

**UNION EUROPÉENNE DES MÉDECINS SPÉCIALISTES
EUROPEAN UNION OF MEDICAL SPECIALISTS**



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Training Requirements for the Specialty of Cardiology

European Standards of Postgraduate Medical Specialist Training

(UEMS 2012/29 Cardiology)

Preamble

The UEMS is a non-governmental organisation representing national associations of medical specialists at the European Level. With a current membership of 34 national associations and operating through 39 Specialist Sections and European Boards, the UEMS is committed to promote the free movement of medical specialists across Europe while ensuring the highest level of training which will pave the way to the improvement of quality of care for the benefit of all European citizens. The UEMS areas of expertise notably encompass Continuing Medical Education, Postgraduate Training and Quality Assurance.

It is the UEMS' conviction that the quality of medical care and expertise is directly linked to the quality of training provided to the medical professionals. Therefore the UEMS has committed itself to contribute to the improvement of medical training at the European level through the development of European Standards in the different medical disciplines. No matter where doctors are trained, they should have at least the same core competencies.

In 1994, the UEMS adopted its Charter on Post Graduate Training aiming at providing the recommendations at the European level for good medical training. Made up of six chapters, this Charter set the basis for the European approach in the field of Post Graduate Training. With five chapters being common to all specialties, this Charter provided a sixth chapter, known as "Chapter 6", that each Specialist Section was to complete according to the specific needs of their discipline.

More than a decade after the introduction of this Charter, the UEMS Specialist Sections and European Boards have continued working on developing these European Standards in Medical training to reflect modern medical practice and current scientific findings. In doing so, the UEMS Specialist Sections and European Boards did not aim to supersede the National Authorities' competence in defining the content of postgraduate training in their own State but rather to complement these and ensure that high quality training is provided across Europe.

At the European level, the legal mechanism ensuring the free movement of doctors through the recognition of their qualifications was established back in the 1970s by the European Union. Sectorial Directives were adopted and one Directive addressed specifically the issue of medical Training at the European level. However, in 2005, the European Commission proposed to the European Parliament and Council to have a unique legal framework for the recognition of Professional Qualifications to facilitate and improve the mobility of all workers throughout Europe. This Directive

2005/36/EC established the mechanism of automatic mutual recognition of qualifications for medical doctors according to training requirements within all Member States; this is based on the length of training in the Specialty and the title of qualification.

Given the long-standing experience of UEMS Specialist Sections and European Boards on the one hand and the European legal framework enabling Medical Specialists and Trainees to move from one country to another on the other hand, the UEMS is uniquely in position to provide specialty-based recommendations. The UEMS values professional competence as *“the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individual and community being served”* (1). While professional activity is regulated by national law in EU Member States, it is the UEMS understanding that it has to comply with International treaties and UN declarations on Human Rights as well as the WMA International Code of Medical Ethics.

Cardiology Background

This current document derives from the previous Chapter 6 of the Training Charter and provides definitions of specialist cardiological competencies and procedures as well as how to document and assess them. For the sake of transparency and coherence, it has been renamed as “Training Requirements for the Specialty of Cardiology 2013”. This document aims to provide the basic Training Requirements for the specialty and should be regularly updated by UEMS Cardiology Section to reflect scientific and medical progress. The three-part structure of this document (trainee, trainer, training institution) reflects the UEMS approach to have a coherent pragmatic document not only for medical specialists but also for decision-makers at the National and European level interested in knowing more about medical specialist training.

The objectives of the UEMS Cardiology Section (UEMS-CS) include the progressive harmonisation of the content and quality of training in cardiology within the member states of the European Union (EU) and the other European countries. To this end the UEMS-CS will continue to co-operate with the European Society of Cardiology (ESC) and the individual national cardiological societies and professional unions to produce the definitions of the training requirements for the specialty of cardiology. This will include the contents of training, the assessment of competence and an outline of the desirable context for training i.e. requirements for trainees, trainers and training institutions.

