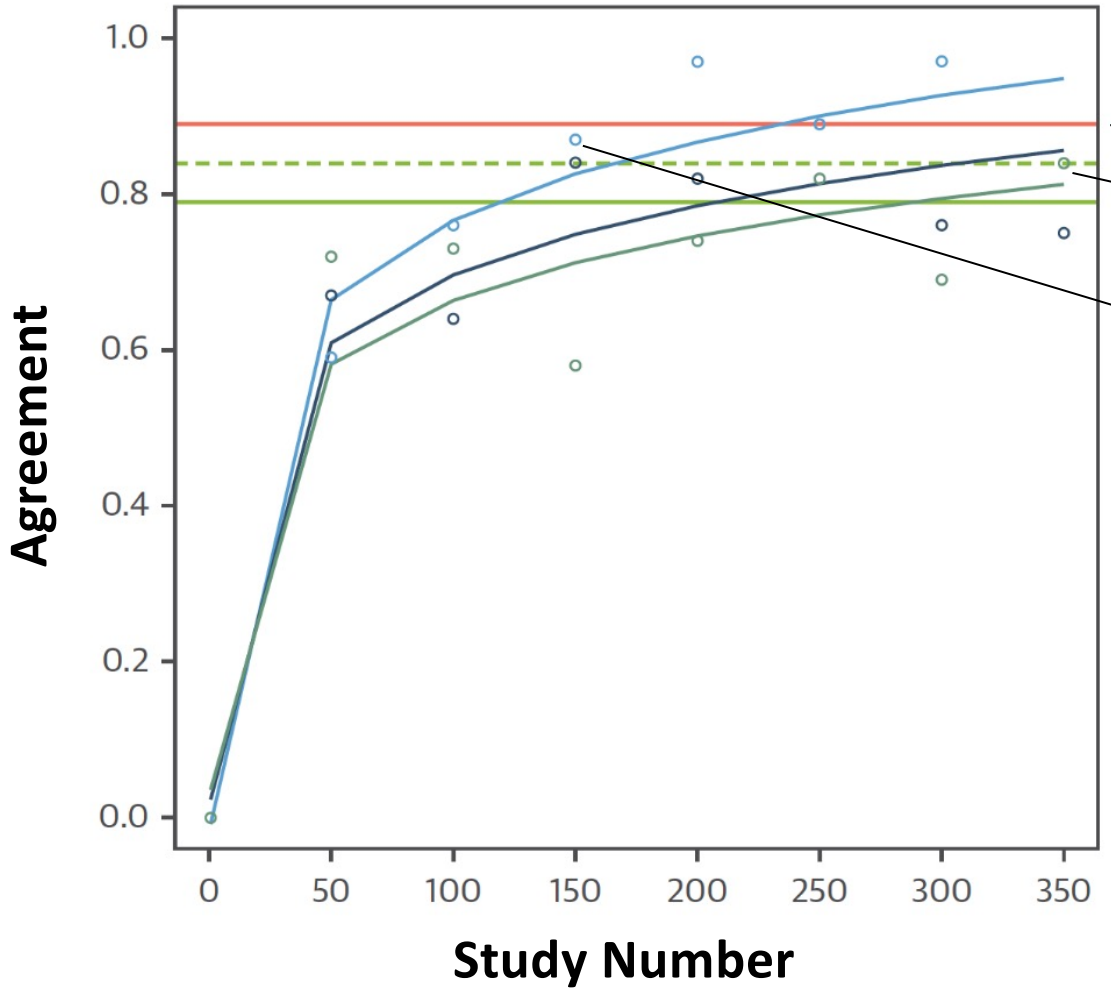
Cardiology Training in Switzerland
Train The Trainer Course 2024

Prof. Felix C. Tanner, MD
Vice-Chairman Cardiology
Director Echocardiography
University Heart Center Zürich
Past President of the Swiss Society of Cardiology
Board Member of the Swiss Institute of Medical Education

Individuum and training

Abnormal Myocardial Perfusion Imaging



Experts

Trainee 2: 350 Studies

Trainee 1: 150 Studies

'An individual trainee's rate of learning was variable'

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

Trust and training

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

This process is often subconscious
→ It should be formalized and applied for training

Professional competence

Cognitive

Core knowledge
Basic communication skills
Information management
Applying knowledge to real-world situations
Using tacit knowledge and personal experience
Abstract problem-solving
Self-directed acquisition of new knowledge
Recognizing gaps in knowledge
Generating questions
Using resources (eg, published evidence, colleagues)
Learning from experience

