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# NATIONAL INSTITUTE FOR HEALTH SPECIALTIES

## NIHS Entrustable Professional Activities (EPAs) for Specialty Education in Cardiology

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## **Cardiology**

### **EPA 1: Managing the on-call duties of Cardiology**

Key Features: This EPA focuses on managing the workload and acuity of afterhours cardiology call.

- This includes:
  - prioritizing amongst requests for assessment and consultation, supporting junior residents, identifying patients that need urgent attention, applying knowledge of the local institution, its protocols and resources, and seeking assistance as required.
  - accepting and providing handover of patient care.
  - Good documentation of patients triaged and seen in ER and those admitted to CCU
- This EPA should be observed at least twice within the first month of cardiology call, mix of weeknight and weekend.

#### Assessment Plan:

Direct and indirect observation with documentation review by supervisor with input from other health care professionals (e.g., staff that was on call, junior residents, cardiology specialists, nursing coordinator, interventionist, ER physician, etc.)

Assessment form collects information on:

- Complexity of call: low; medium; high
- Type of call: weeknight, weekday; weekend

#### Basis for formal entrustment decisions:

- Collect 2 observations of achievement.

When is unsupervised practice expected to be achieved: F1 - Junior fellow

#### Relevant Milestones:

- 1** P 1.1 Respond punctually to requests from other health care professionals
- 2** COL 1.3 Communicate effectively with physicians and other health care professionals
- 3** ME 1.5 Prioritize among patients based on clinical acuity
- 4** ME 1.4 Recognize urgent problems and seek assistance, as needed
- 5** L 2.1 Apply knowledge of local protocols and resources
- 6** COL 1.1 Demonstrate respect for team members
- 7** S 2.3 Supervise and support learners to ensure they work within their limits
- 8** COL 3.2 Summarize and prioritize patient issues for handover to an accepting physician
- 9** P 1.1 Complete assigned responsibilities

## **Cardiology**

### **EPA 2: Assessing and providing initial management for patients with common acute cardiology presentations**

Key Features: This EPA focuses on the application of Internal Medicine competencies related to clinical assessment and decision making to the care of patients with common acute cardiology presentations.

- This EPA will be observed in the inpatient setting (ward, emergency etc.) and address the junior fellow.

#### Assessment Plan:

Direct observation by cardiologist, or entrusted fellow.

Assessment form collects information on:

- Presentation: chest pain; dyspnea; loss of consciousness; palpitation/rhythm disturbances

#### Basis for formal entrustment decisions:

Collect 3 observations of achievement.

- At least 3 different presentations
- At least 1 observation by a Cardiologist

When is unsupervised practice expected to be achieved: F1

#### Relevant Milestones:

- 1** ME 2.1 Determine the acuity of the issue and establish priorities for patient care
- 2** ME 2.2 Elicit a history and perform a relevant physical exam in a time – effective manner
- 3** COM 2.3 Seek and synthesize relevant information from other sources
- 4** ME 2.2 Develop a differential diagnosis
- 5** ME 2.2 Select and/or interpret appropriate investigations
- 6** ME 2.2 Focus the clinical encounter performing it in a time-effective manner, without excluding key elements
- 7** ME 2.4 Develop and implement initial management plans
- 8** ME 2.3 Establish goals of care
- 9** COM 5.1 Document the clinical encounter to convey clinical reasoning and the rationale for decisions and/or recommendations

## **Cardiology**

### **EPA 3: Assessing and providing initial management for patients with life-threatening problems, seeking assistance when appropriate**

Key Features: This EPA focuses on the recognition, assessment, and initial resuscitation of patients with medical emergencies.

- timely and appropriate recognition of the need for additional assistance,
- decision regarding appropriate disposition of the patient
- application of knowledge of the local institution, its protocols and resources.

#### Assessment Plan:

Direct observation and/or case review by supervisor or entrusted fellow

Assessment form collects information on:

- Presentation (select all that apply): arrhythmia; hemodynamic compromise; STEMI; respiratory distress.

#### Basis for formal entrustment decisions:

Collect 2 observations of achievement.

When is unsupervised practice expected to be achieved: F1

#### Relevant Milestones:

- 1** ME 2.1 Recognize instability and medical acuity in a clinical presentation
- 2** P 1.1 Work within personal limitations, asking for assistance as needed
- 3** ME 2.2 Provide assessment and initial stabilization of ABCs
- 4** ME 2.2 Elicit a history and perform a relevant physical exam, in a time- effective manner
- 5** ME 2.2 Select and/or interpret appropriate investigations
- 6** ME 2.4 Develop and implement initial management plans
- 7** ME 3.4 Perform the sequence of cardiac resuscitation as per established protocols
- 8** COL 1.2 Integrate the skills of other health care professionals in the resuscitation
- 9** L 2.1 Apply knowledge of local protocols and resources
- 10** ME 4.1 Determine the appropriate disposition and/or setting for ongoing care

## **Cardiology**

### **EPA 4: Performing the procedural skills of Internal Medicine relevant to Cardiology**

Key Features: This EPA includes all the following: consent; preparation; performance; post-procedural care including documentation; and managing any immediate complications; procedures of obtaining central venous access, placing an arterial catheter, and performing transcutaneous pacing and electrical cardioversion as part of an ACLS protocol.

- This EPA may be achieved in the clinical or simulation setting.

#### Assessment Plan:

Direct observation by supervisor or entrusted fellow

Assessment form collects information on:

- Procedure: obtaining central venous access; placing arterial catheter; performing transcutaneous pacing; using electrical cardioversion
- Setting: clinical; simulation

#### Basis for formal entrustment decisions:

Collect 4 observations of achievement.

- At least 1 of each procedure

When is unsupervised practice expected to be achieved: F1

#### Relevant Milestones:

- 1** ME 3.2 Obtain and document informed consent, explaining the risks and rationale for the procedure
- 2** ME 3.4 Gather and/or manage the availability of appropriate instruments and materials
- 3** ME 3.4 Set up and position the patient for the procedure
- 4** ME 3.4 Maintain universal precautions
- 5** ME 3.4 Perform procedures in a skillful and safe manner, adapting to unanticipated findings or changing clinical circumstances
- 6** ME 3.4 Establish and implement a plan for post-procedure care
- 7** ME 3.4 Recognize and manage complications
- 8** COM 5.1 Document the encounter to convey the procedure and outcome

## **Cardiology**

### **EPA 5: Assessing and providing initial management for patients with undifferentiated cardiac symptoms in the acute care setting**

Key Features: This EPA focuses on the initial diagnostic approach to patients with undifferentiated presentations such as dyspnea, chest pain, palpitations, or loss of consciousness:

- synthesizing the clinical information, interpreting results of investigations, differentiating cardiac from non-cardiac conditions and providing referral, as appropriate.
- This EPA will be primarily observed in the inpatient or emergency room setting; outpatient assessments may be included.

#### Assessment Plan:

Direct observation and/or case review by supervisor

Assessment form collects information on:

- Presentation: dyspnea; chest pain; loss of consciousness; palpitations; undifferentiated troponin rise

#### Basis for formal entrustment decisions:

Collect 5 observations of achievement.

- At least 3 different presentations
- At least 2 different assessors
- At least 1 staff assessor

When is unsupervised practice expected to be achieved: F1

#### Relevant Milestones:

- 1** ME 2.2 Elicit an accurate, relevant history
- 2** COM 2.3 Seek and synthesize relevant information from other sources (e.g. family, medical record)
- 3** ME 2.2 Perform a physical examination relevant to the presentation
- 4** ME 2.2 Interpret the results of investigations in the context of the patient's presentation
- 5** ME 2.2 Select additional investigations, as appropriate
- 6** ME 2.2 Apply the clinical implication of test results, sensitivity/specificity, and pre- and post-test probabilities
- 7** ME 2.2 Develop a differential diagnosis
- 8** ME 2.2 Synthesize clinical information to formulate a summary of the case
- 9** ME 4.1 Determine the need and urgency of referral to another physician
- 10** ME 2.4 Develop and implement initial management plans

- 11** COM 5.1 Document the clinical encounter to adequately convey clinical reasoning and the rationale for decisions and/or recommendations
- 12** COL 1.3 Communicate effectively with physicians and other health care professionals

## **Cardiology**

### **EPA 6: Managing the care of patients with common, uncomplicated cardiac conditions, in the acute care setting**

Key Features: This EPA focuses on the evidence informed medical management of patients with conditions such as acute coronary syndrome, CHF, arrhythmia, or syncope.

