Trust in training: The new ESC Core Curriculum in Cardiology

Spring Summit – 5 March 2020

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Lead, ESC Core Curriculum Task Force
Vice Chairman, Cardiology, University Heart Center Zürich



Drivers to Change



Since 2013, Cardiology has changed:

- Increased demands on knowledge and technical skills (interventions)
- Understanding research and its impact on clinical practice
- Competence assessment
- Patient involvement
- → Focus on skills
- → Focus on assessment of competences in a clinical context
- → Involvement of trainees
- → Involvement of patients

ESC Core Curriculum Task Force [Validated by ESC Management Group]



| Last name | First name | Country | Stakeholder - | Position |
|---------------|------------|-------------|---------------------------------------|--|
| ANGUS | Neil | UK | Extended - Core Curriculum Task Force | Education Committee - Liaison Officer ACNAP |
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| DI SALVO | Giovanni | UK | Extended - Core Curriculum Task Force | Education Committee - Liaison Officer EACVI (replacement Denisa Muraru) |
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| TANNER | Felix | Switzerland | Nucleus - Core Curriculum Task Force | Education Committee Core Curriculum Task Force Lead + NCS - EEGC Board - Switzerland |
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| GREEN | Joseph | USA | Extended - Core Curriculum Task Force | Education Committee Member |
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| VERHORST | Patrick | Netherlands | Extended - Core Curriculum Task Force | Education Committee Member |
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ESC Core Curriculum Task Force [Validated by ESC Management Group]

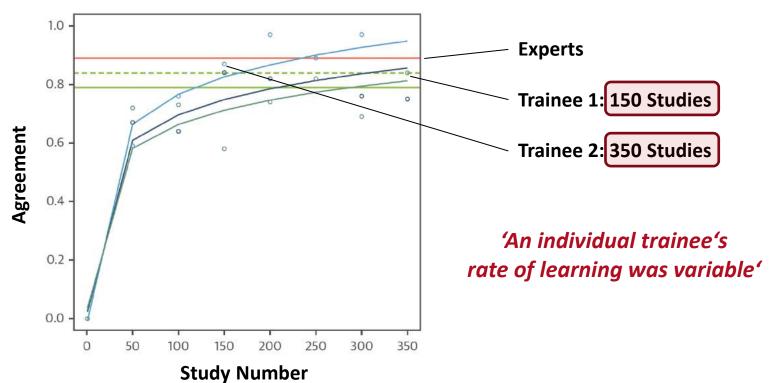


| Last name | First name | Country | Stakeholder | Position |
|--------------|------------|---------------------------|---------------------------------------|---|
| MASCHERBAUER | Julia | Austria | Extended - Core Curriculum Task Force | ESC Board Member |
| PRIORI | Silvia | Italy | Extended - Core Curriculum Task Force | ESC Board Member |
| WEIDINGER | Franz | Austria | Extended - Core Curriculum Task Force | ESC Board Member - National Cardiac Societies |
| ZAMORANO | Jose Luis | Spain | Extended - Core Curriculum Task Force | ESC Board Member - National Cardiac Societies |
| BAX | Jeroen | Netherlands | Extended - Core Curriculum Task Force | ESC Board Member - ESC Past President |
| CASADEI | Barbara | UK | Extended - Core Curriculum Task Force | ESC Board Member - ESC President |
| ACHENBACH | Stephan | Germany | Extended - Core Curriculum Task Force | ESC Board Member - ESC President Elect |
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| LINDE | Cecilia | Sweden | Extended - Core Curriculum Task Force | ESC Board Member - Working Groups, Councils and Young Communities |
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| CANDREVA | Alessandro | Switzerland | Extended - Core Curriculum Task Force | Young Cardiology Community representative |
| DOMINGUES | Kevin | Portugal | Extended - Core Curriculum Task Force | Young Cardiology Community representative |
| MEINANDER | Tuula | Finland | Extended - Core Curriculum Task Force | Young Cardiology Community representative |

Individuals and Training



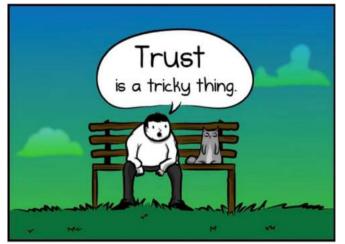
Abnormal Myocardial Perfusion Imaging



J Am Coll Cardiol Img 2019;12:2505-2513

Training and Trust



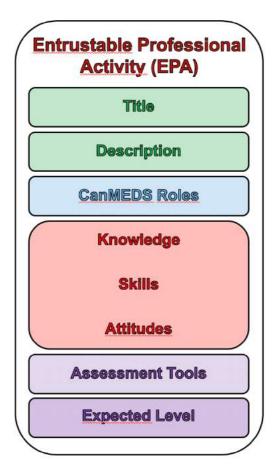




During training of an individual the trainer develops an increasing degree of trust in the trainee's competence

