p> <p>Adult Congenital Heart Disease curriculum tool</p>
5. Heart Failure: Managing disorders of the heart muscle, pericardium and pulmonary vasculature	
Descriptors	<ul style="list-style-type: none"> • Assess, investigate and instigate management in patients presenting acutely with symptoms suggestive of heart failure • Recognise, appropriately investigate and initiate treatment in patients presenting with heart failure in pregnancy, including referral for preconception counselling and ongoing management in pregnancy • Investigate patients with heart failure to identify the underlying aetiology • Optimise management in patients with established heart failure diagnoses, manage heart failure decompensation, and identify indications for device-based monitoring and therapy • Manage patients with heart failure syndromes in collaboration with primary and intermediate care • Appropriately refer to and support cardiac rehabilitation services. • Identify and refer patients in need of specialist or advanced heart failure services • Identify patients approaching end of life and collaborate with palliative care team • Prepare and present cases at the heart failure multidisciplinary team meetings

	<ul style="list-style-type: none"> • Advise on heart failure patients undergoing treatment for non-cardiac conditions • Apply knowledge of genetics and inherited cardiac conditions to diagnosis and management of patients. Prepare and present patients at inherited cardiac conditions/ cardio-genetics multidisciplinary team meetings. Counsel patients with inherited cardiac conditions under supervision • Assess, investigate and instigate management in patients presenting with symptoms suggestive of pulmonary vascular disease. Manage patients with pulmonary hypertension and refer to specialist services where appropriate • Manage patients with cardiac consequences of oncological disease and treatment including in the pre-assessment and late effects settings • Participate in multi-speciality Cardio-Oncology multidisciplinary team meetings and appropriately refer to specialist Cardio-Oncology services. • Assess, investigate and instigate management in patients with symptoms suggestive of pericardial disease • Perform pericardiocentesis independently • Interpret right heart catheterisation data
GPCs	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills</p> <p>Domain 3: Professional knowledge 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 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>
Evidence to inform decision	<p>ALS</p> <p>Mini-CEX</p> <p>ACAT</p> <p>DOPS</p> <p>CbD</p> <p>PS</p> <p>MCR</p> <p>MSF</p> <p>EECC</p> <p>Attendance at learning events and/or relevant certification</p> <p>Logbook of procedures</p> <p>Reflection on clinical and educational events</p>

	British Association of Cardio Pulmonary Rehabilitation (BACPR) online learning module Inherited Cardiac Conditions curriculum tool
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Specialty CiPs – Cardiology Advanced Themes

Trainees will undertake **one** of the following higher level outcomes themed to service needs. These will be integrated into the completion of general cardiology and internal medicine training in the final two or three years of training. This is designed to ensure the output of cardiologists with the appropriate capabilities to meet growing service need, with some flexibility as that evolves. For academic trainees, such as NIHR lecturers, appropriate timetabling will facilitate integration of this training with academic research and capability-based clinical assessment.

1. Lead a Coronary Intervention Service	
Descriptors	<ul style="list-style-type: none"> • Use clinical factors and non-invasive investigations to assess ischaemia and viability and plan further management • Lead multidisciplinary team meetings to discuss merits of medical therapy, percutaneous and surgical options for revascularisation • Prepare patients to safely undergo invasive coronary investigation and treatment • Perform left heart catheterisation independently, safely access the arterial system including use of ultrasound guidance, achieve haemostasis including use of closure devices. Safely perform diagnostic cardiac catheterisation and invasive assessment of coronary lesions to assess ischaemia and guide strategies for revascularisation in stable and acute coronary syndromes. Perform and interpret left ventriculography and pressure assessment. • Independently perform simple percutaneous coronary intervention procedures in stable and acute coronary syndromes • Independently perform primary percutaneous coronary intervention for acute myocardial infarction • Perform complex percutaneous coronary intervention in anatomies such as bifurcation lesions, coronary bypass grafts and calcific disease, using appropriate adjunctive technology • Perform emergency coronary angiography and intervention in shocked patients and after cardiac arrest. • Manage haemodynamically unstable in patients before, during and after percutaneous coronary intervention including use of pharmacological and mechanical circulatory support • Assist in percutaneous revascularisation for chronic total occlusion with understanding of when to refer patient for specialist techniques