- This includes reassessment of the patient's status to assess progress, integration of the results of investigation and adapting initial and ongoing treatment, referral for advanced care as appropriate, and development of a discharge plan, including primary and secondary prevention.

#### Assessment Plan:

Direct observation and case review by supervisor or entrusted fellow

Assessment form collects information on:

- Presentation: uncomplicated ACS; uncomplicated CHF; stable arrhythmias; syncope; undifferentiated elevated troponin

#### Basis for formal entrustment decisions:

Collect 5 observations of achievement:

- At least 3 different presentations
- At least 2 different assessors
- At least 1 staff assessor

When is unsupervised practice expected to be achieved: F1

#### Relevant Milestones:

- 1** ME 1.4 Perform a clinical assessment that addresses all relevant issues
- 2** ME 2.2 Select and/or interpret appropriate investigations
- 3** ME 2.2 Integrate new findings and changing clinical circumstances into the assessment of the patient's clinical status
- 4** S 3.4 Demonstrate an evidence-based approach to clinical management
- 5** ME 4.1 Establish plans for ongoing care, follow-up on investigations, response to treatment and monitoring for disease progression
- 6** ME 4.1 Determine the need and timing of referral to another health care professional
- 7** L 2.1 Demonstrate resource stewardship in clinical care
- 8** COM 5.1 Document the clinical encounter to adequately convey clinical reasoning and rationale for decisions and/or recommendations
- 9** COL 1.3 Consult as needed with other physicians
- 10** HA 1.1 Facilitate timely patient access to services and resources
- 11** HA 1.2 Work with the patient to increase opportunities to adopt healthy behaviors



## **Cardiology**

### **EPA 7: Communicating management plans for common cardiac conditions to patients and families**

Key Features: This EPA focuses on the application of communication skills and strategies to convey information about a cardiac diagnosis, engage the patient and family in shared decision making, and work with them to adopt healthy behaviors.

- This includes simple and complex discussions. An example of a simple discussion is a discussion about the management of acute coronary syndrome. Examples of complex discussions include disclosure of a safety incident or medical error, and discussions about end of life.

#### Assessment Plan:

Direct observation by supervisor

Assessment form collects information on:

- Setting: clinical; simulation
- Type of discussion: simple; complex

#### Basis for formal entrustment decisions:

Collect 2 observations of achievement:

- At least 1 complex discussion

When is unsupervised practice expected to be achieved: F1

#### Relevant Milestones:

- 1** COM 1.1 Develop trusting and supportive relationships with patients and families
- 2** COM 3.1 Convey information about medical course and management plan clearly and accurately
- 3** COM 3.1 Use appropriate language and avoid medical jargon
- 4** COM 3.1 Use strategies to verify and validate the patient's and/or family's understanding
- 5** COM 1.5 Recognize when strong emotions (e.g. fear, anger, anxiety, sorrow) are impacting an interaction and respond appropriately
- 6** ME 2.3 Establish goals of care in collaboration with the patient and family
- 7** COM 4.3 Use communication skills and strategies that help the patient make informed decisions
- 8** COM 4.3 Answer questions from the patient and/or family
- 9** COM 4.1 Communicate in a manner that is respectful, non-judgmental and culturally aware
- 10** HA 1.3 Work the patient to increase opportunities to adopt healthy behaviors

## **Cardiology**

### **EPA 8: Leading the inpatient team**

Key Features: This EPA focuses on the efficient management of an inpatient service in the role of the senior fellow.

- This includes organizing the daily workload for the medical team, working effectively with the interprofessional team, coordinating patient management and discharge plans and using available resources judiciously.
- At this stage, this EPA does not include the role of the most responsible physician for medical decisions.
- The observation of this EPA is not based on a single patient encounter, but rather on the fellow performance over a period of at least one week.

Assessment Plan:

Direct and indirect observation by supervisor, of at least one week of clinical activity, with input from other team members and health professionals (nurse, clinical assistant, other health professionals, other residents, or students)

Use assessment form.

Basis for formal entrustment decisions:

Collect 2 observations of achievement.

When is unsupervised practice expected to be achieved: F3

Relevant milestones:

- 1** ME 1.5 Carry out professional duties in the face of multiple, competing demands
- 2** COL 1.2 Delegate responsibilities to members of the health care team appropriate to their scope of practice and level of expertise
- 3** ME 2.4 Develop and implement patient centered discharge and follow-up plans
- 4** S 3.4 Demonstrate an evidence-based approach to clinical management
- 5** ME 4.1 Coordinate investigation, treatment and followup when multiple physicians and health care professionals are involved
- 6** L 2.1 Allocate health care resources for optimal patient care
- 7** P 1.1 Respond punctually to requests from patients or other health care professionals
- 8** COL 1.3 Communicate effectively with physicians and other health care professionals
- 9** P 1.1 Exhibit appropriate professional behaviors

## **Cardiology**

### **EPA 9: Preparing patients for cardiac tests and procedures**

Key Features: This EPA focuses on applying knowledge regarding the risk, benefits, indications, and contraindications of cardiac interventions to optimize patients for a test or procedure and using communication skills and strategies to help the patient make an informed decision.

#### Assessment Plan:

Direct observation or case review by supervisor

Assessment form collects information on:

- Type of procedure: temp wire; pericardiocentesis; left heart angiogram +/-PCI; TEE; cardioversion; right heart catheter
- Case complexity: none; patient unable to give consent; language barrier; other issue
- Portion observed: case review; consent discussion.

#### Basis for formal entrustment decisions:

Collect 4 observations of achievement.

- At least 1 each of temp wire, pericardiocentesis and left heart angiogram
- At least 1 complex issue
- At least 2 direct observations of consent discussion

When is unsupervised practice expected to be achieved: F1

#### Relevant milestones:

- 1** ME 2.2 Integrate and synthesize clinical information to assess clinical status, peri-procedural risk and opportunities for risk mitigation
- 2** ME 1.3 Apply knowledge of the indications, techniques and complications of cardiac tests and procedures
- 3** ME 2.2 Assess a patient's capacity to provide consent
- 4** ME 3.2 Explain the risks and benefits of and the rationale and alternatives for a proposed test or procedure
- 5** COM 3.1 Use strategies to verify and validate the patient's and/or family's understanding
- 6** COM 3.1 Use appropriate language and avoid medical jargon
- 7** COM 4.3 Use effective communication skills and strategies
- 8** COM 4.3 Answer questions from the patient and/or family
- 9** COM 5.1 Document the consent discussion in an accurate and complete manner, as appropriate

## **Cardiology**

### **EPA 10: Acquiring standard images and measurements for transthoracic echocardiograms, and recognizing severe abnormalities**

Key Features: This EPA focuses on the performance of transthoracic echocardiography to identify conditions such as pericardial effusion, LV and/or RV dysfunction, wall motion abnormalities, valvular abnormalities or aortic abnormalities.

- This EPA includes the technical skills of TTE as well as interpretation of those results, and communication with the treating physician.
- This EPA does not include managing the condition.
- The observation of this EPA is divided into two parts:
  - acquiring standard images
  - recognizing severe abnormalities

#### Assessment Plan:

##### *Part A: Image acquisition*

Direct observation by supervisor or echo technician

Assessment form collects information on:

- Setting: bedside; echo lab

#### Basis for formal entrustment decisions:

Collect 5 observations of achievement

##### *Part B: Interpretation*

Review of images and report by supervisor or echo technician

Assessment form collects information on:

- Role in procedure: image acquisition; image interpretation; both
- Diagnosis: normal heart; pericardial effusion; ventricular dysfunction; valvular abnormalities; aortic dilation; other abnormality - indicate diagnosis (write in):

#### Basis for formal entrustment decisions:

Collect 5 observations of achievement

- A range of abnormal findings
- At least 2 observers

When is unsupervised practice expected to be achieved: F1

#### Relevant Milestones:

##### *Part A: Image acquisition*

- 1** ME 1.3 Apply knowledge of cardiovascular anatomy, physiology and pathophysiology
- 2** ME 1.3 Apply knowledge of the physical principles of ultrasound, including 2D and Doppler echocardiography

- 3** ME 3.4 Adjust echocardiographic instrument settings appropriately to optimize image quality
- 4** ME 3.4 Obtain standard echocardiographic parasternal, apical, and subcostal views
- 5** ME 3.4 Monitor patient comfort and safety, and adjust the procedure as needed
- 6** COM 5.1 Record high quality images of significant findings

*Part B: Interpretation*

- 7** ME 1.3 Apply knowledge of cardiovascular anatomy, physiology and pathophysiology
- 8** ME 2.2 Recognize clinically significant findings in a transthoracic 2D- echocardiogram
- 9** ME 3.4 Assess the quality and validity of the study, and any impact on the diagnostic interpretation
- 10** ME 3.4 Summarize findings of clinical relevance, and suggestions for further testing and/or management as appropriate
- 11** COM 5.1 Provide clear, concise and accurate reports of diagnostic testing in a timely fashion
- 12** COM 5.1 Communicate critical results urgently, as needed

## **Cardiology**

### **EPA 11: Teaching and supervising junior learners**

Key Features: This EPA focuses on the informal teaching that occurs in the clinical (bedside) setting, and includes providing clinical supervision and teaching, and ensuring safe patient care.