This process of standardization and harmonization of cardiology training runs in parallel with European developments in the certification, recertification, continuing medical education (CME) and continuing professional development (CPD) of cardiologists. This includes the development of a European Diploma General Cardiology and the supporting on-line resources.

It is accepted that there is a prevailing trend for increased sub-specialization in cardiology, and this is supported by UEMS-CS whenever it is consistent with improved standards of clinical practice. However, in order to meet the needs of patients and the wide variety of models of service provision across Europe it is essential to ensure that all cardiologists obtain broad based training across all of

general cardiology irrespective of any further sub-specialisation and it is this training in general cardiology that is defined here. The Training Requirements for the Specialty of Cardiology 2013 are a development from previous UEMS documents including the 1994 Charter on Specialist Training with its chapter 6 for cardiology and previous ESC documents including the Core Curriculum for the General Cardiologist (2,3). The UEMS-CS tasked a sub-group (appendix A) to review these alongside representative national curricula. The group had representation from lay members, trainees, trainers and national training programme directors.

Cardiology Training Aims

The training requirements for the specialty of Cardiology aim to produce a competent specialist cardiologist. A cardiologist, a sub-specialisation of a physician, predominantly cares for patients with cardiovascular disorders and the concepts of Cardiology and Cardiovascular Medicine can be used interchangeably. Care of patients with cardiovascular disorders embraces a wide range of emergency and elective clinical activities. Cardiologists need knowledge of not only the underlying disease processes, available diagnostic and therapeutic modalities but also an appreciation of the importance of the epidemiology and potential for prevention of cardiovascular disease. Cardiologists need a broad understanding of the cardiovascular needs of individual patients and the communities in which they live. In order to provide optimal patient care cardiologists need the ability to work as leaders of, or within, teams and systems involving other healthcare professionals. Cardiologists, who generally work as hospital based specialists, need to integrate their work with not only community based primary care colleagues but also other hospital based physicians, e.g. diabetologists or nephrologists, as well as working closely with cardiothoracic surgeons and anaesthetists and the imaging specialties, e.g. radiology or nuclear medicine. Cardiologists have a wide variety of opportunities for research and the training is designed to facilitate opportunities for academic careers.

I. TRAINING REQUIREMENTS FOR TRAINEES

1. Content of training and learning outcome

Training in cardiology should be based on the syllabus detailed in section 2 of the ESC Core Curriculum for the General Cardiologist (3rd edition 2013, 3). Delivery of a training program in these areas of cardiology consists of training in all aspects of cardiovascular medicine and the acquisition of varying levels of expertise in cardiological procedures. Included are common many competencies that should be acquired by all physicians during their training starting within their undergraduate career and developed further throughout their postgraduate career. As a medical professional the trainee in cardiology should acknowledge the UN Declaration of Human Rights; WMA Declaration of Geneva (Oath of Hippocrates); WMA International Code of Medical Ethics; WMA Declaration of Helsinki; WMA Declaration of Lisbon; WMA Declaration of Madrid; WMA Declaration of Seoul; WMA Declaration of Tokyo.

The necessary core cardiology competences are set out as cardiology learning objectives with the knowledge, skills, attitudes and competencies needed to fulfil the objectives. By the end of the training programme the trainee will be expected to be

able to manage the clinical problems detailed in this section. The knowledge, skills, attitudes and competencies required for expertise in the core cardiology procedures and investigations are also defined. By the end of the training programme the trainee will be expected to select appropriately, interpret correctly and where appropriate perform competently these procedures and investigations. For the assurance of adequate experience certain number of procedures should be undertaken by each individual under different levels of supervision. For the practical procedures each trainee should have a training log-book. The necessary numbers and levels of competence are defined in Appendix B 1.

2. Organisation of training

a. Schedule of training and minimum duration of training

A cardiology trainee is a doctor who has completed their general professional training as a physician and is in an accredited training programme to become a recognised medical specialist. The trainee in cardiology must be recognized as a trainee according to the regulations in force for each EU/EEA member state. This stage is variably known in different countries as an intern, fellow or registrar. Training in cardiology must last for at least 4 years. In order to achieve the relevant competencies in general internal medicine, training in cardiology should usually be preceded by a common trunk in general internal medicine, both amounting to a total training duration of (at least) 6 years. Training institutions should provide a structured plan for training in general internal medicine and cardiology.