	<ul style="list-style-type: none"> • Contribute to pre-pregnancy counselling and pregnancy management of women with coronary artery disease in cooperation with a multidisciplinary specialist maternal cardiology service • Identify appropriate patients to consider interventions for valvular or structural heart disease including indications and appropriate percutaneous techniques
GPCs	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills</p> <p>Domain 3: Professional knowledge 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 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>
Evidence to inform decision	<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> <p>EECC</p>
2. Lead a Cardiac Imaging Service	
Descriptors	<ul style="list-style-type: none"> • Provide expert advice on use of imaging techniques to manage patients in ischaemia and viability • Provide expert advice on use of imaging techniques to manage patients with structural heart disease • Provide expert advice on use of imaging techniques to manage patients with cardiomyopathies • Provide expert advice on use of imaging techniques to manage patients at with or at risk of disease of the great vessels • Provide expert advice on the use of imaging techniques to investigate for potential cardiac infection • Provide expert advice on the use of imaging techniques in the investigation of cardiac tumours • Provide expert advice on the use of imaging techniques in the management of pericardial disease

	<ul style="list-style-type: none"> • Weigh the benefits of nuclear, MRI, Echo and CT based techniques in clinical scenarios • Deliver imaging of Adult Congenital Heart Disease patients in cooperation with Adult Congenital Heart Disease specialists • Contribute to pre-pregnancy counselling and pregnancy management of women with acquired structural cardiovascular disease in cooperation with a multidisciplinary specialist maternal cardiology service • Identify novel imaging techniques and emerging evidence base or guidelines to apply to patient management • Lead an imaging service through competence to perform, supervise and teach techniques in at least one and deliver a second out of nuclear, MRI, Echo and CT <ul style="list-style-type: none"> ○ Supervise a nuclear imaging service encompassing assessment of ischaemia, viability, myocardial function and infection. ○ Supervise a cardiac MRI service encompassing ischaemia, viability and structural heart assessments ○ Supervise a cardiac CT service encompassing coronary imaging and structural heart assessment ○ Supervise an echo service encompassing transoesophageal echo, 3D echo techniques, LV strain assessment, stress echocardiography and contrast echo techniques
GPCs	<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 Accreditations and Curriculum tools</p>
Evidence to inform decision	<p>ALS Mini CEX ACAT DOPS MCR MSF CbD Attendance at learning events Level 1 accreditation in CT coronary angiography or curriculum tool</p>

	Attendance at reporting sessions for imaging investigations Logbook of procedures EECC
3. Lead an Arrhythmia Management Service	
Descriptors	<ul style="list-style-type: none"> • Provide expert management of patients suffering with or at risk from arrhythmia in general cardiology • Provide expert input on patients suffering from or at risk of arrhythmia in the Inherited Cardiac Conditions and Adult Congenital Heart Disease service • Provide expert management of patients suffering from or at risk from arrhythmia in cardiac surgical patients • Contribute to pre-pregnancy counselling and pregnancy management of women with implantable cardiac devices, arrhythmias or risk of arrhythmias in cooperation with a multidisciplinary specialist maternal cardiology service • Interrogate and reprogram pacemakers and complex devices independently • Provide expert management of patients with complications of device therapy including identifying indications for lead extraction • Implant pacemakers independently • Perform and interpret diagnostic electrophysiological studies under supervision • Perform atrial flutter, slow pathway and accessory pathway ablation under supervision • Assist in atrial fibrillation, atrial tachycardia and ventricular ablation • Assist in implantation of implantable defibrillator and cardiac resynchronisation devices • Assist in transvenous lead extraction • Lead an arrhythmia service with full competence to perform and teach at least one of advanced device implantation or advanced ablation capabilities <ul style="list-style-type: none"> ○ Provide expert management of arrhythmias in an ablation service with competence to perform independently and teach diagnostic electrophysiological studies, atrial flutter ablation, accessory pathway ablation, slow pathway ablation, atrial fibrillation ablation and electro anatomical mapping. Perform complex atrial and ventricular ablation under supervision. ○ Provide expert management of arrhythmias in a complex device implantation service with competence to independently perform and teach implantation of implantable defibrillator and cardiac resynchronisation devices. Advise on indications based on evidence base, guidelines and individual patient factors for emerging techniques including leadless pacing, subcutaneous implantable defibrillator and His bundle pacing.