- This includes delegation of tasks to other fellows, residents and interns and may include administrative duties relevant to organization of the medical team.

#### Assessment plan:

Direct observation by supervisor, incorporating junior learner feedback.

Assessment form collects information on:

- Setting (write in):

#### Basis for formal entrustment decisions:

Collect 2 observations of achievement.

When is unsupervised practice expected to be achieved: F2

#### Relevant Milestones:

- 1** COL 2.1 Delegate tasks and responsibilities in an appropriate and respectful manner
- 2** S 2.1 Be a positive role model
- 3** S 2.2 Create a positive learning environment
- 4** S 2.3 Provide opportunities for appropriate graded clinical responsibility
- 5** S 2.3 Be available and accessible to junior learners
- 6** S 2.4 Identify the learning needs and desired learning outcomes of others
- 7** S 2.4 Provide clinical teaching and/or other informal learning activities
- 8** S 2.5 Provide feedback to enhance learning and performance
- 9** P 1.1 Intervene when behaviors toward colleagues and/or learners undermine a respectful environment

## **Cardiology**

### **EPA 12: Detecting significant findings through physical examination**

Key Features: The focus of this EPA is the integration of cardiovascular anatomy, physiology and pathophysiology with physical examination skills to identify and recognize the significance of clinical findings.

- The observation of this EPA must occur in patients with abnormal findings on clinical exam and must be based on the entirety of the examination (i.e., not individual milestones).
- The observation of this EPA must occur on patients not known to the fellow.

#### Assessment Plan:

Direct observation by supervisor.

Use assessment Form.

#### Basis for formal entrustment decisions:

Collect 2 observations of achievement:

- At least 2 observers

When is unsupervised practice expected to be achieved: F1

#### Relevant Milestones:

- 1** COM 1.2 Optimize the physical environment for patient comfort, dignity, privacy, and safety
- 2** ME 1.3 Apply knowledge of cardiovascular anatomy, physiology and pathophysiology
- 3** ME 2.2 Assess the JVP
- 4** ME 2.2 Assess carotid waveform and peripheral pulses
- 5** ME 2.2 Assess blood pressure in both arms
- 6** ME 2.2 Inspect and palpate the precordium
- 7** ME 2.2 Evaluate heart sounds
- 8** ME 2.2 Evaluate systolic and/or diastolic murmurs, including maneuvers for dynamic auscultation as appropriate (e.g. positional change, Valsalva strain)
- 9** ME 2.2 Perform a relevant focused exam of the chest, abdomen and extremities
- 10** ME 2.2 Interpret the findings of the physical exam in the context of the patient's presentation

## **Cardiology**

### **EPA 13: Assessing and providing initial management for patients with complex cardiac conditions in the acute care setting**

Key Features: This EPA focuses on the clinical assessment, interpretation of diagnostic investigations and implementation of a management plan for a broad range of acute complex cardiac conditions.

- Complex conditions may include complex cardiac disease or a cardiac condition with multiple active comorbidities.
- This includes consultation/referral with other health care professionals, as needed, and communication of the plan to the patient and family.
- This EPA may be observed in the CCU, ER or with a telephone consultation.

#### Assessment Plan:

Direct observation and/or case review by supervisor

Assessment form collects information on:

- Presentation (select all that apply): complicated ACS; refractory heart failure; shock; adult congenital heart disease; pregnancy; multivalve disease; significant complications from procedures; unstable rhythm abnormality; pulmonary hypertension; end stage cardiac disease.

#### Basis for formal entrustment decisions:

Collect 7 observations of achievement:

- At least 5 different presentations
- At least 3 observers

When is unsupervised practice expected to be achieved: F2/3

#### Relevant milestones:

- 1** ME 1.4 Perform a clinical assessment that addresses all relevant issues
- 2** ME 2.2 Select and/or interpret appropriate investigations
- 3** ME 3.3 Balance risk, effectiveness and priority of interventions in the presence of multiple co-morbidities and/or other features of case complexity
- 4** S 3.4 Integrate best evidence and clinical expertise into decision-making
- 5** COL 1.3 Integrate the patient's perspective and context into the care plan
- 6** ME 2.4. Develop and implement management plans that consider all of the patient's health problems and needs
- 7** HA 1.1 Identify barriers to access and care for individual patients
- 8** ME 4.1 Determine the need and urgency of referral to another physician
- 9** ME 4.1 Establish plans for ongoing care, follow-up on investigations, response to treatment and/or monitoring for disease progression



- 10** COM 4.3 Use communication strategies and skills that help the patient make informed decisions
- 11** COL 1.3 Work effectively with other health care professionals to plan and provide integrated care

## **Cardiology**

### **EPA 14: Providing ongoing management for patients with complex cardiac conditions in the acute care setting**

Key Features: This EPA focuses on clinical assessment, evidence informed decision making and judicious use of health care resources.

- Examples include patients with multiple active comorbidities; complicated ACS; refractory heart failure; ACHD; pregnancy; multivalvular disease; significant complications from procedures; unstable arrhythmias; pulmonary hypertension; and end stage cardiac disease.
- This EPA requires consideration of the patient's treatment goals, interactions between different diseases and treatments, consideration of multimorbidity and frailty and, often, coordination with other physicians and health care professionals.
- This EPA may be observed in the cardiology ward or CCU.

#### Assessment Plan:

Direct observation and/or case review by supervisor

Assessment form collects information on:

- Presentation (select all that apply): complicated acute coronary syndrome; refractory heart failure; shock; adult congenital heart disease; pregnancy; multivalve disease; significant complications from procedures; unstable rhythm abnormalities; pulmonary hypertension; end stage cardiac disease.

#### Basis for formal entrustment decisions:

Collect 5 observations of achievement:

- At least 4 presentations
- At least 3 observers

When is unsupervised practice expected to be achieved: F3

#### Relevant milestones:

- 1** ME 1.4 Perform a clinical assessment that addresses all relevant issues
- 2** ME 2.2 Interpret the results of investigations performed to monitor the condition and/or treatment
- 3** ME 2.2 Synthesize patient information to determine clinical status and/or response to treatment
- 4** ME 2.2 Integrate the patient's other medical problems and current health status into the clinical assessment
- 5** COL 1.3 Integrate the patient's perspective and context into the care plan
- 6** ME 2.4 Adjust management plans based on clinical status and/or response to treatment

- 7** ME 4.1 Determine the need and timing of referral to another physician
- 8** S 3.4 Integrate best evidence and clinical expertise into decision-making
- 9** COM 4.3 Use communication skills and strategies that help the patient make informed decision
- 10** HA 1.3 Incorporate prevention, health promotion and health surveillance into patient interactions
- 11** COL 1.3 Work effectively with other physicians and health care professionals to plan and provide integrated care

## **Cardiology**

### **EPA 15: Providing cardiology consultation for patients admitted to other clinical services**

Key Features: This EPA focuses on the role of the cardiologist as a consultant to other inpatient clinical services, and the distinct patient populations and consult questions in those settings.

- This includes consultations for perioperative assessment and/or management as well as cardiac issues in patients with other reasons for admission to hospital.
- This EPA may be observed in the hospital ward, ICU, or peri-operative setting.

#### Assessment Plan:

Case review by supervisor

Assessment form collects information on:

- Perioperative: yes; no
- Active bleeding/high risk of bleeding: yes; no
- Comorbidity (select all that apply): cancer; bleeding; renal failure; infection; pregnancy; other comorbidity.