Trainees who are unable to work full-time are entitled to opt for less than full time training (LTFT) programmes. The EC Directive 2005/36/EC requires that: LTFT shall meet the same requirements as full-time training, from which it will differ only in the possibility of limiting participation in medical activities; the competent authorities shall ensure that the competencies achieved during part-time training are not less than those of full-time trainees.

b. Curriculum of training

The trainee in cardiology should be involved in the treatment of a sufficient number of inpatients, day care patients and outpatients (ambulatory) and perform at least the number of practical procedures seen as a minimum in the context of training in Cardiology (see Appendix B). The trainee should have sufficient linguistic ability to communicate with patients, communicate with colleagues and be able to study the international medical literature.

c. Assessment and evaluation

The purpose of the assessment system is to:

- enhance learning by providing formative assessment, enabling trainees to receive immediate feedback, measure 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
- provide robust, summative evidence that trainees are meeting the curriculum standards during the training programme
- ensure trainees are acquiring competencies
- assess trainees' actual performance in the workplace

- ensure that trainees possess the essential underlying knowledge required for cardiology
- identify any requirements for targeted or additional training where necessary and facilitating decisions regarding progression through the training programme.

The assessments should be supported by structured feedback for trainees within the training programme of Cardiology. Assessment tools will be both formative and summative. Workplace-based assessments should take place throughout the training programme to allow trainees to continually gather evidence of learning and to provide trainees with formative feedback. 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.

Knowledge based assessment (KBA)

Formative assessment: during the whole training period the trainee is strongly encouraged to work continuously on MCQs related to all chapters of the Core Curriculum and related educational material via the ESCeL platform (or any existing national equivalents).

Summative assessment: trainees are encouraged to undertake the Euro-KBA which is being developed as a computer based summative exam consisting of 120 MCQs in 3 hours. This should be taken after a minimum of three years of training in cardiology. This Euro-KBA will be delivered through the joint efforts of the UEMS-CS and the ESC.

Assessment of skills

Assessment and documentation of skills comprises workplace based assessments (see below) and a logbook. In particular this should document the specified list and numbers of procedures performed during training, including documentation of procedural and/or disease variables (Appendix B 2). There should also be a recording of Directly Observed Procedural Skills (DOPS) and a final statement of the trainer(s) regarding the level of competence achieved (see below). Online documentation for all these competences is available through the EUCARDIA® platform (www.eucardia.org) developed by UEMS-CS (or can be done using any existing national equivalents).

Direct Observation of Procedural Skills (DOPS) - is an assessment tool designed to assess 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. A description of how to undertake and document DOPS is available on the EUCARDIA® platform.

A series of “anchor statements” are provided to act as a formative guide to both trainee and trainer. For the procedural skills assessments, they are:

Level 1 – has experience of selecting the procedure appropriately and interpreting the results but not necessarily experience of performing the procedure. However, participation in the procedure under direct supervision during training will be valuable.

Level 2 – is able to go beyond level 1 and perform the procedure with limited supervision/assistance in routine uncomplicated cases.

Level 3 – independently is able to recognise the indication for, perform and interpret the results of the procedure and manage any complications arising.
The trainee should have his/her personal logbook (see www.eucardia.org).

Assessment of professionalism

The trainee is strongly encouraged to provide evidence of her/his scientific, educational and other professional activities. In addition towards the end of general cardiology training period a modified 360° appraisal should occur between trainee and trainer based on the materials available at the EUCARDIA® platform (or using any existing national equivalents).