GPCs	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills</p> <p>Domain 3: Professional knowledge 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 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>
Evidence to inform decision	<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> <p>EECC</p> <p>Device Follow up curriculum tool</p> <p>Pacemaker implantation curriculum tool</p> <p>Complex Device implantation curriculum tool</p> <p>EP Ablation Curriculum tool</p>
4. Lead an Adult Congenital Heart Disease service	
Descriptors	<ul style="list-style-type: none"> • Diagnose, assess and manage adults presenting with new diagnoses of Adult Congenital Heart Disease • Manage patients with known congenital heart disease transitioning from paediatric to adult care • Perform transthoracic echocardiography in Adult Congenital Heart Disease patients and interpret results to manage care • Perform transoesophageal echocardiography in Adult Congenital Heart Disease patients and interpret results to manage care • Understand indications and interpret MRI to investigate Adult Congenital Heart Disease patients in conjunction with imaging specialists • Understand indications and interpret CT to investigate Adult Congenital Heart Disease patients in conjunction with imaging specialists • Manage heart failure in Adult Congenital Heart Disease patients • Manage arrhythmias in Adult Congenital Heart Disease patients

	<ul style="list-style-type: none"> • Manage pulmonary hypertension in Adult Congenital Heart Disease patients in collaboration with National PH Centres • Lead the Adult Congenital Heart Disease multidisciplinary team • Identify, investigate, counsel and refer patients appropriately for surgical and catheter interventions • Contribute to the care of the peri-operative Adult Congenital Heart Disease patient in theatre, intensive care and the ward • Manage Adult Congenital Heart Disease patients post procedure in conjunction with the procedural team • Identify Adult Congenital Heart Disease patients with indications for cardiac transplantation. Investigate, counsel and refer patients appropriately • Diagnose and manage the long-term sequelae of native, repaired and palliated Adult Congenital Heart Disease lesions • Identify Adult Congenital Heart Disease patients who would benefit from supportive and palliative care, refer and share care appropriately • Contribute to pre-pregnancy counselling and pregnancy management of women with congenital heart disease in cooperation with a multidisciplinary specialist maternal cardiology service • Assist with diagnostic catheterisation and intervention in the Adult Congenital Heart Disease patient
<p>GPCs</p>	<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>
<p>Evidence to inform decision</p>	<p>ALS Mini CEX ACAT DOPS MCR MSF CbD Attendance at learning events and/or relevant certification EECC Adult Congenital Heart Disease curriculum tool</p>

5. Lead a Heart Failure Service

Descriptors	<ul style="list-style-type: none"> • Provides expert management of inpatients with heart failure both as primary responsible physician and through consultation • Provides expert leadership of an outpatient service for heart failure assessment and management across community, secondary and tertiary care. • Is an expert in the diagnosis and management of heart failure syndromes including rare causes of heart failure • Manages heart failure patients with co-morbidity and frailty in conjunction with the multidisciplinary team • Assess and refers suitable heart failure patients for transplantation and mechanical support, manages patients post heart transplantation or with mechanical support in conjunction with specialist services • Investigates and manages patients with heart failure and related problems due to cancer or cancer therapy • Investigates and treats patients with heart failure and pulmonary hypertension; refers to, and manages in conjunction with, specialist services • Manages patients with hereditary heart failure conditions in conjunction with the Inherited Cardiac Conditions service • Contribute to pre-pregnancy counselling and pregnancy management of women with or at risk of heart failure in cooperation with a multidisciplinary specialist maternal cardiology service • Assesses prognosis in heart failure, communicates effectively with patients and family including breaking bad news. Recognises and manages patients requiring end of life care collaborating with palliative care team. • Is an expert in interpretation of transthoracic echocardiography in heart failure • Understands and can interpret the reports of Cardiovascular MRI, nuclear and Cardiac CT scans in heart failure • Interpret cardio-pulmonary exercise test data to guide heart failure management • Interprets right heart catheterisation independently • Interprets heart failure diagnostics on implantable devices to help in patient management.
GPCs	<p>Domain 1: Professional values and behaviours</p> <p>Domain 2: Professional skills Practical skills, Communication and interpersonal skills, Dealing with complexity and uncertainty, Clinical skills</p> <p>Domain 3: Professional knowledge 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>

	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
Evidence to inform decision	ALS Mini CEX ACAT DOPS MCR MSF CbD Attendance at learning events and/or relevant certification EECC Logbook of procedures

3.5 Presentations and conditions

The table below details the key presentations and conditions of 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.