#### Basis for formal entrustment decisions:

Collect 3 observations of achievement:

- At least 1 in perioperative setting
- At least 1 involving active bleeding or high risk of bleeding

When is unsupervised practice expected to be achieved: F2

#### Relevant milestones:

- 1** L 4.1 Manage time and prioritize tasks
- 2** ME 1.4 Adapt the clinical assessment to the expectations and boundaries of the consultant role
- 3** S 3.4 Integrate best evidence and clinical expertise into decision making
- 4** ME 2.4 Develop and implement management plans that consider all of the patient's health problems and needs
- 5** COL 3.2 Provide anticipatory guidance for results of outstanding investigations and/or next steps for management
- 6** COL 1.3 Communicate effectively with the consulting service
- 7** COL 2.2 Work effectively with other health care professionals to develop plans for clinical care when there are differences in opinion and/or recommendations
- 8** COM 5.1 Document clinical encounters to convey clinical reasoning and the rationale for decisions and/or recommendations
- 9** P 1.1 Exhibit appropriate professional behaviors

## **Cardiology**

### **EPA 16: Providing the initial cardiology consultation for patients with cardiac conditions in the outpatient setting**

Key Features: This EPA focuses on the setting of the outpatient clinic, and the distinct clinical presentations, patient acuity, and access to medical information and resources that are specific to this setting.

- An important aspect of this EPA is the decision making regarding future plan of care, which may include ongoing follow-up, discharge back to referring physician, referral to another physician or admission.
- This EPA may be observed in the cardiology clinic, fellow longitudinal clinic, or any specialized clinic (e.g., heart function clinic; congenital heart disease clinic; cardiac rehabilitation setting).

#### Assessment Plan:

Direct observation and/or case review by supervisor

Assessment form collects information on:

- Presentation (select all that apply): pericardial; myocardial; coronary; valve; vascular; conduction/arrhythmia; congenital; perioperative; non-cardiac chest pain; pregnancy; end stage cardiac disease.

#### Basis for formal entrustment decisions:

Collect 7 observations of achievement:

- At least 5 different presentations

When is unsupervised practice expected to be achieved: F2/F3

#### Relevant milestones:

- 1** ME 1.4 Perform a clinical assessment that addresses all relevant issues
- 2** ME 2.2 Select, sequence and prioritize investigations based on patient needs and the resources available in the outpatient setting
- 3** S 3.4 Integrate best evidence and clinical expertise into decision-making
- 4** ME 2.4 Develop and implement management plans that consider all of the patient's health problems and needs
- 5** ME 2.4 Determine the setting of care appropriate for the patient's current health care needs, including admission to hospital, ongoing outpatient follow up or discharge to referring physician
- 6** COM 3.1 Convey information about the medical course and management plan clearly and accurately
- 7** COM 5.1 Document consultations to adequately convey clinical reasoning and the rationale for decisions and/or recommendations

**8** HA 1.2 Select relevant patient education resources

## **Cardiology**

### **EPA 17: Providing ongoing management for patients with cardiac conditions in the outpatient setting**

Key Features: This EPA focuses on clinical reassessment and integration of the results of investigations and the patient's clinical response to therapy to monitor and refine ongoing treatment plans in the outpatient setting.

- This EPA includes patients whose condition is complex, and therefore requires consideration of the patient's treatment goals, interactions between different diseases and treatments, consideration of multimorbidity and frailty and, often, coordination with other physicians and health care professionals.
- This EPA may be observed in the cardiology clinic, fellow longitudinal clinic, or any specialized clinic (e.g., heart function clinic, congenital heart disease clinic, cardiac rehabilitation setting).

#### Assessment Plan:

Direct observation and/or case review by supervisor

Assessment form collects information on:

- Presentation (select all that apply): pericardial; myocardial; coronary; valve; vascular; conduction/arrhythmia; congenital; perioperative; non-cardiac chest pain; pregnancy; end stage cardiac disease

#### Basis for formal entrustment decisions:

Collect 5 observations of achievement.

- At least 4 different presentations
- At least 1 patient with congenital heart disease

When is unsupervised practice expected to be achieved: F2/F3

#### Relevant Milestones:

- 1** ME 1.4 Perform a clinical assessment that addresses all relevant issues
- 2** ME 2.2 Interpret the results of investigations performed to monitor the condition and/or treatment
- 3** ME 2.2 Synthesize patient information to determine clinical status and/or response to treatment
- 4** ME 2.4 Adjust management plans based on clinical status and/or response to treatment
- 5** ME 2.4 Develop a plan for management, which may include continuation of current treatment, change in therapy, escalation of therapy or a palliative approach
- 6** ME 4.1 Determine the need and timing of referral to another health care professional
- 7** ME 4.1 Determine the frequency and timing of future investigations and visits

- 8** COL 3.1 Determine when care should be transferred back to the primary health care professional
- 9** S 3.4 Integrate best evidence and clinical expertise into decision-making
- 10** COM 4.3 Use communication skills and strategies that help the patient make informed decisions
- 11** HA 1.3 Incorporate prevention, health promotion and health surveillance into patient interactions



## **Cardiology**

### **EPA 18: Managing patients who are critically ill or hemodynamically unstable, and providing or arranging for definitive care**

Key Features: This EPA focuses on stabilization, optimization, and development and implementation of a definitive management plan or referral for advanced care.

- This includes patients with cardiogenic shock, advanced/complicated heart failure, induced hypothermia, unstable arrhythmias, and pulmonary hypertension.
- This EPA includes evaluating the indications for and managing induced hypothermia and invasive monitoring such as right heart catheters and intra-aortic balloon pumps and co-managing invasive ventilation and renal replacement therapy. It does not require managing extracorporeal membrane oxygenation (ECMO) or temporary mechanical support independently.

#### Assessment Plan:

Direct observation and/or case review by supervisor

Assessment form collects information on:

- Presentation (select all that apply): resuscitated arrest; complicated acute coronary syndrome (ACS) and its spectrums; shock; life threatening arrhythmias (i.e., brady or tachy); mechanical/anatomical complications; aortic syndromes; acute pericardial disorders; uni- or biventricular failure; valvular dysfunction (native and prosthetic); pulmonary embolism.
- Renal replacement therapy required: yes; no
- Ventilation required: yes; no

#### Basis for formal entrustment decisions:

Collect 5 observations of achievement:

- A range of presentations
- At least 4 different assessors
- At least 2 patients requiring renal replacement therapy
- At least 2 patients requiring ventilation

When is unsupervised practice expected to be achieved: F3

#### Relevant milestones:

- 1** ME 2.2 Focus the clinical encounter, performing it in a time-effective manner without excluding key elements
- 2** ME 2.4 Manage hemodynamic support and monitoring
- 3** ME 2.4 Manage non-invasive and/or invasive ventilation, in collaboration with other specialists
- 4** S 3.4 Integrate best evidence and clinical expertise into decision making

- 5** ME 2.4 Develop and implement management plans for critically ill patients, including providing or arranging for definitive care
- 6** ME 3.1 Integrate planned procedures or therapies into global assessment and management plans
- 7** ME 4.1 Determine the need and urgency of referral to another physician
- 8** COM 3.1 Convey information about diagnosis and prognosis clearly and compassionately
- 9** COL 3.2 Organize the handover of care to the most appropriate physician or health care setting

## **Cardiology**

### **EPA 19: Shared decision making with patients with complex, refractory or end stage cardiac conditions**

Key Features: This EPA focuses on the application of communication skills to help patients and families make complex decisions about their care.

- This includes discussing goals of care and determining appropriate treatment options which may include high risk procedures, end of life care, transition to palliation, refractory symptoms, discontinuation or denial of ICD, denial of advanced HF treatments, or denial of surgery.

#### Assessment Plan:

Direct observation by supervisor  
Use assessment form.

#### Basis for formal entrustment decisions:

Collect 2 observations of achievement.