Multisource Feedback (MSF)

This tool is a method of assessing generic skills such as communication, leadership, team working, reliability etc. This provides objective 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, administration staff, and other allied professionals. The trainee will not see the individual responses by raters feedback is given to the trainee by the Educational Supervisor.

d. Governance

Each National Authority should work with the national cardiological society and professional union to provide quality assurance of training in cardiology. Trainees should have the opportunity to be partly trained in recognized training institutions both in other member states of the EU as well as outside the EU. These training periods have to be approved by the National Authority.

The National Authority should determine each country's process for the selection and appointment of trainees in cardiology. The National Authority should implement regulation of access to training in cardiology in accordance with national manpower planning projections in the EC member state. There should be close involvement of trainers, training institutions and any other responsible bodies to select and appoint trainees who are suitable for Cardiology in accordance with the established selection procedure. This selection procedure should be transparent, and application should be open to all persons who have completed basic medical training.

II. TRAINING REQUIREMENTS FOR TRAINERS

Trainers should be recognized by the relevant national authorities. Each training institution should have a chief of training who should have been practising cardiology for at least 5 years after specialist accreditation and should have completed a specific training programme. There should be additional trainers who should be practicing cardiologists. The ratio between the number of trainers and the number of trainees should allow close personal supervision of the trainee during his/her training. The chief of training should work out a training programme for the trainee in accordance with the trainee's own requirements which also complies with national rules, EC Directives and UEMS-CS recommendations.

Supervision

All elements of work in training posts must be supervised with the level of supervision varying depending on the experience of the trainee and the clinical

exposure and case mix undertaken. Outpatient and referral supervision must routinely include the opportunity to personally discuss all cases. As training progresses the trainee should have the opportunity for increasing autonomy, consistent with safe and effective care for the patient. Trainees should have at all times a named Educational Supervisor responsible for overseeing their education.

Educational Supervisor - A trainer who is selected and appropriately trained to be responsible for the overall supervision and management of a specified trainee's educational progress during a training placement or series of placements.

Clinical Supervisor - A trainer who is selected and appropriately trained to be responsible for overseeing a specified trainee's clinical work and providing constructive feedback during a training placement.

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

Appraisal with Supervisors and Training Director

The supervisor should provide regular appraisal, at least every 3 months, to discuss progress, activity, individual strengths and weaknesses. Each appraisal meeting should generate a summary agreed by both parties and at the end of the time with a particular supervisor; he/she should issue a formal report on progress, shared with the trainee that will be assessed by the Training Director. At the end of the period of specialist area training, each trainee will undergo appraisal with the Training Director, who will hold ultimate responsibility for "signing off" the training period and the competences achieved by the trainee (can be documented by the EUCARDIA® administrative software, www.eucardia.org).

III. TRAINING REQUIREMENTS FOR TRAINING INSTITUTIONS

The general requirements for recognition as a Training centre in Cardiology are that:

- it is an institution, or group of institutions, which offer the trainee practice across the full range of the specialty including involvement with allied specialties to provide the trainee in Cardiology the opportunity to develop his/her skills in a team approach to patient care
- it has all the necessary infrastructure to provide the training in Cardiology as defined in the curriculum
- it has adequate teaching staff
- it provides a good learning environment
- it provides the trainee with space and opportunities for practical and theoretical study and access to adequate national and international professional literature
- it has a structured training program, which includes theoretical teaching sessions, training duties for each trainer and adequate numbers of practical procedures per trainee
- it undergoes monitoring in a structured way by the national authorities including visits and appraisal of their standards as training centres at least every five years

- it has an internal system of medical audit or quality assurance including features such as mortality conferences, reporting of accidents in accordance with a structured procedures
- it has a chief of training recognised by the relevant national authorities who should have been practising the specialty for at least 5 years after specialist accreditation and should have received specific training

The number of trainees per training centre should be based upon the number of trainees that the centre can train (the number of practical procedures per trainee is the minimum which has to be taken into account) and the manpower planning projection of each EU national state. The national authorities can put into effect additional criteria for training institutions if needed.