Technical

Physical examination skills
Surgical/procedural skills

Integrative

Incorporating scientific, clinical, and humanistic judgment
Using clinical reasoning strategies appropriately (hypothetico-deductive, pattern-recognition, elaborated knowledge)
Linking basic and clinical knowledge across disciplines
Managing uncertainty

Context

Clinical setting
Use of time

Relationship

Communication skills
Handling conflict
Teamwork
Teaching others (eg, patients, students, and colleagues)

Affective/Moral

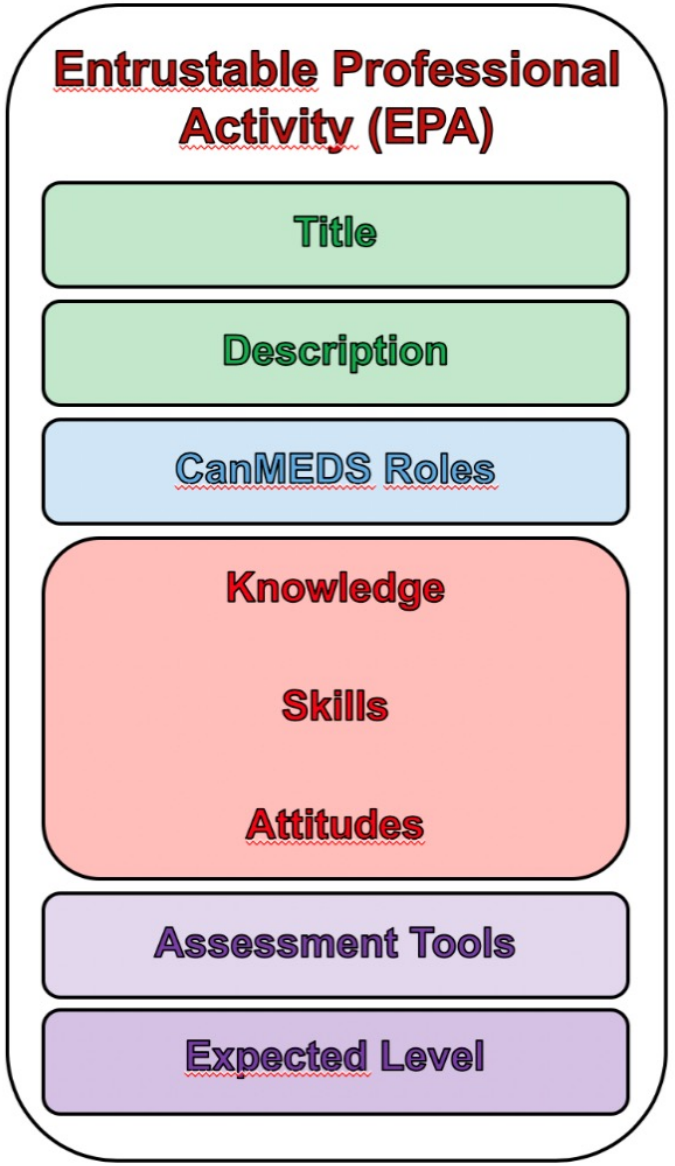
Tolerance of ambiguity and anxiety
Emotional intelligence
Respect for patients
Responsiveness to patients and society
Caring

Habits of Mind

Observations of one's own thinking, emotions, and techniques
Attentiveness
Critical curiosity
Recognition of and response to cognitive and emotional biases
Willingness to acknowledge and correct errors

Epstein RM et al. JAMA 2002;287:226-235

Entrustable professional activities (EPAs)