Entrustable Professional Activities (EPAs)

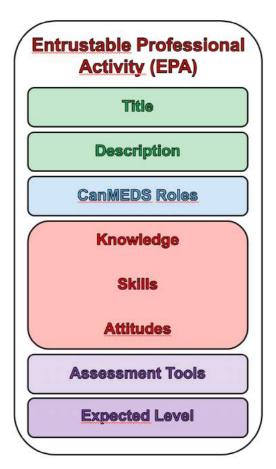




- EPA = a unit of professional practice the trainee can execute in an independent manner at some stage of training
- EPAs enable assessment of clinically meaningful units of competence (e.g. 'assess a patient with chest pain')
- To complete an EPA successfully means that the trainer has developed trust in the trainee

Entrustable Professional Activities (EPAs)





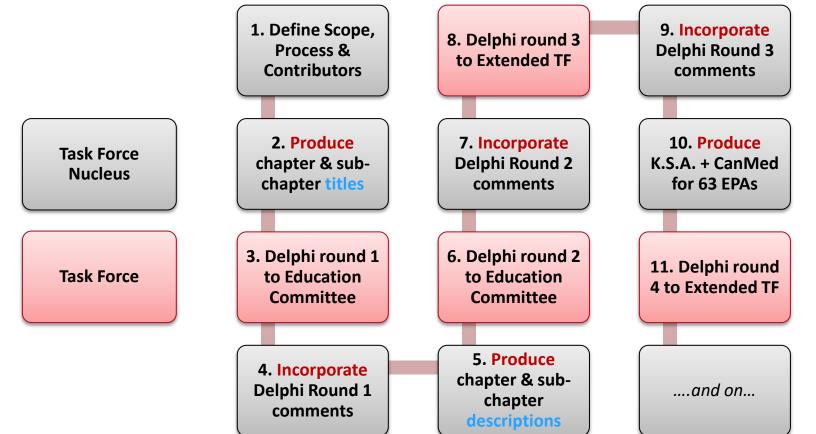
Our rationale for use of EPAs:

to generate the necessary flexibility for guiding and assessing trainees with different abilities and training needs

to promote a holistic type of assessment in the clinical setting focussed on the clinical competence of the trainee

Methodology: Delphi rounds to reach consensus





Updated Content Structure - Chapters



Chapter 1

The Cardiologist in the Wider Context

Chapter 2

Imaging

Chapter 3

Coronary Artery Disease **Chapter 4**

Valvular Heart Disease **Chapter 5**

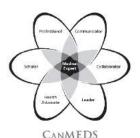
Rhythm Disorders Chapter 6

Heart Failure Chapter 7

Acute Cardiac Care **Chapter 8**

Prevention Rehabilitation Sports **Chapter 9**

Cardiac
Patients in
Additional
Settings



CanMEDS Physician Competency Framework Roles

Professional

Leader

Communicator

Health Advocate

Collaborator

Scholar

Frank JR, Snell L, Sherbino J, editors. CanMEDS 2015 Physician Competency Framework.

Ottawa: Royal College of Physicians and Surgeons of Canada 2015

Updated Content Structure - EPAs



Compilation

Draft ESC Core Curriculum content - Delphi Round 4 (16 Dec 19)