A 'good learning environment' includes encouragement for self-directed learning as well as recognising the learning potential in all aspects of day to day work. A supportive open atmosphere should be cultivated and questions welcomed. The bulk of learning occurs as a result of clinical experience (experiential on-the-job learning) and self-directed study. Lectures and formal educational sessions make up only a small part of the postgraduate training in cardiovascular medicine. Trainees should regularly update their personal portfolio to keep a personal record, and be able to present to others, the evidence of the learning methods used.

Experiential Learning Opportunities: Every patient seen, on the ward or in out-patients, provides a learning opportunity, which will be enhanced by following the patient through the course of their illness. Patients seen should provide the basis for critical reading around clinical problems. Ward rounds should be led by a consultant and include feed-back on clinical and decision making skills. Trainees should have the opportunity to assess both new and follow-up outpatients and discuss each case with the supervisor so as to allow feedback on diagnostic skills and gain the ability to plan investigations. There are many situations where clinical problems are discussed with clinicians in other disciplines, such as cardiac surgical multidisciplinary meetings. These provide excellent opportunities for observation of clinical reasoning.

Training in Practical Procedures: Undertaking supervised practical procedures in Cardiology with a consultant or more senior trainee, including the care and counselling of the patient/carers before and after the procedure, is the key method of gaining competence in these aspects of the curriculum (apprenticeship learning). Also with advances in technology the use of simulators will play an increasing part in the training of practical procedures. As trainees gain experience they will progress from observing to performing and from simple to more complex cases. Trainees should maintain a logbook of experience.

Small Group Learning Opportunities: case presentations and small group discussion, particularly of difficult cases, including presentations at clinical and academic meetings; critical incident analysis; small group bedside teaching, particularly covering problem areas identified by trainees; small group sessions of data interpretation, particularly covering problem areas identified by trainees; participation in audit meetings, journal clubs and research presentations.

Audit and Guidelines: trainees should be directly involved in and, after understanding the rationale and methodology, be expected to undertake a minimum of one in-depth audit every two-years of training. Trainees should be involved in guideline generation and review.

Personal Study: personal study including computer-based learning; practice examination questions and subsequent reading; reading journals; writing reviews and other teaching material.

Online Education: the development of the ESC e-learning platform (ESCeL) will provide trainees across Europe with an unrivalled educational resource. This curriculum based tool will enable the trainee to undertake and document formative knowledge assessments mapped to the ESC Core Curriculum for General Cardiology syllabus.

2. Quality Management within Training institutions

Training centres in Cardiology should be recognized by the proper authorities of each of the EU national states, i.e. the National Authority. Each centre should undergo monitoring in a structured way by the national authorities including visits and appraisal of their standards as training centres at least every five years. Each centre should have an internal system of medical audit or quality assurance including features such as mortality conferences, reporting of accidents in accordance with a structured procedure.

IV Implementation

UEMS-CS considers that the requirements detailed in this document form the basis of a uniformly high yet achievable standard for training in cardiology in all EU/EEA countries. In order to facilitate implementation of such training all relevant documents will be made accessible online. Formative KBA, by ESCeL platform, as well as documentation of practical skills and assessment of professionalism, by EUCARDIA[®] platform, with appropriate authentication procedures will also be possible online. Trainers will be expected to use the Training Requirements for the Specialty of Cardiology alongside the ESC Core Curriculum for the General Cardiologist as the basis of their discussion with trainees since both trainers and trainees are expected to have a good knowledge of the requirements as a guide for their training programme. Each trainee will engage with the curriculum by maintaining a portfolio and use the curriculum to develop learning objectives and reflect on learning experiences. Their portfolio could be developed through EUCARDIA[®] (www.eucardia.org) as a means to progress to the European Diploma General Cardiology (or through any existing national equivalent). Each trainee will be able to engage with the curriculum based education provided by the ESCeL platform by ESC.

National authorities will be responsible for the quality management of the delivery of the curriculum based training in their Cardiology training institutions.

European Diploma General Cardiology

The UEMS-CS will issue a European Diploma General Cardiology (ED)

- to stimulate implementation of the training described in this document

- to enable trainees to make visible Europe-wide, that they (as well as their trainers and training institutions) have met well defined quality criteria for assessment of knowledge, skills and professionalism,
- to provide regulators with a working template for a Europe-wide harmonised framework for specialty training in cardiology and
- demonstrate the capability of UEMS to exert professional self-regulation at the European level.