When is unsupervised practice expected to be achieved: F3

#### Relevant Milestones:

- 1** ME 2.1 Identify patients for whom the burden of disease modifying therapy or investigations is greater than the clinical benefit
- 2** ME 2.3 Recognize and respond to signs that it is time to transition care away from a disease modifying approach
- 3** COM 3.1 Convey information about diagnosis and prognosis clearly and compassionately
- 4** COM 3.1 Use appropriate language and avoid medical jargon
- 5** COM 3.1 Use strategies to verify and validate the patient's and/or family's understanding
- 6** COM 2.1 Gather information about the patient's beliefs, values, preferences, context and expectations with regards to their care
- 7** ME 2.3 Address the impact of the medical condition on the patients' ability to pursue life goals and purposes
- 8** ME 2.3 Establish goals of care in collaboration with the patient and/or family
- 9** COM 1.5 Recognize when strong emotions (e.g., fear, anger, anxiety, sorrow) are impacting an interaction and respond appropriately
- 10** ME 3.1 Select investigations and therapies appropriate to the patient's goals of care
- 11** ME 2.4 Develop and implement management plans that optimize symptom management and support achievement of the patient's goals of care
- 12** ME 2.4 Develop management plans that align with the goals of care

**13** COM 5.1 Document the clinical encounter to accurately reflect the discussion and decisions

## **Cardiology**

### **EPA 20: Supporting lifestyle modification and/or rehabilitation**

Key Features: This EPA focuses on prevention and health promotion.

- This includes risk reduction and optimization of quality of life and functional status as an integrated strategy that considers the patient's other medical conditions and overall goals of care.
- This also includes applying communication skills and working effectively with the patient, and their family as applicable, to encourage the adoption of healthy behaviors.

Assessment Plan:

Direct observation by supervisor

Use assessment form.

Basis for formal entrustment decisions:

Collect 2 observations of achievement.

When is unsupervised practice expected to be achieved: F2

Relevant Milestones:

- 1** P 1.1 Demonstrate respect for patient autonomy
- 2** ME 2.2 Assess risk factors for disease progression as well as a patient's need for health promotion
- 3** ME 2.2 Assess the patient's functional and performance status, and the effect of their underlying condition on their tolerance for physical activity
- 4** ME 2.2 Assess an individual's access to health care, food, security, social support and other social determinants of health
- 5** ME 2.4 Integrate primary and secondary prevention strategies as part of the overall management plan
- 6** COM 4.3 Use communication skills and strategies that help the patient make informed decisions
- 7** HA 1.2 Apply the principles of behavior change during conversations with patients about adopting health behaviors
- 8** HA 1.2 Work with the patient to increase their understanding of their illness and health care needs
- 9** HA 1.2 Select relevant patient education resources
- 10** HA 1.1 Facilitate timely patient access to services and resources

## **Cardiology**

### **EPA 21: Performing transvenous pacing**

Key Features: This EPA includes obtaining informed consent, pre-procedural planning, technical execution of the procedure, and immediate post-procedural care.

- This EPA must be observed in the clinical setting.

#### Assessment Plan:

Direct observation by supervisor

Assessment form collects information on:

- Urgency of procedure: elective; urgent; emergent

#### Basis for formal entrustment decisions:

Collect 2 observations of achievement:

- At least 1 that is not elective

When is unsupervised practice expected to be achieved: F1

#### Relevant milestones:

- 1** ME 3.2 Obtain and document informed consent, explaining the risks and rationale for the procedure
- 2** ME 3.4 Gather and/or manage the availability of appropriate instruments and materials
- 3** ME 3.4 Demonstrate aseptic technique: skin preparation; draping; establishing and respecting the sterile field; hand cleanse, gown and glove
- 4** ME 3.4 Perform the insertion of a transvenous pacemaker, using ultrasound guidance as appropriate
- 5** COL 1.2 Communicate effectively with nurses and/or assistants during the procedure
- 6** P 1.1 Work within personal limitations, asking for assistance as needed
- 7** ME 3.4 Order and review post procedure imaging
- 8** ME 3.4 Adjust device settings
- 9** COM 5.1 Document the procedure
- 10** ME 3.4 Establish and implement a plan for post-procedure care
- 11** ME 3.4 Recognize and manage complications

## **Cardiology**

### **EPA 22: Performing pericardiocentesis**

Key Features: This EPA includes obtaining informed consent, pre-procedural planning, technical execution of the procedure, interpretation of results/findings and immediate post-procedural care.

- This EPA must be observed in the clinical setting.

#### Assessment Plan:

Direct observation by supervisor

Assessment form collects information on:

- Urgency of procedure: elective; urgent; emergent
- Complexity: simple; difficult
- Reason for complexity (write in):

#### Basis for formal entrustment decisions:

Collect 2 observations of achievement:

- At least 1 that is not elective

When is unsupervised practice expected to be achieved: F2/3

#### Relevant milestones:

- 1** ME 3.2 Obtain and document informed consent, explaining the risks and rationale for the procedure
- 2** ME 1.3 Apply knowledge of key anatomic relationships
- 3** ME 3.4 Gather and/or manage the availability of appropriate instruments and materials
- 4** ME 3.4 Demonstrate aseptic technique: skin preparation; draping; establishing and respecting the sterile field; hand cleanse, gown and glove
- 5** ME 3.4 Perform pericardiocentesis, using ultrasound guidance as appropriate
- 6** ME 3.4 Monitor patient comfort and safety, and adjust the procedure as needed
- 7** COL 1.2 Communicate effectively with nurses and/or assistants during the procedure
- 8** P 1.1 Work within personal limitations, asking for assistance as needed
- 9** COM 5.1 Document the procedure
- 10** ME 2.2 Interpret the results of diagnostic investigations in the context of the clinical presentation
- 11** ME 3.4 Establish and implement a plan for post-procedure care
- 12** ME 3.4 Recognize and manage complications

## **Cardiology**

### **EPA 23: Performing elective electrical cardioversion**

Key Features: This EPA focuses on ensuring that the patient is suitable for the procedure, managing or mitigating associated risks (e.g. risk of thromboembolism, appropriate setting and monitoring) and includes obtaining informed consent, providing sedation, technical execution of the procedure, and immediate post-procedural care.

- This EPA must be observed in the clinical setting.

#### Assessment Plan:

Direct observation by supervisor

Use assessment form.

#### Basis for formal entrustment decisions:

Collect 2 observations of achievement.

When is unsupervised practice expected to be achieved: F1

#### Relevant milestones:

- 1** ME 2.2 Perform an assessment of the patient's airway
- 2** ME 2.2 Assess a patient's suitability to proceed with electrical cardioversion
- 3** ME 3.2 Obtain and document informed consent, explaining the risks and rationale for the procedure
- 4** ME 3.4 Select and provide sedation, as appropriate
- 5** ME 3.4 Perform electrical cardioversion
- 6** COL 1.2 Communicate effectively with nurses and/or assistants during the procedure
- 7** COM 5.1 Document the procedure
- 8** ME 3.4 Establish and implement a plan for post-procedure care
- 9** ME 3.4 Recognize and manage complications



## **Cardiology**

### **EPA 24: Performing pulmonary artery catheterization**

Key Features: This EPA includes obtaining informed consent, pre-procedural planning, technical execution of the procedure, interpretation of results/findings and immediate post-procedural care.

- This EPA may be observed in the cath lab or in another clinical setting.

#### Assessment Plan:

Direct observation by supervisor (faculty member or entrusted fellow)

Assessment form collects information on:

- Type of procedure: right heart cath; left heart cath; bedside insertion of PA catheter

#### Basis for formal entrustment decisions:

Collect 1 observation of achievement:

- At least one right heart catheterization or bedside insertion of pulmonary artery catheter

When is unsupervised practice expected to be achieved: F2

#### Relevant milestones:

- 1** ME 3.2 Obtain and document informed consent, explaining the risks and rationale for the procedure
- 2** ME 3.4 Gather and/or manage the availability of appropriate instruments and materials
- 3** ME 3.4 Demonstrate aseptic technique: skin preparation; draping; establishing and respecting the sterile field; hand cleanse, gown and glove
- 4** ME 3.4 Perform the insertion of a pulmonary artery catheter
- 5** COL 1.2 Communicate effectively with nurses and/or assistants during the procedure
- 6** P 1.1 Work within personal limitations, asking for assistance as needed
- 7** ME 3.4 Order and review post procedure imaging
- 8** COM 5.1 Document the procedure
- 9** ME 3.4 Establish and implement a plan for post-procedure care

## **Cardiology**

### **EPA 25: Performing and interpreting transthoracic echocardiography**

Key Features: This EPA focuses on acquiring images for a high quality diagnostic TTE and interpreting findings for the purposes of a comprehensive diagnostic report.