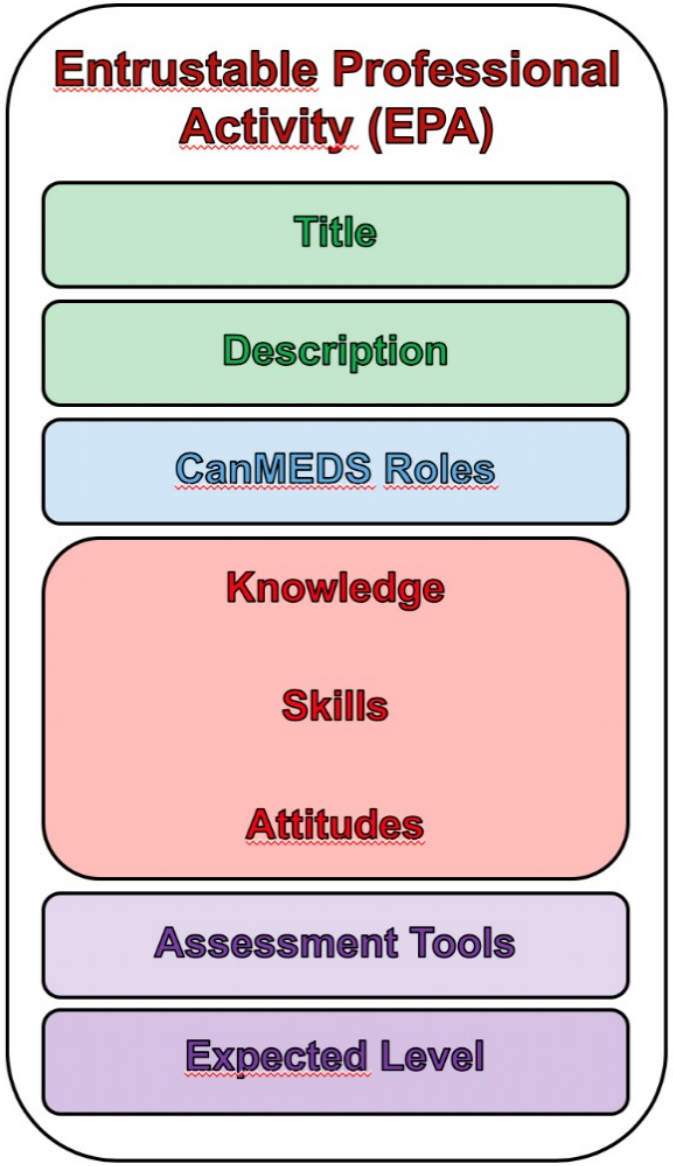


- EPA = a unit of professional practice the trainee can execute in an independent manner at some stage of training
- EPAs enable assessment of clinically meaningful units of competence in daily clinical practice

  → 'assess and manage a patient with chest pain'
- To complete an EPA successfully means that the trainer has developed sufficient trust in the trainee

  → 'can manage a patient with chest pain independently

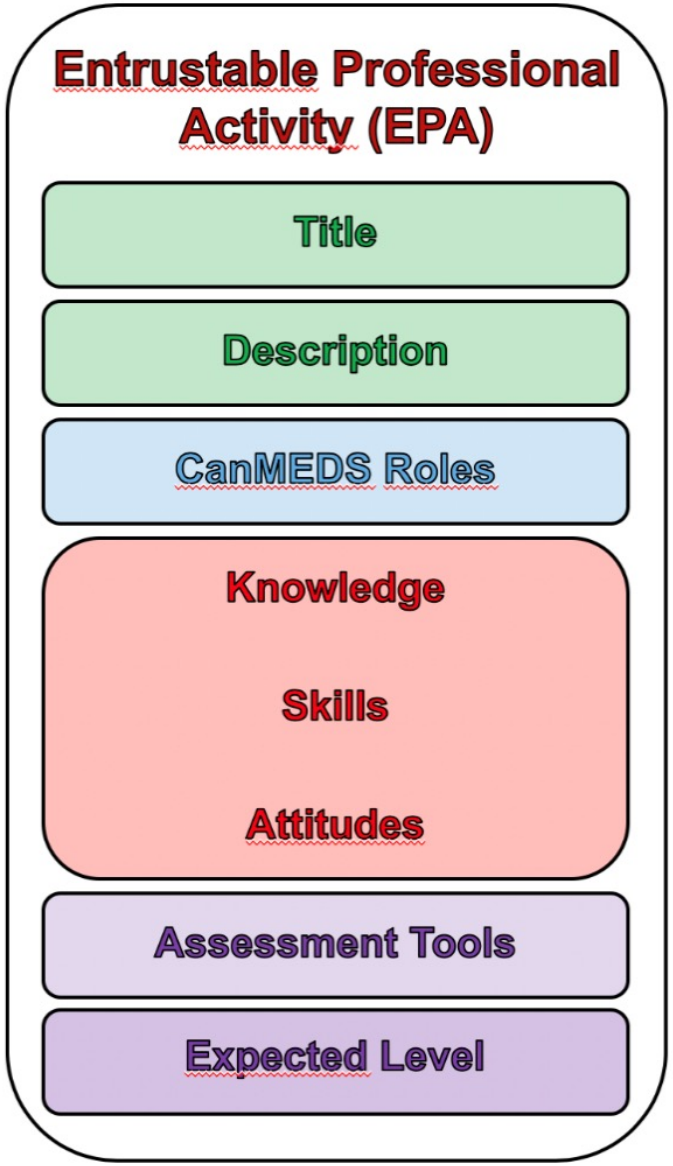
Entrustable professional activities (EPAs)