The ED will be issued to all cardiologists who have concluded a programme of training and successfully demonstrated the necessary knowledge, skills and professionalism and are holders of a valid national license as a cardiologist.

The ED will first be issued after successful completion of training in cardiology (“training phase”) and will afterwards be open for renewal every 5 years for the rest of the lifelong working time as a cardiologist (“specialist phase”) (see Appendix C). In a transition phase the ED may also be issued to qualified cardiologists from EU/EEA countries who have not been trained according to the precise specifications outlined below.

The central monitoring authority at the level of UEMS-CS is the Advisory Committee European Diploma (statutes and rules of procedure available on the web-site (www.uems-cardio.eu)). This Advisory Committee will be responsible for all decisions regarding acceptance or rejection of training institutions, trainers and trainees, respectively, as well as for any other issues related to the European Diploma.

Trainee: The trainee must be recognized as a trainee according to the regulations in force for each EU/EEA member state.

Trainer: At least one trainer must be recognized by the relevant national authorities as a trainer and 3-4 trainers per training site is strongly recommended in order to ensure close supervision of the trainee(s). All trainers must have practiced as cardiologists for at least 5 years and should be able to provide a CV that can demonstrate their personal capabilities.

Training institutions: Trainees being trained in an institution (or group of institutions) recognized as a training site by the relevant national authorities in an EU/EEA member state may apply for the ED.

Assessment procedures for the ED:

Knowledge assessment

Formative assessment: During the whole training period the trainee should work continuously on mcqs related to all chapters of the Core Curriculum and related educational material. This occurs primarily on a formative basis, but passmarks may be defined for each chapter of the Core Curriculum, to be fulfilled by the end of the training period.

Summative assessment (Euro-KBA): Trainees must pass a summative exam consisting of 120 mcqs. This can be taken after a minimum of three years of training in cardiology. For the Euro-KBA the writing of multiple choice questions will be supported by a Question Writing Group under the aegis of the ESC. There will be a

Question Selection Group and an Exam Performance Review Group under the aegis of the UEMS-CS. (statutes and rules of procedure available on the web-site). In the specialist phase KBA is documented by 250 hours of CME/CPD, of which at least 50% have to be EBAC accredited.

Assessment of skills: a logbook, specifying the type and numbers of procedures performed during training; documentation of procedural and/or disease variables; results of Directly Observed Procedural Skills, DOPS assessments; a final statement of the trainer(s) regarding the level of competence achieved (according to requirements of Appendix B). All documentation occurs online (see www.eucardia.org). The logbook is mandatory during the training phase and may be used optionally in the specialist phase.

Assessment of professionalism: At the end of the training period a modified 360° appraisal will occur between trainee and trainer (based on the process within the EUCARDIA® software). In addition the trainee is strongly encouraged to provide evidence of her/his scientific, educational or other professional activities. In the specialist phase assessment of professionalism will be carried out as 360° appraisal. If this is not feasible, provision of evidence of scientific, educational or other professional activities is mandatory in conjunction with proof of attendance of courses in communication skills etc.

The ED will be issued if: all requirements as outlined above have been fulfilled and the applicant presents a valid license as a cardiologist first issued in an EU/EEA member state.

The ED may also be issued to applicants from non-EU/EEA states whose first license has not been issued in an EU/EEA member state, if

- they have been trained in accordance with the principles outlined in this document
- their training institution(s) as well as trainer(s) meet the criteria as defined in this document,
- their formative KBA has been done by use of the ESC ESCeL platform
- the documentation of practical skills as well as assessment of professionalism has been done by use of the EUCARDIA® platform
- they have passed the summative Euro-KBA
- they present a valid national license as a cardiologist.