#### Assessment Plan:

Direct observation and/or review of images and report by echo tech or echocardiographer  
Assessment form collects information on:

- Bedside: yes; no
- Images obtained by fellow: yes; no
- Findings (select all that apply): normal heart; cardiomyopathy; ventricular dysfunction; diastolic dysfunction; valvular heart disease; pericardial disease; aortic disease; intracardiac mass; intracardiac shunt; prosthetic valve; other finding

#### Basis for formal entrustment decisions:

Collect 50 observations of achievement:

- At least 5 bedside echocardiograms
- At least 15 with abnormal findings

When is unsupervised practice expected to be achieved: F 2 / F 3

#### Relevant Milestones:

- 1** ME 3.4 Adjust echocardiographic instrument settings appropriately to optimize image quality
- 2** ME 3.4 Obtain standard echocardiographic parasternal, apical, and subcostal views
- 3** ME 3.4 Monitor patient comfort and safety, and adjust the procedure as needed
- 4** COM 5.1 Record high quality images of significant findings
- 5** ME 3.4 Assess the quality and validity of the study, and any impact on the diagnostic interpretation
- 6** ME 1.3 Apply knowledge of cardiovascular anatomy, physiology and pathophysiology
- 7** ME 2.2 Recognize clinically significant findings in a transthoracic echocardiogram
- 8** ME 3.4 Provide interpretation of transthoracic echocardiography
- 9** ME 3.4 Summarize findings of clinical relevance, and suggestions for further testing and/or management as appropriate
- 10** COL 1.2 Communicate effectively with nurses and/or assistants during the procedure
- 11** P 1.1 Work within personal limitations, asking for assistance as needed
- 12** COM 5.1 Provide clear, concise and accurate reports of diagnostic testing in a timely fashion
- 13** COM 5.1 Communicate critical results urgently, as needed

## **Cardiology**

### **EPA 26: Supervising and interpreting exercise stress tests**

Key Features: This EPA focuses on assessing the patient's suitability to undergo exercise stress testing, supervising the procedure to ensure patient safety and quality of results, and providing an interpretation of the investigation.

- This includes identification of critical results, and communication with the responsible physician/clinical team.
- The aspects of interpreting the test and providing a report may be based on images of active studies or teaching file studies.
- The observation of this EPA is divided into two parts: supervising individual tests; reporting a batch of tests.

#### Assessment Plan:

##### *Part A: Supervising stress tests*

Direct observation by supervisor

Assessment form collects information on:

- Indication for testing: ischemia; arrhythmia; functional capacity; exercise prescription; valvular disease
- Study stopped/alterd due to patient factors: yes; no

#### Basis for formal entrustment decisions:

Collect 3 observations of achievement:

- At least 2 studies that had to be altered due to the patient's underlying condition
- At least 2 different assessors

##### *Part B: Reporting stress tests*

Review of a batch of reports by supervisor

Assessment form collects information on:

- Number in batch (write in):
- Number with critical cardiac findings (write in):

#### Basis for formal entrustment decisions:

Collect 5 observations of achievement:

- At least 2 batches with patients with critical cardiac findings

When is unsupervised practice expected to be achieved: F1/2

#### Relevant Milestones:

##### Part A: Supervising stress tests

- 1** ME 2.2 Perform a focused clinical assessment without excluding key elements
- 2** ME 2.2 Assess a patient's suitability to proceed with cardiac stress testing

- 3** ME 3.1 Select the stress test protocol relevant to the clinical question and patient condition
- 4** ME 3.2 Obtain and document informed consent, explaining the risks and rationale for the procedure
- 5** ME 3.4 Monitor patient comfort and safety, and adjust the procedure as needed
- 6** ME 3.4 Modify or adjust the procedure as needed to optimize study quality
- 7** ME 3.4 Manage immediate complications of the procedure, as relevant
- 8** COM 5.1 Communicate critical results urgently, as needed
- 9** COL 1.2 Communicate effectively with nurses and/or technologists during the procedure

Part B: Reporting stress tests

- 10** ME 1.3 Apply knowledge of the principles, strengths and limitations of diagnostic investigations
- 11** ME 1.3 Apply knowledge of the technical components of diagnostic testing including equipment and protocols
- 12** ME 3.4 Assess the quality and validity of the study, and any impact on the diagnostic interpretation
- 13** ME 3.4 Summarize findings of clinical relevance, and suggestions for further testing and/or management as appropriate
- 14** COM 5.1 Provide clear, concise and accurate reports of diagnostic testing in a timely fashion
- 15** COM 5.1 Communicate critical results urgently, as needed

## Cardiology

### EPA 27: Supervising and interpreting nuclear stress tests

Key Features: This EPA focuses on assessing the patient's suitability to stress testing to ensure patient safety and quality of results and providing an interpretation of the investigation.

- This includes identification of critical results, and communication with the responsible physician/clinical team.
- The aspects of interpreting the test and providing a report may be based on images of active studies or teaching file studies.
- The observation of this EPA is divided into two parts: supervising individual tests; interpreting a batch of tests.

#### Assessment Plan:

##### *Part A: Supervising stress tests*

Direct observation by supervisor

Assessment form collects information on:

- Type of stress used (write in):
- Study stopped/altered: yes; no
- If yes, indicate reason (write in):

#### Basis for formal entrustment decisions:

Collect 3 observations of achievement:

- At least 2 studies that had to be altered due to the patient's underlying condition
- At least 2 different observers

##### *Part B: Reporting stress tests*

Review of a batch of reports by supervisor

Assessment form collects information on:

- Number in batch (write in):
- Number with critical cardiac finding (write in):

#### Basis for formal entrustment decisions:

Collect 5 observations of achievement:

- At least 2 batches containing abnormal cardiac findings

When is unsupervised practice expected to be achieved: F2/3

#### Relevant Milestones:

##### Part A: Supervising stress tests

- 1 ME 2.2 Perform a focused clinical assessment without excluding key elements
- 2 ME 2.2 Assess a patient's suitability to proceed with cardiac stress testing

- 3** ME 3.1 Select the stress test protocol relevant to the clinical question and patient condition
- 4** ME 3.2. Obtain and document informed consent, explaining the risks and rationale for the procedure
- 5** ME 3.4 Monitor patient comfort and safety, and adjust the procedure as needed
- 6** ME 3.4 Modify or adjust the procedure as needed to optimize study quality
- 7** ME 3.4 Manage immediate complications of the procedure, as relevant
- 8** COM 5.1 Communicate critical results urgently, as needed
- 9** COL 1.2 Communicate effectively with nurses and/or technologists during the procedure

Part B: Reporting stress tests

- 10** ME 1.3 Apply knowledge of cardiovascular anatomy, physiology and pathophysiology
- 11** ME 1.3 Apply knowledge of the principles, strengths and limitations of diagnostic investigations
- 12** ME 1.3 Apply knowledge of the technical components of diagnostic testing including equipment and protocols
- 13** ME 3.4 Assess the quality and validity of the study, and any impact on the diagnostic interpretation
- 14** ME 3.4 Summarize findings of clinical relevance, and provide suggestions for further testing and/or management as appropriate
- 15** COM 5.1 Provide clear, concise and accurate reports of diagnostic testing in a timely fashion
- 16** COM 5.1 Communicate critical results urgently, as needed

## **Cardiology**

### **EPA 28: Providing reports of resting ECG and ambulatory ECG monitor interpretation**

Key Features: This EPA focuses on providing a high-quality interpretation of 12 lead ECGs and Holter monitor tracings, within a time limit commensurable with usual clinical practice.

#### Assessment Plan:

##### *Part A: ECG*

Supervisor review of a batch of reported ECGs

Assessment form collects information on:

- Total reports (write in):
- Appropriate case mix: yes; no

#### Basis for formal entrustment decisions:

Collect 3 observations of achievement:

- At least 100 reports in batch

##### *Part B: Ambulatory ECG monitor*

Supervisor review of a batch of reported Holter monitor studies.

Assessment form collects information on:

- Total reports (write in):
- Appropriate case mix: yes; no

#### Basis for formal entrustment decisions:

Collect 3 observations of achievement:

- At least 20 reports in batch

When is unsupervised practice expected to be achieved: F2

#### Relevant milestones:

##### Part A: ECGs

- 1** ME 1.3 Apply knowledge of cardiac electrophysiology
- 2** ME 3.4 Assess the quality and validity of the study, and any impact on the diagnostic interpretation
- 3** COM 5.1 Provide clear, concise and accurate reports of diagnostic testing in a timely fashion
- 4** COM 5.1 Communicate critical results urgently, as needed

##### Part B: Ambulatory ECG monitors

- 5** ME 1.3 Apply knowledge of cardiac electrophysiology
- 6** ME 3.4 Assess the quality and validity of the study, and any impact on the diagnostic interpretation

- 7** ME 3.4 Summarize findings of clinical relevance, and provide suggestions for further testing and/or management as appropriate
- 8** COM 5.1 Provide clear, concise and accurate reports of diagnostic testing in a timely fashion
- 9** COM 5.1 Communicate critical results urgently, as needed



## **Cardiology**

### **EPA 29: Performing, interpreting and managing the results of cardiac implantable electronic device (CIED) interrogations**

Key Features: This EPA focuses on the technical skills of device interrogation as well as the expertise of managing implanted cardiac devices.