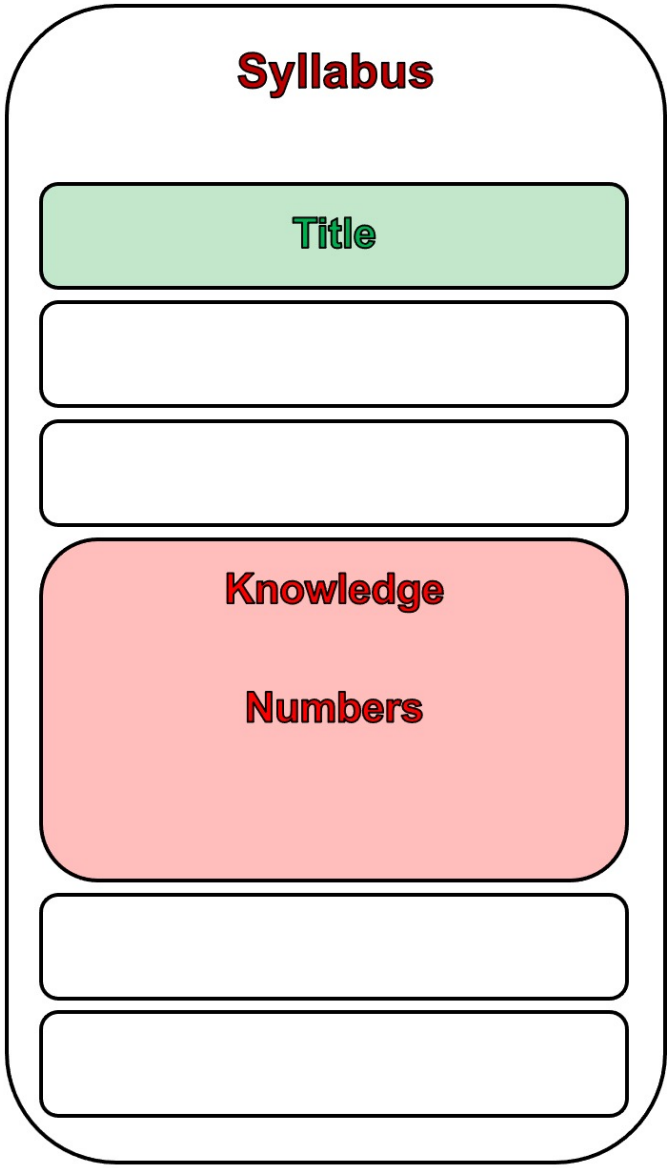


EPAs generate the necessary flexibility for guiding and assessing trainees with different abilities and training needs

EPAs promote a holistic assessment in the clinical setting focussing on the clinical competence of the trainee

Entrustable professional activities (EPAs)





Numbers verses competence level

EPA-System	System of Numbers of procedures and investigations
Strengths - EPAs can be overseen, assessed, monitored, documented, and certified - easy, formative, and repeated assessment during the training period - multisource assessment - aspects of assessment are knowledge, skills and attitudes - a completed EPA documents the ability of a trainee to safely, effectively, and independently perform the professional activity - Tools for assessement of each professional activity are defined - consistent to CanMEDS Physician Competency Framework - EPAs provide a framework to extend the training period until the trainee can be trusted - EPAs can used equally for continuous medical education (CME)	**Strengths** - easy to count - no subjective component - documentation requires less time

Numbers verses competence level

- **Training using numbers:**

  ‘We gave him/her a fair chance, but he/she failed, so sorry’

  → Problem is shifted onto the patients

- **Training using competence levels:**

  ‘We did our best, but we trust him/her to work with distant supervision only, and he/she will need some more training’