Clinical area	Presentations	Conditions/Issues
Coronary artery disease	Chest pain, breathlessness, atypical discomfort,	Acute coronary syndromes, chronic coronary artery disease, cardiogenic

Clinical area	Presentations	Conditions/Issues
	asymptomatic risk factor detection, complications of coronary investigations and interventions	shock, microvascular disease, coronary spasm, coronary artery spasm, non ischaemic mimics of coronary artery disease, hypertension, dyslipidaemia, vascular access complications, contrast nephropathy , coronary artery disease in pregnancy
Valvular heart disease, aortopathy and cardiac tumours	Breathlessness, palpitations, chest pain, syncope, embolic phenomenon, asymptomatic detection	Mitral, Aortic, pulmonary and tricuspid regurgitation or stenosis, prevention and treatment of infective endocarditis, aortopathy, management of anticoagulation for prosthetic valves and mitral stenosis, inherited conditions predisposing to structural disease of the heart or great vessels, implications of pregnancy
Arrhythmias and implantable devices	Syncope, palpitations, breathlessness, fatigue, asymptomatic detection, embolic phenomenon, infection and other implantable device complications, routine care of patients with implanted devices	Brady arrhythmias, tachy arrhythmias, atrial fibrillation, management of anticoagulation in atrial arrhythmias, asymptomatic risk management, safe prescription of rate and rhythm control agents, use of implantable devices for symptomatic and prognostic benefit, appropriate onward referral for arrhythmia interventions, basic implanted device interrogation programming, inherited conditions predisposing to arrhythmias, the role of screening for acquired and inherited conditions, implanted device infection and malfunction, arrhythmia management in pregnancy
Adult congenital heart disease and heart disease in pregnancy	Breathlessness, syncope, palpitations, chest pain, oedema, hypoxia, asymptomatic detection and routine follow up	Ventricular and atrial septal defects as isolated or complex anatomies, transposition of the great arteries, congenital valve defects, univentricular circulations, post surgical anatomies, management of anticoagulation, identification heart failure and arrhythmia risk in ACHD patients, manage patients transitioning from paediatric care, management of heart failure, systemic and pulmonary hypertension, arrhythmias and coronary disease in pregnancy, safe prescribing in pregnant and breast

Clinical area	Presentations	Conditions/Issues
		feeding women, risks of pregnancy to mother and foetus in inherited and acquired heart disease.
Heart muscle, pericardium and pulmonary vessels	Breathlessness, syncope, palpitations, fatigue, oedema, chest pain, asymptomatic detection	Heart failure syndromes across a range of systolic functions and aetiologies including ischaemic heart disease and dilated cardiomyopathies, acute and chronic myo and pericarditis, pulmonary hypertension syndromes, hypertrophic cardiomyopathy and related conditions, myocardial infiltration, cardiac complications of oncology treatments, inherited conditions predisposing to myocardial disease, family screening, arrhythmia risk and indications for implantable devices in patients with myocardial disease, pericardial tamponade, heart muscle disease and pulmonary hypertension in pregnancy

3.6 Practical procedures

There are a number of 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).