- This includes identification and appropriate management of critical findings, which may include clinical problems (e.g., pocket infection, atrial fibrillation, heart failure), device problems (e.g., inappropriate therapy, programming issues, battery end of life, need for upgrade or downgrade) and lead problems (e.g., lead dislodgment, lead fracture, sensitivity issues).

#### Assessment Plan:

Direct observation or case and interrogation data review by supervisor (faculty, fellow, other healthcare professionals)

Assessment form collects information on:

- Device: ICD; CRT; pacemaker
- Device manufacturer (write in) :
- Finding (select all that apply): normal: clinical problem; device problem; lead problem

#### Basis for formal entrustment decisions:

Collect 10 observations of achievement:

- At least 2 ICD interrogations
- At least 1 CRT device
- At least 4 with a clinical, device or lead problem
- At least 3 by faculty supervisor

When is unsupervised practice expected to be achieved: F2/3

#### Relevant milestones:

- 1** ME 2.2 Perform a focused clinical assessment without excluding key elements
- 2** ME 1.3 Apply knowledge of device therapies, including equipment and modalities
- 3** ME 3.4 Interrogate permanent pacemakers and implanted devices
- 4** ME 2.2 Interpret the results of diagnostic investigations in the context of the clinical presentation
- 5** ME 2.4 Manage device and/or lead problems
- 6** COM 5.1 Document the encounter to convey the procedure and outcome
- 7** P 1.1 Work within personal limitations, asking for assistance as needed

## **Cardiology**

### **EPA 30: Providing reports of diagnostic coronary angiograms, incorporating adjunctive imaging and physiology results, and right and/or left heart catheterizations**

Key Features: This EPA focuses on assessing the quality of obtained images and/or tracings, identifying clinically relevant findings, interpreting the investigation in the context of the patient and providing an appropriate clinical recommendation.

- This EPA includes evaluating the indications for adjunctive intracoronary physiology and imaging.
- This does not include acquiring technical proficiency for performing these procedures.

#### Assessment Plan:

Review of images and verbal or written report by supervisor

Assessment form collects information on:

- Intracoronary imaging or physiology: yes; no
- Hemodynamic tracings: yes; no
- Post bypass surgery: yes; no

#### Basis for formal entrustment decisions:

Collect 7 observations of achievement:

- At least 2 intracoronary imaging or physiology
- At least 3 hemodynamic tracings
- At least 2 post bypass surgery

When is unsupervised practice expected to be achieved: F2/3

#### Relevant milestones:

- 1** ME 3.4 Assess the quality and validity of the study, and any impact on the diagnostic interpretation
- 2** ME 1.3 Apply knowledge of cardiovascular anatomy, physiology and pathophysiology
- 3** ME 2.2 Recognize clinically significant findings in a diagnostic coronary angiogram
- 4** ME 2.2 Identify indications for adjunctive intracoronary physiology and imaging
- 5** ME 2.2 Interpret the results of diagnostic investigations in the context of the clinical presentation
- 6** S 3.4 Integrate best evidence and clinical expertise into decision making
- 7** ME 2.4 Provide recommendations for further testing and/or management
- 8** ME 4.1 Determine the need and timing of referral for cardiac intervention
- 9** COL 1.2 Consult as needed with other physicians

## **Cardiology**

### **EPA 31: Delivering scholarly teaching to a variety of audiences, including peers, junior trainees, and/or other health professionals**

Key Features: This EPA focuses on the skills of critical appraisal, as well as presentation and teaching skills.

#### Assessment Plan:

Direct observation by Cardiologist

Assessment form collects information on:

- Type of activity: journal club; grand rounds; case presentation; other

#### Basis for formal entrustment decisions:

Collect 2 observations of achievement.

When is unsupervised practice expected to be achieved: F1/2/3

#### Relevant Milestones:

- 1** S 2.4 Identify the learning needs and desired learning outcomes of others
- 2** S 2.4 Develop learning objectives for a teaching activity
- 3** S 3.3 Critically evaluate the integrity, reliability and applicability of health related research and literature
- 4** S 3.4 Integrate best evidence and clinical expertise
- 5** S 2.4 Present the information in an organized manner to facilitate understanding
- 6** S 2.4 Use audiovisual aids effectively
- 7** S 2.4 Provide adequate time for questions and discussion

## **Cardiology**

### **EPA 32: Advancing the discipline and/or patient care through scholarly activity**

Key Features: This EPA may include scholarly activities related to clinical or basic science research, patient safety, quality improvement or education.

- The fellow's involvement in a scholarly activity must include the following: generation of question/hypothesis, literature review, project design, ethics application, data collection, data analysis/statistics, data synthesis and manuscript preparation and/or presentation of work.
- The assessment of this EPA is based on the submission of a completed scholarly project and may also include observation of the presentation of the scholarly work at a local, national, or international meeting.
- This EPA does not need to be accomplished in a unified block or blocks of time but is left to the discretion of the program.

#### Assessment Plan:

Supervisor does assessment based on review of fellow's research project submission.  
Use assessment form.

#### Basis for formal entrustment decisions:

Collect 1 observation of achievement.

When is unsupervised practice expected to be achieved: F2/3

#### Relevant Milestones:

- 1** L 4.1 Organize work to manage clinical, scholarly, and other responsibilities
- 2** S 4.4 Identify, consult, and collaborate with content experts and others in the conduct of scholarly work
- 3** S 4.4 Generate focused questions for scholarly investigation
- 4** S 3.3 Critically evaluate the integrity, reliability, and applicability of health- related research and literature
- 5** S 4.5 Summarize the findings of a literature review
- 6** S 4.4 Select appropriate methods of addressing a given scholarly question
- 7** S 4.2 Identify ethical principles in research
- 8** S 4.3 Actively participate as a research team member, balancing the roles and responsibilities of a researcher with the clinical roles and responsibilities of a physician
- 9** S 4.4 Collect data for a scholarly project
- 10** S 4.4 Perform data analysis
- 11** S 4.4 Integrate existing literature and findings of data collection
- 12** S 4.4 Identify areas for further investigation
- 13** S 4.5 Summarize and communicate the findings of research and scholarly inquiry

**14 P 1.1** Exhibit honesty, integrity and respect for the privacy of clinical information in the conduct of scholarly work

## **Cardiology Transition to Practice**

### **EPA 33: Managing a cardiac intensive care unit**

Key Features: This EPA focuses on the role of the cardiologist leading the delivery of care for patients in a cardiac intensive care unit.

- This includes responsibility for medical decision making across the breadth of clinical scenarios, and includes triaging incoming transfers, overseeing the care of patients in the unit, and managing discharges and transfers out of the unit.
- This also includes clinical administrative aspects such as the judicious use of resources in decisions about bed management and patient flow and facilitating access to diagnostic tests and treatments.
- The observation of this EPA is based on a period of at least one week.

#### Assessment Plan:

Direct and/or indirect observation by supervisor, with input from charge nurse  
Use assessment form.

#### Basis for formal entrustment decisions:

Collect 1 observation of achievement.

When is unsupervised practice expected to be achieved: F3

#### Relevant Milestones:

- 1** L 4.1 Set priorities and manage time to fulfil diverse responsibilities
- 2** ME 1.1 Demonstrate responsibility and accountability for decisions regarding patient care, acting in the role of most responsible physician
- 3** ME 2.4 Assess the need and timing of patient transfer to another level of care
- 4** S 3.4 Integrate best evidence and clinical expertise into decision-making
- 5** L 2.1 Allocate health care resources for optimal patient care
- 6** ME 4.1 Coordinate the involvement of consulting services in patient care
- 7** COL 1.2 Work effectively with the interprofessional team
- 8** COM 1.5 Manage disagreements and emotionally charged conversations
- 9** P 4.1 Manage the mental and physical challenges that impact physician wellness and/or performance in demanding or stressful clinical settings

## **Cardiology Transition to Practice**

### **EPA 34: Managing an inpatient ward service**

Key Features: This EPA focuses on leading the provision of care on a cardiology ward.