References

1. Epstein RM, Hundert EM, Defining and Assessing Professional Competence JAMA 2002, 287: 226-35
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3. Gillebert TC, Brooks NB, Fontes-Carvalho R, Fras Z et al, Core Curriculum for the General Cardiologist (3rd edition) Eur Heart J, 2013 (in press)

Appendix A

Members of the Task Force European Diploma:

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Appendix B 1

List of procedures – indicative numbers and levels of competence expected

UEMS Cardiology Section 2012/ European Curriculum for the Specialty of Cardiology		
Procedure/ technique	Numbers	Level of competence
ECG	500	III
Ambulatory ECG	100	III
Exercise test	150	III
Ambulatory BP	50	III
Echo-Doppler Studies	350	III
TEE	50	II
Stress Echo	50	I
Nuclear Studies	50	II
Cardiac CT	50	II
CMR	50	II
Coronary and/ or LV Angiography	300	III
Percutaneous Interventions	50	II
Temp. PM Impl.	10	III
PM/ ICD programming	50	III
PM implantation	20	II
ICD implantation	10	I
CRT implantation/ programming	10/20	I
E-Phys. Studies	25	II
Arrhythmia Ablation	10	I
Right Heart and PA cath.	20	III
Electr. Cardioversion	10	III
Pericardiocentesis	5	III
ILR	5	II

Appendix B 2

Items for documentation of pathology/ procedural variables

ECG:

none

sinus tachycardia

sinus bradycardia/arrest

av-block I

av-block II

av-block III

bundle branch block

atrial flutter

atrial fibrillation

preexcitation syndrome

other sv-tachycardia

ventricular tachycardia

ventricular flutter/fibrillation

long/short QT syndromes

ST depression and/or T wave abnormalities

(acute) ST elevation

postmyocardial infarction changes

Echocardiography:

None

Valves:

mitral/aortic/tricuspid/pulmonic

incompetence/stenosis/endocarditis/prosthesis/reconstructive surgical intervention

LV/myocardium:

Hypertrophy

Regional wall motion abnormalities signs of dilated/hypertrophic-obstructive, hypertrophic-nonobstructive, restricted, other cardiomyopathy

EF determined

Pericardium:

Pericardial effusion

Pericardial tamponade

Thrombus/Tumor

Aortic aneurysm/dissection/other

Congenital heart disease

Coronary and LV angiography:

Diagnosis (after angio):

coronary abnormality

stable coronary artery disease

acute coronary syndrome

valve disease

cardiomyopathy

patient with bypass(es): venous, internal mammary, other

other (incl. no significant coronary macroangiopathy)

Procedure:

- access: femoral/ brachial/ radial

- other procedures

LV angio

combined left and right heart catheterization

coronary angioplasty in the same session

valve intervention in the same session

ablation in the same session

- intra- and direct postprocedural difficulties/complications related to:

puncture/puncture site

extra coronary vessel dissection /perforation

contrast media

rhythm disorders

LV perforation

coronary occlusion

neurological deficit

Temporary pacing

Indication:

sinus bradycardia/arrest

av block II - III

prophylactic periprocedural pacing (surgery, acute PCI)

syncope of unknown origin

during resuscitation

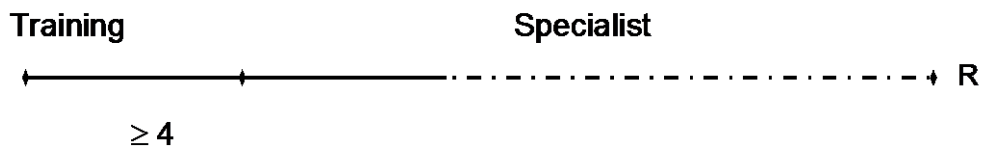
Access: transvenous/ jugular/ subclavian/ brachial/ femoral/ external transthoracic

Complications: hemorrhage/ dislocation/ infection

Appendix C

Figure showing timeline of European Diploma General Cardiology

European Diploma General Cardiology



-Knowledge (MCQ,Exam)

CME/CPD (MCQ)

-Skills

Logbook

-Professionalism

Professionalism (360°)