Table of content

| | of content | |
|-------|--|---|
| 1. Ch | apter 1: | |
| 1.1. | Introduction | |
| 1.2. | CanMEDS Roles | |
| 2. Ch | apter 2: Imaging | |
| 2.1 | Assess a patient using one or multiple imaging modalities | |
| 2.2 | Assess a patient using echocardiography | 1 |
| 2.3 | Assess a patient using cardiac magnetic resonance | 1 |
| 2.4 | Assess a patient using cardiac computed tomography | |
| 2.5 | Assess a patient using nuclear techniques | 1 |
| 3. Ch | apter 3: Coronary artery disease | 1 |
| 3.1 | Manage a patient with symptoms suggestive of coronary artery disease | |
| 3.2 | Manage a patient with acute coronary syndrome | |
| 3.3 | Manage a patient with chronic coronary syndrome | 1 |
| 3.4 | Assess a patient using coronary angiography | |
| 4. Ch | apter 4: Valvular heart disease | 2 |
| 4.1 | Manage a patient with aortic regurgitation | 2 |
| 4.2 | Manage a patient with aortic stenosis | 2 |
| 4.3 | Manage a patient with mitral regurgitation | 2 |
| 4.4 | Manage a patient with mitral stenosis | 2 |
| 4.5 | Manage a patient with tricuspid regurgitation | |
| 4.6 | Manage a patient with tricuspid stenosis | 2 |
| 4.7 | Manage a patient with pulmonary regurgitation | 3 |
| 4.8 | Manage a patient with pulmonary stenosis | 3 |
| 4.9 | Manage a patient with multivalvular disease | 3 |
| 4.10 | Manage a patient with a prosthetic valve | 3 |
| 4.11 | Manage a patient with endocarditis | 3 |
| 5. Ch | apter 5: Rhythm disorders | 3 |
| 5.1 | Manage a patient with palpitations | |
| 5.2 | Manage a patient with transient loss of consciousness | 4 |
| 5.3 | Manage a patient with atrial fibrillation. | 4 |
| 5.4 | Manage a patient with atrial flutter | 4 |
| 5.5 | Manage a patient with supraventricular tachycardia | 4 |
| 5.6 | Manage a patient with ventricular arrhythmia | 4 |

| 5.7 | Manage a patient with bradycardia | 4 |
|-------|--|---|
| 5.8 | Manage a patient with a cardiac ion channel dysfunction | 4 |
| 5.9 | Manage a patient with a pacemaker | 4 |
| 5.10 | Manage a patient with an ICD. | |
| 5.11 | Manage a patient with a CRT device | |
| 6. Ch | apter 6: Heart Failure | |
| 6.1 | Manage a patient with symptoms and signs of heart failure | |
| 6.2 | Manage a patient with heart failure with reduced ejection fraction | |
| 5.3 | Manage a patient with heart failure with preserved ejection fraction | |
| 6.4 | Manage a patient with acute heart failure | |
| 6.5 | Manage a patient with cardiomyopathy | |
| 6.6 | Manage a patient with pericardial disease | |
| 6.7 | Manage a patient with right heart dysfunction | |
| 6.8 | Manage a patient with a cardiac tumour | |
| 6.9 | Manage cardiac dysfunction in oncology patients | |
| 7. Ch | apter 7: Acute Cardiac Care | |
| 7.1 | Manage a patient with haemodynamic instability | |
| 7.2 | Manage a patient with survived cardiac arrest | |
| 7.3 | Manage a critically ill cardiac patient | |
| 7.4 | Manage a patient after a percutaneous cardiovascular procedure | |
| 7.5 | Manage a patient after cardiac surgery | |
| 7.6 | Manage end-of-life care in a cardiac patient | |
| 8. Ch | apter 8: Prevention, rehabilitation, sports | |
| 8.1 | Manage cardiovascular aspects in an athlete (Sport Cardiology) | |
| 8.2 | Manage a patient with arterial hypertension | |
| 8.3 | Manage a patient with dyslipidaemia | |
| 8.4 | Manage cardiovascular aspects in a diabetic patient | |
| 8.5 | Manage an individual in primary prevention | |
| 8.6 | Manage a cardiac patient in secondary prevention | |
| 8.7 | Prescribe a prevention and rehabilitation program for a cardiovascular patient | |
| 9. Ch | apter 9: Cardiac patients in further settings | |
| 9.1 | Manage a patient with aortic disease | |
| 9.2 | Manage a patient with trauma to the aorta or the heart | |
| 9.3 | Manage a patient with peripheral artery disease | |
| 9.4 | Manage a patient with thromboembolic venous disease | |
| 9.5 | Manage a patient with pulmonary thromboembolism | |
| | | |

| 9.7 | Manage a patient with adult congenital heart disease |
|-----|--|
| 9.8 | Manage a pregnant patient with cardiac symptoms or disease |
| 9.9 | Perform a cardiological consultation 99 |

Updated Content Structure - EPAs



4.1 Manage a patient with aortic regurgitation

Description

<u>Timeframe:</u> from diagnosis of aortic regurgitation until referral for surgical/interventional therapy Setting: out-patient setting, in-patient setting, emergency department