  → Problem is solved before patients are concerned

Entrustment levels = competence levels

Level 1: Trainee is able to observe

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

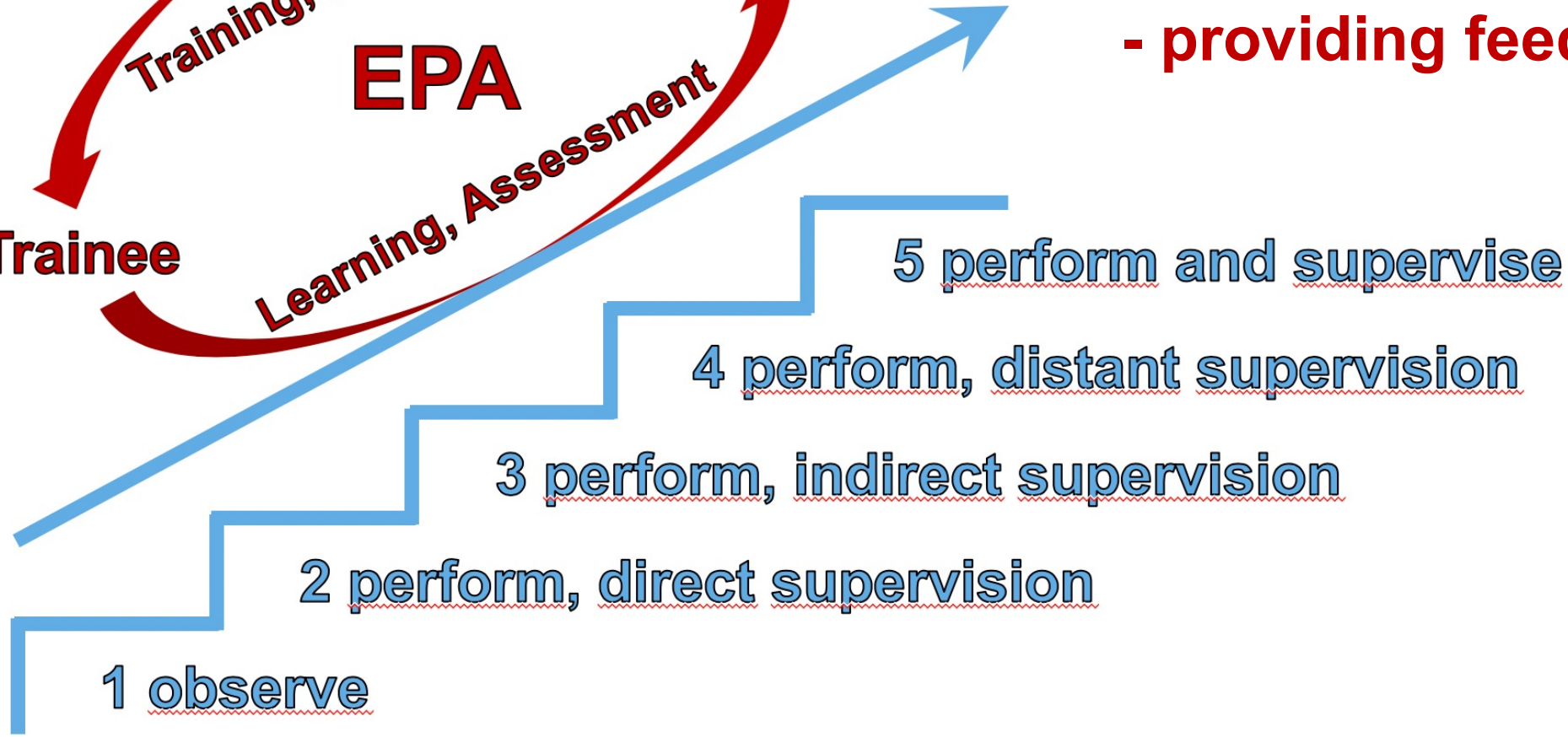
Level 3: Trainee is able to perform the activity under indirect supervision
reactive, on-demand supervision, trainee has to ask for help, supervisor readily available, within minutes

Level 4: 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

Training with EPAs

Trainer supports trainee by
- being an example
- showing commitment
- providing feedback

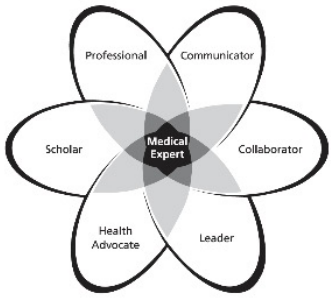


Swiss cardiology training program

Chapter 1

The Cardiologist in the Wider Context

Chapter 2	Chapter 3	Chapter 4	Chapter 5	Chapter 6	Chapter 7	Chapter 8	Chapter 9
Imaging	Coronary Artery Disease	Valvular Heart Disease	Rhythm Disorders	Heart Failure	Acute Cardiac Care	Prevention Rehabili-tation Sports	Cardiac Patients in Additional Settings