Procedures to be maintained as competent to perform unsupervised throughout training:

- Central Venous line insertion
- Arterial Line insertion
- DCCV

Core Procedures – minimum level of competence expected at ARCP

Procedure	ST4	ST5	ST6	ST7	ST8
Minimum level required					
Emergency echo (FEEL)	Competent to perform unsupervised	Maintain	Maintain	Maintain	Maintain
Transthoracic echo	Able to perform under direct supervision	Competent to perform unsupervised	Maintain	Maintain	Maintain
Temporary pacing wire	Skills lab certified	Able to perform under direct supervision	Able to perform under direct supervision	Competent to perform unsupervised	Maintain
Permanent Pacemaker*	Skills lab certified	Able to perform under direct supervision	Able to perform under direct supervision	Able to perform under direct supervision	Able to perform under direct supervision
Diagnostic Angiography**	Skills lab certified	Able to perform under direct supervision	Able to perform under direct supervision	Able to perform under direct supervision	Able to perform under direct supervision
Pericardiocentesis	Skills lab certified	Able to perform under direct supervision	Able to perform under direct supervision	Able to perform under direct supervision	Competent to perform unsupervised
Emergency device interrogation	Skills lab certified	Able to perform under direct supervision	Competent to perform unsupervised	Maintain	Maintain

Special Considerations for Advanced Training:

*Permanent pacemaker, competent to perform unsupervised required to enter year 4 if in advanced arrhythmia training

**Diagnostic Angiography, competent to perform unsupervised required to enter year 4 if in advanced coronary intervention training.

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.

Trainees will have an appropriate clinical supervisor and a named educational supervisor. The clinical supervisor and educational supervisor may be the same person. It will be best practice for trainees to have an educational supervisor who practises internal medicine for periods of IM stage 2 training. Educational supervisors of IM trainees who do not themselves practise IM must take particular care to ensure that they obtain and consider detailed feedback from clinical supervisors who are knowledgeable about the trainees' IM performance and include this in their educational reports.

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

Organisation of the Cardiology training programme

The cardiology curriculum will be delivered alongside Internal Medicine stage two training over an indicative five years. During this period trainees will blend Internal Medicine, core cardiology and advanced themes for service. The core cardiology capabilities are organised in five themes with a concentration on the competencies required to deliver safe emergency care at the outset of training building up through elective and strategic skills. Trainees will be required to acquire capabilities in one of the five themes to an advanced level. Training in the advanced theme will commence in the third year of training and run alongside continued IM and core cardiology training until completion of training.

Palliative and end of life care

Palliative and end of life care is a core component of the Internal Medicine (IM) curriculum and trainees will continue to develop their knowledge and skills throughout specialty training. Palliative and end of life care is one of the eight clinical Capabilities in Practice (CiPs, CiP8), with specialist palliative care experience recommended. Experience of end of life care can be achieved during attachments to routine medical teams (eg geriatric medicine, oncology, respiratory medicine) and ICU but trainees may have the opportunity to undertake a palliative medicine attachment to a specialist palliative care setting (or range of settings), which would enhance a trainee's ability to gain knowledge and skills in managing palliative and end of life patients beyond experience in an IM or other speciality environment.

During a palliative medicine placement, trainees will have a clinical supervisor and will be encouraged to undertake relevant workplace based assessments to evidence entrustment decisions for CiP8. Depending on the setting in which they are based, trainees will have the opportunity to provide direct care to hospice/specialist palliative care unit inpatients, work in day hospice and outpatient settings, undertake domiciliary visits and work with hospital and community palliative care teams. During an attachment, trainees are likely to participate in the specialty palliative care on call.

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:

Medical clinics including specialty clinics

The educational objectives of attending clinics are:

- To understand the management of chronic diseases
- 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.

These objectives can be achieved in a variety of settings including hospitals, day care facilities and the community. The clinic might be primarily run by a specialist nurse (or other qualified health care professionals) rather than a consultant physician. 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.

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.

Palliative and end of life care

Trainees undertaking a palliative medicine attachment will see palliative care patients with a range of life-limiting illnesses, including cancer, frailty, multi-morbidity, dementia and organ failure. They will gain expertise in:

- Managing difficult physical symptoms;
- Managing psychological, spiritual and existential distress for patients and those close to them;
- Addressing complex social issues for patients at the end of life (including facilitating preferences for place of care and death);
- Managing challenging symptoms in the dying patient;
- Identifying those in need of proactive or enhanced bereavement support;
- Managing palliative care patients out of hours, including in non-acute settings (hospice and community).