- This includes responsibility for medical decision making across the breadth of clinical scenarios and includes overseeing the care of patients and managing admissions, transfers, and discharges.
- This also includes clinical administrative aspects such as the judicious use of resources in decisions about bed management and patient flow and facilitating access to diagnostic tests and treatments.
- The observation of this EPA is based on a period of at least one week.

#### Assessment Plan:

Direct observation and/or case review by supervisor, with input from other health professionals

Use assessment form.

#### Basis for formal entrustment decisions:

Collect 1 observation of achievement.

When is unsupervised practice expected to be achieved: F3

#### Relevant Milestones:

- 1** ME 1.1 Demonstrate responsibility and accountability for decisions regarding patient care, acting in the role of most responsible physician
- 2** S 3.4 Integrate best evidence and clinical expertise into decision-making
- 3** L 2.1 Allocate health care resources for optimal patient care
- 4** L 4.1 Set priorities and manage time to fulfil diverse responsibilities
- 5** L 4.1 Integrate supervisory and teaching responsibilities into the overall management of the clinical service
- 6** COL 1.2 Work effectively with the interprofessional team
- 7** ME 4.1 Formulate and implement plans for discharge that include appropriate ongoing care and follow up

## **Cardiology Transition to Practice**

### **EPA 35: Managing a cardiology consultation service**

Key Features: This EPA includes all aspects of leading a consultation service, including responsibility for the medical care decisions, collaboration with other health care professionals and communication with the patient and family.

- The observation of this EPA is based on a period of at least one week.

#### Assessment:

Direct and/or indirect observation by supervisor

Assessment form collects information on:

- Complexity of consult list: low; medium; high

#### Basis for formal entrustment decisions:

Collect 1 observation of achievement.

When is unsupervised practice expected to be achieved: F3

#### Relevant Milestones:

- 1** L 4.1 Set priorities and manage time to fulfil diverse responsibilities
- 2** COL 1.3 Communicate effectively with the consulting service
- 3** COL 2.2 Work effectively with other health care professionals to develop plans for clinical care when there are differences in opinion and/or recommendations
- 4** ME 1.5 Carry out professional duties in the face of multiple, competing demands
- 5** L 4.1 Integrate supervisory and teaching responsibilities into the overall management of the clinical service
- 6** L 4.2 Run the service efficiently, safely, and effectively



## **Cardiology**

### **EPA 36: Managing longitudinal aspects of care in a clinic**

Key Features: This EPA focuses on the management of a longitudinal outpatient clinic in the role of the physician most responsible for patient care.

- This includes responsibility for the medical care decisions, follow-up on investigations and accessibility in between clinic visits.
- It also includes time management, practice management, and the judicious use of resources in the outpatient setting.
- The observation of this EPA is not based on a single patient encounter, but rather on the fellow performance over a period of time.

#### Assessment Plan:

Indirect observation by supervisor(s), with input from other health care professionals  
Use assessment form.

#### Basis for formal entrustment decisions:

Collect at least 2 observations at 3-6 month intervals; with at least 1 observation of achievement

When is unsupervised practice expected to be achieved: F1/2

#### Relevant Milestones:

- 1** ME 2.2 Select investigation strategies demonstrating awareness of availability and access in the outpatient setting
- 2** ME 2.4 Formulate treatment plans that are suitable for implementation in the outpatient setting
- 3** S 3.4 Integrate best evidence and clinical expertise into decision-making
- 4** COL 1.3 Provide accurate, timely and relevant written information to the referring/primary care physician
- 5** L 4.1 Manage time effectively in the outpatient clinic
- 6** L 4.1 Review and act on test results in a timely manner
- 7** P 1.1 Respond punctually to requests from patients or other health care professionals

## **Cardiology**

### **EPA 37: Interpreting basic Cardiac CT and Cardiac MRI findings**

Key Features: This EPA focuses on ability to interpret basic imaging modalities used commonly in Cardiology.

- This includes identification of critical results, and communication with the responsible physician/clinical team.
- The aspects of interpreting the test and providing a report may be based on images of active studies or teaching file studies.
- The observation of this EPA is divided into two parts: supervising individual tests; interpreting a batch of tests.

#### Assessment Plan:

##### *Part A: Supervising stress tests*

Direct observation by supervisor

Assessment form collects information on:

- Type of cardiac imaging used (write in):
- Study stopped/altered: yes; no. If yes, indicate reason (write in):

#### Basis for formal entrustment decisions:

Collect 3 observations of achievement:

- At least 4 studies that had to be altered due to the patient's underlying condition
- At least 4 different observers

##### *Part B: Reporting Cardiac CT and cardiac MRI*

Review of a batch of reports by supervisor

Assessment form collects information on:

- Number in batch (write in):
- Number with critical cardiac finding (write in):

#### Basis for formal entrustment decisions:

Collect 5 observations of achievement:

- At least 2 batches containing abnormal cardiac findings

When is unsupervised practice expected to be achieved: F2/F3

#### Relevant Milestones:

##### Part A: Supervising cardiac imaging

- 1** Perform a focused clinical assessment without excluding key elements
- 2** Assess a patient's suitability to proceed with the procedure, HR, claustrophobia etc
- 3** Obtain and document informed consent, explaining the risks and rationale for the procedure

- 4** Monitor patient comfort and safety, and adjust the procedure as needed
- 5** Modify or adjust the procedure as needed to optimize study quality
- 6** Manage immediate complications of the procedure, as relevant
- 7** Communicate critical results urgently, as needed
- 8** Communicate effectively with nurses and/or technologists during the procedure

Part B: Reporting results

- 9** Apply knowledge of cardiovascular anatomy, physiology and pathophysiology
- 10** Apply knowledge of the principles, strengths and limitations of diagnostic investigations
- 11** Apply knowledge of the technical components of diagnostic testing including equipment and protocols
- 12** Assess the quality and validity of the study, and any impact on the diagnostic interpretation
- 13** Summarize findings of clinical relevance, and provide suggestions for further testing and/or management as appropriate
- 14** Provide clear, concise and accurate reports of diagnostic testing in a timely fashion
- 15** Communicate critical results urgently, as needed

## Cardiology

### **EPA 38: Acquiring standard images and measurements for transesophageal echo, and recognizing severe abnormalities**

Key Features: This EPA focuses on the performance of transesophageal echocardiography to identify conditions such as valvular abnormalities or aortic abnormalities, possible endocarditis, and left atrial appendage examination.

- This EPA includes the technical skills of TEE as well as interpretation of those results, and communication with the treating physician.
- This EPA does not include managing the condition.
- The observation of this EPA is divided into two parts:
  - acquiring standard images
  - recognizing severe abnormalities.

#### Assessment Plan:

##### *Part A: Image acquisition*

Direct observation by supervisor or echo technician

Assessment form collects information on:

- Setting: bedside; echo lab

#### Basis for formal entrustment decisions:

Collect 5 observations of achievement.

##### *Part B: Interpretation*

Review of images and report by supervisor or echo technician

Assessment form collects information on:

- Role in procedure: image acquisition; image interpretation; both
- Diagnosis: normal heart; valvular abnormalities; aortic dilation; Left atrial appendage thrombus; Other: indicate diagnosis (write in):

#### Basis for formal entrustment decisions:

Collect 5 observations of achievement:

- A range of abnormal findings
- At least 2 observers

When is unsupervised practice expected to be achieved: F3

#### Relevant Milestones:

##### *Part A: Image acquisition*

- 1 Apply knowledge of cardiovascular anatomy, physiology and pathophysiology
- 2 Apply knowledge of the physical principles of ultrasound, including 2D and Doppler echocardiography

- 3 Adjust echocardiographic instrument settings appropriately to optimize image quality**
- 4 Obtain standard transesophageal views**
- 5 Monitor patient comfort and safety, and adjust the procedure as needed
- 6 Monitor need for conscious sedation and possible complications

Part B: Interpretation

- 7 Apply knowledge of cardiovascular anatomy, physiology and pathophysiology**
- 8 Recognize clinically significant findings in echocardiogram**
- 9 Assess the quality and validity of the study, and any impact on the diagnostic interpretation**
- 10 Summarize findings of clinical relevance, and suggestions for further testing and/or management as appropriate**
- 11 Provide clear, concise and accurate reports of diagnostic testing in a timely fashion**
- 12 Communicate critical results urgently, as needed**