CanMEDS

CanMEDS Physician Competency Framework Roles

Professional
Communicator
Collaborator
Leader
Health Advocate
Scholar

Frank JR, Snell L, Sherbino J, editors. CanMEDS 2015 Physician Competency Framework. Ottawa: Royal College of Physicians and Surgeons of Canada 2015

Swiss cardiology training program

7. Chapter 7: AcuteCardiovascularCare 61
   7.1. Manage a patient with haemodynamic instability 61
   7.2. Manage a patient post-cardiac arrest 62
   7.3. Manage a critically ill cardiac patient 64
   7.4. Manage a patient after a percutaneous cardiovascular procedure 65
   7.5. Manage a patient after cardiac surgery 66
   7.6. Manage end-of-life care in a critically ill cardiac patient 67

Swiss cardiology training program

4.2. Manage a patient with aortic stenosis

Description

Timeframe: from diagnosis of aortic stenosis (AS) until referral for surgical/interventional therapy
Setting: outpatient setting, inpatient 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
- Leader
- Professional

Knowledge

- List the causes of AS
- Describe the haemodynamics of AS
- Describe the pathophysiology of AS and its impact on the heart and circulation
- Describe the symptoms and clinical signs of AS
- Outline the natural history and prognosis of AS
- Describe the values and limitations of diagnostic modalities; in particular echocardiography
- Quantify the severity of AS and its effect on cardiac function
- Plan the follow-up during conservative management of a patient with AS
- Explain the current guidance on endocarditis prophylaxis
- Discuss the indications for aortic valve replacement, with or without replacement of the ascending aorta
- Describe the indications, benefits, and risks of conservative, interventional, and surgical therapy
- Discuss the impact of aortic root dilatation, concomitant coronary artery disease, and other co-morbidities

Skills

- Take a relevant history and perform an appropriate physical examination
- Select appropriate diagnostic modalities
- Perform and interpret the following diagnostic modalities:
  – ECG
  – Exercise ECG
  – Cardiopulmonary exercise testing
  – Transthoracic echocardiography
- Interpret the following diagnostic modalities:
  – Chest X-ray
  – Trans-oesophageal 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 time for careful evaluation of symptoms using, when appropriate, the results of exercise testing
- Limit investigations to those required for definitive diagnosis and planning for an intervention
- Educate the patient on the cause, and probable natural history of their AS
- Educate the patient on the necessity for regular follow-up
- Provide balanced, understandable, and appropriate information to the patient on 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

- Direct observation/WBA (e.g. DOPS, Mini-CEX, fieldnotes)
- CbD (case-based discussion)/EbD (entrustment-based discussion)

Level of independence

- 5. Able to teach (no supervision)

Swiss cardiology training program

EPA		Level of independence				
		1	2	3	4	5
2. Imaging						
2.1. Assess a patient using one or multiple imaging modalities						
2.2. Assess a patient using echocardiography						
2.3. Assess a patient using cardiac magnetic resonance						
2.4. Assess a patient using cardiac computed tomography						
2.5. Assess a patient using nuclear techniques						
3. Coronary artery disease						
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						
3.4. Assess a patient using coronary angiography						
4. Valvular heart disease						
4.1. Manage a patient with aortic regurgitation						
4.2. Manage a patient with aortic stenosis						
4.3. Manage a patient with mitral regurgitation						
4.4. Manage a patient with mitral stenosis						
4.5. Manage a patient with tricuspid regurgitation						
4.6. Manage a patient with tricuspid stenosis						
4.7. Manage a patient with pulmonary regurgitation						
4.8. Manage a patient with pulmonary stenosis						
4.9. Manage a patient with multivalvular disease						
4.10. Manage a patient with a prosthetic valve						
4.11. Manage a patient with endocarditis						
5. Rhythm disorders						
5.1. Manage a patient with palpitations						
5.2. Manage a patient with transient loss of consciousness						
5.3. Manage a patient with atrial fibrillation						
5.4. Manage a patient with atrial flutter						
5.5. Manage a patient with supraventricular tachycardia						
5.6. Manage a patient with ventricular arrhythmia						
5.7. Manage a patient with bradycardia						
5.8. Manage a patient with a cardiac ion channel dysfunction						
5.9. Manage a patient with a pacemaker						
5.10. Manage a patient with an ICD						
5.11. Manage a patient with a CRT device						
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						
6.3. 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 tumor						
6.9. Manage cardiac dysfunction in oncology patients						
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						
9.6. Manage a patient with pulmonary hypertension						
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						