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 (eg 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)
- 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 exams, assessments in the workplace and judgements made about a learner during their approved programme of 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 (eg 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 **clinical and 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 clinical and specialty CiPs

Level	Descriptor
Level 1	Entrusted to observe only – no provision of clinical care
Level 2	Entrusted to act with direct supervision: 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	Entrusted to act with indirect supervision: 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	Entrusted to act unsupervised

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 level 4 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 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 grids below set out the expected level of supervision and entrustment for the IM clinical CiPs and the specialty CiPs and include the critical progression points across the whole training programme.

Table 1: Outline grid of levels expected for Internal Medicine clinical capabilities in practice (CiPs)

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

IM Clinical CiP	ST4	ST5	ST6	ST7	CRITICAL PROGRESSION POINT
1. Managing an acute unselected take	3	3	3	4	
2. Managing the acute care of patients within a medical specialty service	2	3	3	4	
3. Providing continuity of care to medical inpatients	3	3	3	4	
4. Managing outpatients with long term conditions	3	3	3	4	
5. Managing medical problems in patients in other specialties and special cases	3	3	3	4	
6. Managing an MDT including discharge planning	3	3	3	4	
7. Delivering effective resuscitation and managing the deteriorating patient	4	4	4	4	
8. Managing end of life and applying palliative care skills	3	3	3	4	

Table 2: Outline grid of levels expected for Cardiology specialty capabilities in practice (CiPs)

Levels to be achieved by the end of each training year for specialty CiPs

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. Coronary disease and Intervention: Manage coronary artery disease and associated conditions	2	2	3	3	4	
2. Imaging: Management of valvular heart disease, aortopathy and cardiac tumours	2	2	3	3	4	
3. Electrophysiology and Devices: Management of cardiac arrhythmias and cardiac implantable electronic devices	2	2	3	3	4	
4. Adult Congenital Heart Disease: Management of adult congenital heart disease and heart disease in pregnancy	2	2	3	3	4	
5. Heart Failure: Managing disorders of the heart muscle, pericardium and pulmonary vasculature	2	2	3	3	4	
Advanced theme CiP	N/A	N/A	2	2	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).

Summative assessment

Examinations and certificates

- Advanced Life Support Certificate (ALS)
- Radiation Protection Certificate
- BSE accreditation in core echocardiography
- European Examination in Core Cardiology (EECC)

Workplace-based assessment (WPBA)

- Direct Observation of Procedural Skills (DOPS) – summative

Formative 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 Survey (PS)
- Quality Improvement Project Assessment Tool (QIPAT)
- Teaching Observation (TO)

Curriculum Tools

- Emergency Echo curriculum tool
- Transthoracic Echo curriculum tool or BSE accreditation
- CT curriculum tool or level 1 accreditation
- Basic device interrogation curriculum tool
- Pacemaker implantation curriculum tool*
- Complex Device implantation curriculum tool*
- EP Ablation Curriculum tool*

*Advanced arrhythmia trainees only

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).

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

Emergency Echo Curriculum Tool (may be substituted for Focused Echo in Emergency Life Support qualification)

The first stage of echo competency expected to be completed within the first few months of training. Assesses ability to perform a basic echo to assess left ventricular function, pericardial effusion and gross valvular and right heart abnormalities.

Echo Curriculum Tool (may be substituted for full British Society of Echocardiography accreditation)

Documents ability to safely perform and report echocardiograms across the full range of adult cardiac pathology. Required by the end of the second year of cardiology speciality training.

Basic Device Interrogation Curriculum Tool

Documents capability in safely interrogating and performing simple programming changes in implanted devices as assessed through skills lab and clinical experience

European Examination in Core Cardiology (EECC)

The SAC in conjunction with the British Cardiovascular Society, the European Cardiac Society and the UEMS-Cardiac Section developed the European Examination in Core Cardiology (EECC) which is the summative knowledge based assessment for Cardiology. The aim of this assessment is to assess a trainee's understanding of the necessary knowledge components of the core cardiovascular medicine curriculum to a level appropriate for a newly appointed consultant. A satisfactory performance in the examination is expected during core training, usually in ST5, and satisfactory performance is mandatory before attainment of the CCT. Trainees who fail to achieve the required standard in the examination in ST5 will not be prevented from proceeding to ST6 and ST7 provided their other elements of performance are judged adequate at the ARCP. Information about the EECC including guidance for candidates, is available on the BCS website www.bcs.com.