Including:

initial assessment based on clinical history and physical examination

identification of causes and differential diagnosis

performance and interpretation of basic diagnostic modalities

interpretation of additional diagnostic modalities

medical therapy

Excluding: performing interventional or surgical therapy

CanMEDS-Roles

- Medical Expert
- Communicator
- Collaborator
- Professional

Knowledge

- · List the causes of AR
- Describe the haemodynamics of AR
- . Describe the pathophysiology of AR and its effect on the heart and circulation
- Describe the symptoms and clinical signs of AR
- . Outline the natural history and prognosis of AR
- · Describe the values and limitations of diagnostic modalities, in particular echocardiography, but also:
 - ECG
 - exercise ECG
 - cardiopulmonary exercise testing
 - chest X-ray
 - cardiac catheterization
 - coronary angiography
 - cardiac CT
 - cardiac MR
- Quantify the severity of AR and its effect on cardiac function
- . Plan the follow-up under conservative management of a patient with AR
- · Explain the current guidance on endocarditis prophylaxis
- · Describe the indications, benefits, and risks of conservative, interventional, and surgical management
- Discuss the impact of aortic root dilatation, concomitant coronary artery disease and other comorbidities on the management and outcome of AR

kills

- · Take a relevant history and perform an appropriate physical examination
- Select appropriate investigations
- Perform and interpret the following diagnostic modalities:
 - ECG
 - exercise ECG
 - cardiopulmonary exercise testing
 - transthoracic echocardiography
- Interpret the following diagnostic modalities:
 - chest X-ray
 - transoesophageal echocardiography
 - stress echocardiography
 - cardiac catheterization
 - coronary angiography
 - cardiac CT
 - cardiac MR
- Decide on the strategy and frequency of follow-up
- Identify the appropriate timing for interventional or surgical therapy
- Optimize patient condition in preparation of interventional or surgical therapy
- Assess the benefits and risks of different therapeutic approaches

Attitudes

- Allow adequate time for evaluation of symptoms using, when appropriate, the results of exercise testing
- Limit the investigations to those required to reach a definitive assessment and for planning a therapeutic intervention
- · Educate the patient on the cause and likely natural history, and consequences of their AR
- · Educate the patient on the necessity for compliance with regular follow-up
- Provide balanced, understandable, and appropriate information to the patient on the benefits and risks of different therapeutic approaches
- · Involve the patient in all decisions relating to their care
- Commit to work in a Heart Team involving imaging specialists, interventional cardiologists, cardiac surgeons, anaesthetists, and nurses

Assessment tools

- · Testing knowledge on AR by oral and/or written examination
- · Direct observation of skills with structured feedback
- Direct observation of attitudes with multi-source feedback

Related ESC Topics (ESC Topic List)

Topic List: 2.; 3.1.; 3.2.; 3.3.; 3.5.; 10.; 15; 22.; 25.1.; 25.3.; 26.2.; 26.4.

Updated Content Structure – Entrustment Levels



Level 1: Trainee is able to observe

<u>Level 2</u>: Trainee is able to perform the activity under direct supervision proactive, close supervision, supervisor in the room

<u>Level 3</u>: Trainee is able to perform the activity under indirect supervision reactive, on-demand supervision, trainee has to ask for help, supervisor readily available, within minutes

<u>Level 4</u>: Trainee is able to perform the activity under distant supervision reactive supervision available remotely, e.g. within 20-30min, on the phone or post-hoc