Procedures	Level I, II, III	Level of independence				
	validated 2019-02-18	1	2	3	4	5
ECG	III					
AMBULATORY ECG	III					
EXERCISE ECG TESTING	III					
CARDIOPULMONARY EXCERCISE TESTING	III					
AMBULATORY BP MONITORING	III					
TRANSTHORACIC ECHOCARDIOGRAPHY	III					
TRANSESOPHAGEAL ECHOCARDIOGRAPHY	II					
STRESS ECHOCARDIOGRAPHY	I					
VASCULAR ULTRASOUND	I					
CORONARY CT						
CARDIAC CT	II					
CARDIAC MR	I					
NUCLEAR IMAGING	I					
RIGHT HEART CATHETERISATION	II					
ENDOMYOCARDIAL BIOPSY	I					
CORONARY ANGIOGRAPHY	II					
PERCUTANEOUS INTERVENTIONS	I					
STRUCTURAL INTERVENTIONS	I					
CARDIAC SURGERY	I					
PACEMAKER PROGRAMMING	II					
ICD/CRT PROGRAMMING	I					
TEMPORARY PACEMAKER IMPLANTATION	III					
PERMANENT PACEMAKER IMPLANTATION	II					
ICD/CRT IMPLANTATION	I					
ELECTROPHYSIOLOGICAL STUDIES	I					
ELECTROPHYSIOLOGICAL INTERVENTIONS	I					
ELECTRICAL CARDIOVERSION	III					
PERICARDIOCENTESIS	III					