BSE eLearning module

The BSE eLearning module complements experiential learning early in training and completion by end of ST4 is expected. Designed to be formative rather than summative, trainees can resit this module as often as they wish during this year. A certificate of satisfactory completion should be uploaded on to ePortfolio. BSE accreditation in adult transthoracic echocardiography can be used in place of DOPS assessments. Details of the processes required for BSE accreditation are available at www.bsecho.org.

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, outpatient letter, and discharge summary). A typical encounter might be when presenting newly referred patients in the outpatient 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 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).

Supervisors 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).

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.

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
EECC	European Examination in Core Cardiology	GPC	Good Clinical Practice
MCR	Multiple consultant report	MSF	Multi source feedback
PS	Patient survey	QIPAT	Quality improvement project assessment tool
TO	Teaching observation		

Blueprint of assessments mapped to the Cardiology Capabilities in Practice (CiPs)

Learning outcomes	ACAT	Cbd	DOPS	MCR	Mini-CEX	MSF	PS	QIPAT	TO	ECC
Generic CiPs										
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				√		√			√	
Internal Medicine Clinical CiPs										
Managing an acute unselected take	√	√		√		√				
Managing the acute care of patients within a medical specialty service	√	√		√		√				
Providing continuity of care to medical inpatients, including management of comorbidities and cognitive impairment	√		√	√	√	√				
Managing patients in an outpatient clinic, ambulatory or community setting, including management of long term conditions	√			√	√		√			
Managing medical problems in patients in other specialties and special cases	√	√		√						
Managing a multidisciplinary team including effective discharge planning	√			√		√				
Delivering effective resuscitation and managing the acutely deteriorating patient	√		√	√		√				
Managing end of life and applying palliative care skills		√		√	√	√				
Practical procedural skills			√							
Cardiology Specialty CiPs - Core										
Coronary disease and Intervention: Manage coronary artery disease and associated conditions	√	√	√	√	√	√	√			√

Learning outcomes	ACAT	CbD	DOPS	MCR	Mini-CEX	MSF	PS	QIPAT	TO	EECC
Imaging: Management of valvular heart disease, aortopathy and cardiac tumours	√	√	√	√	√	√	√			√
Electrophysiology and Devices: Management of cardiac arrhythmias and cardiac implantable electronic devices	√	√	√	√	√	√	√			√
Adult Congenital Heart Disease: Management of adult congenital heart disease and heart disease in pregnancy	√	√	√	√	√	√	√			√
Heart Failure: Managing disorders of the heart muscle, pericardium and pulmonary vasculature	√	√	√	√	√	√	√			√
Cardiology Specialty CiPs – Advanced Theme										
Lead a Coronary Intervention service	√	√	√	√	√	√	√			√
Lead a Cardiac Imaging service	√	√	√	√	√	√	√			√
Lead an Arrhythmia Management service	√	√	√	√	√	√	√			√
Lead an Adult Congenital Heart Disease service	√	√	√	√	√	√	√			√
Lead a Heart Failure 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 learning⁹.

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

⁹ [Improving feedback and reflection to improve learning. A practical guide for trainees and trainers](#)

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 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 training¹⁰.

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. Trainees on a dual training program may have a single educational supervisor responsible for their internal medicine and specialty training, or they may have two educational supervisors, one responsible for internal medicine and one for specialty.

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

¹⁰ [Promoting excellence: standards for medical education and training](#)

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 roles¹¹. 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 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.

¹¹ [Recognition and approval of trainers](#)

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.

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. The eportfolio 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 the eportfolio 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 eportfolio 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 the eportfolio to monitor the progress of trainees for whom they are responsible.

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

All appraisal meetings, personal development plans and workplace based assessments (including MSF) should be recorded in the eportfolio. Trainees are encouraged to reflect on their learning experiences and to record these in the eportfolio. 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.

JRCPTB

Joint Royal Colleges of Physicians Training Board



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PHYSICIANS AND
SURGEONS OF GLASGOW



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