Level 5: Trainee is able to supervise others in performing the activity

Updated Content Structure – Entrustment Levels



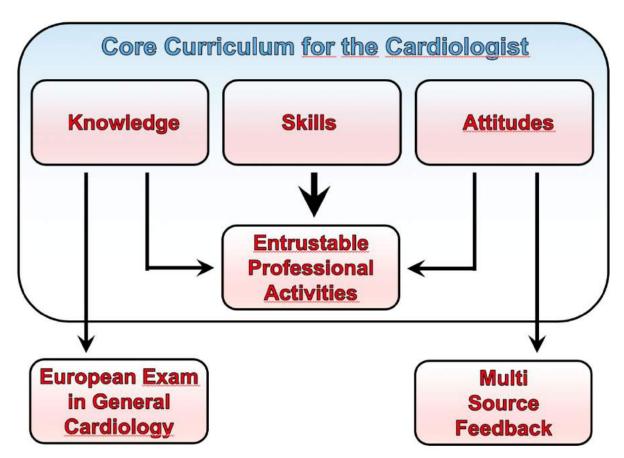
| EPA | 8 | 2 | Level o | findepe | endence | |
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| 2. Imaging | | | | | | |
| 2.1. Assess a patient using one or multiple imaging modalities | | | | | 0 | |
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| 2.5. Assess a patient using nuclear techniques | | | | | | |
| 3. Coronary artery disease | | | | | | _ |
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| 3.3. Manage a patient with chronic coronary syndrome | | | | | | |
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| 4. Valvular heart disease | | | | | | _ |
| 4.1. Manage a patient with aortic regurgitation | | | | | | |
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| 4.3. Manage a patient with mitral regurgitation | | | | | | |
| 4.4. Manage a patient with mitral stenosis | | | | | | |
| 4.5. Manage a patient with tricuspid regurgitation | 2 | | | 0 8 | | |
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| 5.7. Manage a patient with bradycardia | | 8 8 | | 8 8 | - 1 | |
| 5.8. Manage a patient with a cardiac ion channel dysfunction | | | | | | _ |
| 5.9. Manage a patient with a pacemaker | | 3 1 | | | | |
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| 6. Heart failure | | | | 1 20 | | Т |
| 6.1. Manage a patient with symptoms and signs of heart failure | | | | | | |
| 6.2. Manage a patient with heart failure with reduced ejection fraction | | | | | | |
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| 6.8. Manage a patient with a cardiac tumor | | 3 3 | | | | |
| 6.9. Manage cardiac dysfunction in oncology patients | | 1 | | | | _ |

| 9. Cardiac patients in further settings | | 5 | 1 | | 11 |
|---|----|----|---|--|----|
| 9.1. Manage a patient with aortic disease | | | | | |
| 9.2. Manage a patient with trauma to the aorta or the heart | 2) | | | | |
| 9.3. Manage a patient with peripheral artery disease | | | | | |
| 9.4. Manage a patient with thromboembolic venous disease | | | | | |
| 9.5. Manage a patient with pulmonary thromboembolism | 2 | 33 | | | |
| 9.6. Manage a patient with pulmonary hypertension | | | | | |
| 9.7. Manage a patient with adult congenital heart disease | 75 | | | | - |
| 9.8. Manage a pregnant patient with cardiac symptoms or disease | 3 | | | | |
| 9.9. Perform a cardiological consultation | | | | | |

| Procedures | Level I, II, III | | Level of independence | | | | | |
|------------------------------------|----------------------|---|-----------------------|---|---|------|--|--|
| | validated 2019-02-18 | 1 | 2 | 3 | 4 | 5 | | |
| 500 | | | 1 | | | | | |
| ECG | | | | | | | | |
| AMBULATORY ECG | III | | | | | | | |
| EXERCISE ECG TESTING | III | | | | | | | |
| CARDIOPULMONARY EXCERCISE TESTING | III | | | | | | | |
| AMBULATORY BP MONITORING | lli lli | | | | | | | |
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| CARDIAC CT | II. | | | | | | | |
| CARDIAC MR | 10 | | | | | | | |
| NUCLEAR IMAGING | | | 4 | | | | | |
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| STRUCTURAL INTERVENTIONS | 1 | | | | | | | |
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| ICD/CRT IMPLANTATION | | | | | | | | |
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| ELECTROPHYSIOLOGICAL INTERVENTIONS | 1 | | | | | | | |
| ELECTRICAL CARDIOVERSION | III | | | | | ii . | | |
| PERICARDIOCENTESIS | 1 11 | | 100 | | 1 | | | |

EPA and Assessment



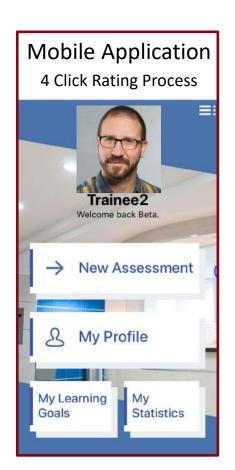


EPA and Trainer Trainee Interaction





EPA-based Assessment Using Mobile Technology





EPA Data

Point



Adjusted Teaching **And Supervision**



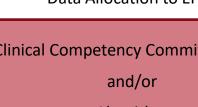


Back-end

Data Allocation to EPAs

Clinical Competency Committee (CCC)

Algorithm



Schuwirth LWT and Van der Vleuten CPM. "Programmatic Assessment: From Assessment of Learning to Assessment for Learning". MedTeach 33,6 (June 2011): 478-85.

Publication of Core Curriculum 2020



ESC Congress Amsterdam 2020

Bringing the world of cardiology together

29 August - 2 September