Swiss cardiology training program

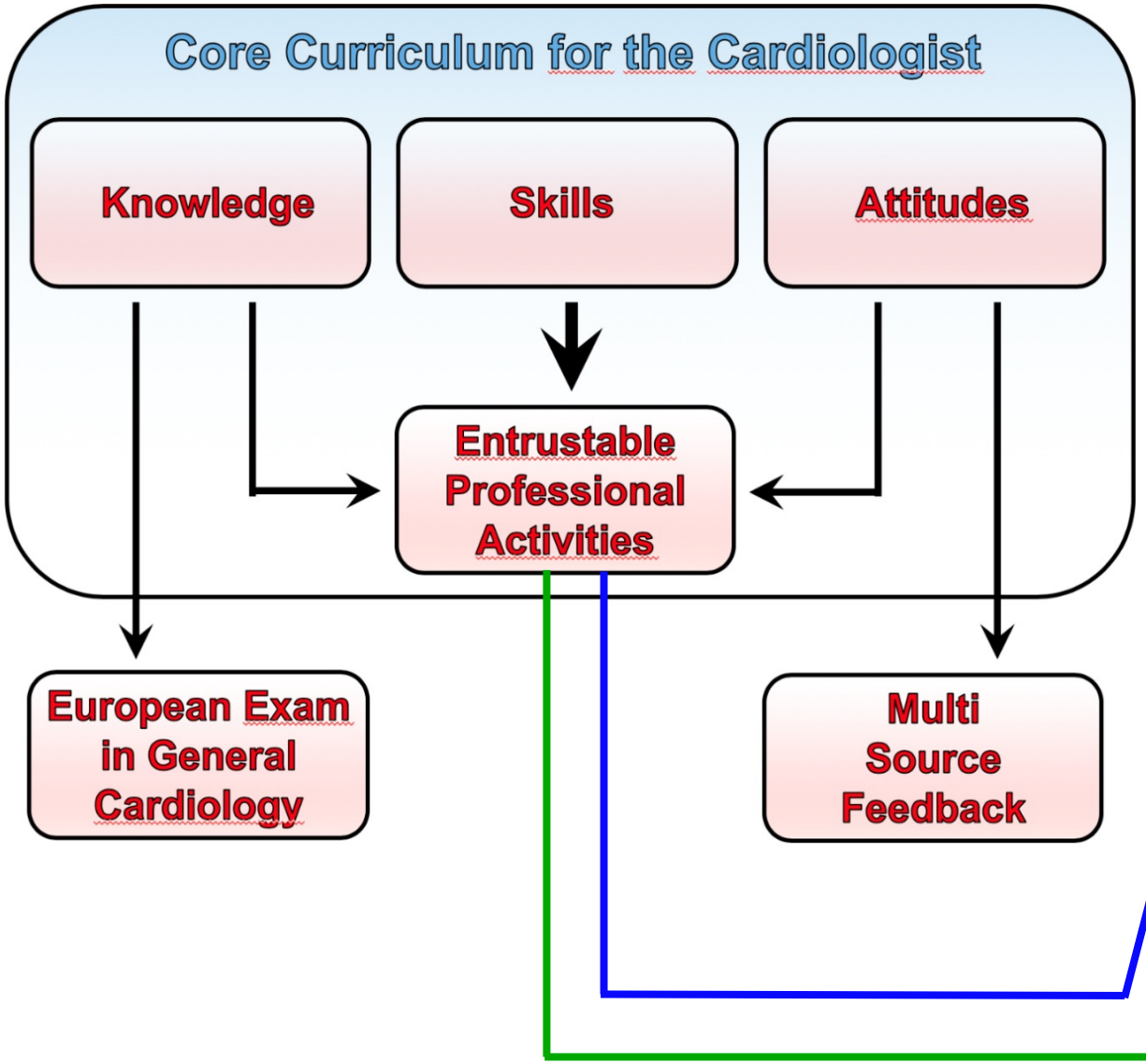
SIWF FMH
ISFM

Facharzt für Kardiologie

Weiterbildungsprogramm vom 1. Juli 2022

Akkreditiert durch das Eidgenössische Departement des Innern: 31. August 2018

Supervision and assessment with EPAs



Ad hoc assessment

'Why don't we use the current situation for an evaluation of clinical competence'

Planned assessment

'I still need another assessment to complete the competence profile in my curriculum'

Optimizing assessments with EPAs

EPA

Clinical Teaching Situation

Direct Observation

Adjusted teaching
Individual support

Mobile Application

4 Click Rating Process

Trainee2

Welcome back Beta.

New Assessment

My Profile

My Learning Goals

My Statistics

Back-end

Data Allocation to EPAs

Clinical Competency Committee (CCC)

and/or

Algorithm

Mobile Application

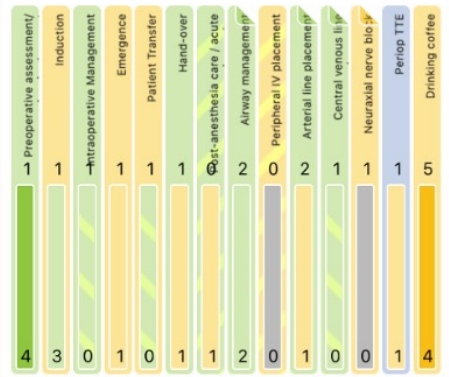
Individual EPA Profile

Profile

Bob Beta

trainee2@fromlabs.com

Rhythm disorders



Documenting assessments with EPAs

prEPAred-Assessment System

Self-directed Learning

„Precision Medical Education“

How to work with EPAs

For trainers

Do's	Don'ts
Define the EPAs that are feasible and relevant for your setting; any clinical situation is an opportunity for an assessment	Don't think you are on your own; share challenges, tips, and tricks with peers
Use the Knowledge/Skills/Attitudes section of the EPAs as a resource for specific feedback	Don't use the Knowledge/Skills/Attitudes section as a checklist
Integrate the assessment real time in your daily work	Don't postpone the assessment
When observing a trainee always look for knowledge and attitudes, not only skills	Don't assess manual/technical skills only
Use your expert judgement to rate the level of the trainee's independence	Don't worry about subjectivity

For trainees

Do's	Don'ts
Integrate the assessment in the workflow	Don't postpone assessments
Ask your trainer to rate the level of independence for every EPA you perform - and the reason for the level	Don't only ask for ratings in EPAs you are already competent in
Ask all your trainers to rate you at several occasions	Don't only ask for ratings from your favourite trainer
Identify the relevant EPAs for each setting	
Use your EPA profile for driving your learning and completing your competence	
Use Knowledge/Skills/Attitudes section of the EPAs to guide you in your training	

How to work with EPAs

Key message 1

Perform ad hoc assessments in the clinical context

How to work with EPAs

Key message 2

Use prEPAred as information resource

How to work with EPAs

Key message 3

Use prEPAred for rapid documentation

How to work with EPAs

Key message 4

Use competence profile for appraisal interview

Thank you for your attention