NATIONAL INSTITUTE FOR HEALTH SPECIALITIES

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

Draft version 1

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List of EPAs:

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:

- Case complexity: low; medium; high
- Shift: weeknight, weekday; weekend

Basis for formal entrustment decision:

- Collect 2 observations of achievement in the first month.

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 and ongoing management for patients with acute and common cardiac presentations in the acute care setting

Key Features: This EPA focuses on the application of internal medicine and cardiology competencies related to assessment, diagnostic reasoning, and evidence-informed management of patients presenting with acute and undifferentiated cardiac symptoms, as well as common, uncomplicated cardiac conditions.

- It includes determining acuity, performing focused clinical assessment, synthesizing clinical information from multiple sources, differentiating cardiac from non-cardiac conditions, selecting and interpreting investigations, and initiating management.
- It also includes reassessment of the patient's clinical status, integration of new findings, adaptation of management plans, referral for advanced care as appropriate, and development of discharge and follow-up plans, including primary and secondary prevention.
- This EPA will be primarily observed in the inpatient or emergency room setting; outpatient assessments may be included.
- This EPA addresses the junior fellow.

Assessment Plan:

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

Assessment form collects information on:

- Case mix: chest pain / acute coronary syndrome; dyspnea / congestive heart failure; palpitations / arrhythmias; loss of consciousness (syncope); undifferentiated troponin rise

Basis for formal entrustment decisions:

Collect 4 observations of achievement:

- At least 2 different presentations
- At least 2 different assessors
- At least cardiologist

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 2.1 Determine the acuity of the issue and establish priorities for patient care
3. ME 2.2 Elicit an accurate, relevant history
4. ME 2.2 Perform a physical examination relevant to the presentation
5. COM 2.3 Seek and synthesize relevant information from other sources (e.g. family, medical record)
6. ME 2.2 Develop a differential diagnosis
7. ME 2.2 Select and/or interpret appropriate investigations

8. ME 2.2 Apply the clinical implication of test results, including sensitivity/specificity and pre-/post-test probability
9. ME 2.2 Synthesize clinical information to formulate a summary of the case
10. ME 2.4 Develop and implement initial management plans
11. ME 2.2 Integrate new findings and changing clinical circumstances into the assessment of the patient's status
12. S 3.4 Demonstrate an evidence-based approach to clinical management
13. ME 4.1 Establish plans for ongoing care, including follow-up on investigations, monitoring response to treatment, and disease progression
14. ME 4.1 Determine the need and timing of referral to another physician or healthcare professional
15. ME 2.3 Establish goals of care
16. L 2.1 Demonstrate resource stewardship in clinical care
17. COL 1.3 Communicate effectively and consult as needed with physicians and other healthcare professionals
18. COM 5.1 Document the clinical encounter to adequately convey clinical reasoning and rationale for decisions and/or recommendations
19. HA 1.1 Facilitate timely patient access to services and resources
20. HA 1.2 Work with the patient to increase opportunities to adopt healthy behaviors

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:

- Case mix (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: Insertion of a central venous catheter

Key Features: This EPA includes all the following: obtaining informed consent; preparation; performance of central venous catheter insertion; post-procedural care including documentation; and recognition and management of immediate complications.

- This includes patient selection, appropriate choice of insertion site, use of ultrasound guidance where indicated, and adherence to aseptic technique.
- It also includes ensuring patient safety throughout the procedure and appropriate monitoring during and after insertion.
- 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: insertion of central venous catheter (e.g., internal jugular, subclavian, femoral)
- Setting: clinical; simulation

Basis for formal entrustment decisions:

Collect 3 observations of achievement:

- 2 different anatomical sites
- No more than 1 simulation
- At least 2 different assessors

When is unsupervised practice expected to be achieved: F1

Relevant Milestones:

1 ME 3.2 Obtain and document informed consent, explaining the risks, benefits, and rationale for the procedure
2 ME 3.4 Gather and manage the availability of appropriate equipment and materials
3 ME 3.4 Prepare and position the patient appropriately for the procedure
4 ME 3.4 Maintain strict aseptic technique and universal precautions
5 ME 3.4 Use ultrasound guidance appropriately (where applicable)
6 ME 3.4 Perform central venous catheter insertion in a skillful and safe manner
7 ME 3.4 Adapt technique to anatomical variation or unexpected findings
8 ME 3.4 Confirm appropriate catheter placement (clinical and/or imaging)
9 ME 3.4 Establish and implement a plan for post-procedure care
10 ME 3.4 Recognize and manage immediate complications (e.g., bleeding, pneumothorax, malposition, infection risk)
11 COM 5.1 Document the procedure, findings, and outcome clearly and accurately

Cardiology

EPA 5: 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
- 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 6: 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:

- 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 [write in]
- 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 7: 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

Part B: Interpretation

Review of images and report by supervisor or echo technician

Assessment form collects information on:

- Role in procedure: image acquisition without interpretation; image acquisition with interpretation.
- 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 8: 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 9: 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: 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 10: 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 11 with elements from EPA 34)

EPA 11: Teaching, supervising and leading junior learners in the clinical setting

Key Features: This EPA focuses on informal teaching that occurs in the clinical (bedside) setting, and includes providing clinical supervision, 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.
- It also includes leadership of the clinical team, integrating teaching and supervision into patient care activities, and supporting effective team functioning.
- This includes contributing to the coordination of patient care activities, prioritization of clinical tasks, and facilitating efficient patient flow and use of resources.

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 2.2 Create a positive learning environment
3 S 2.3 Provide opportunities for appropriate graded clinical responsibility
4 S 2.3 Be available and accessible to junior learners
5 S 2.4 Identify the learning needs and desired learning outcomes of others
6 S 2.4 Provide clinical teaching and/or other informal learning activities
7 S 2.5 Provide feedback to enhance learning and performance
8 P 1.1 Intervene when behaviors toward colleagues and/or learners undermine a respectful environment
9 ME 1.1 Demonstrate responsibility and accountability for clinical decisions within the team context
10 L 2.1 Allocate healthcare resources appropriately in the supervision of patient care activities
11 L 4.1 Set priorities and manage time to balance clinical, teaching, and supervisory responsibilities
12 L 4.1 Integrate supervisory and teaching responsibilities into the overall management of the clinical service
13 COL 1.2 Work effectively with the interprofessional team to support patient care and learning

Cardiology

EPA 12: 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 perioperative setting.

Assessment Plan:

Case review by supervisor

Assessment form collects information on:

- Perioperative: yes; no
- Active bleeding/high risk of bleeding: yes; no
- Case mix (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 13: 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 1 observation 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 14: 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:

- 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 15: 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/altered due to patient factors: yes; no

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:

Part A: Supervising stress tests

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

Collect 5 observations of achievement:

- At least 2 batches with patients with critical cardiac findings

When is unsupervised practice expected to be achieved: F2

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 16: 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

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:

Part A: ECG

Collect 3 observations of achievement:

- At least 100 reports in batch

Part B: Ambulatory ECG monitor

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 17: 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: F2

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 18: 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: elective; urgent; emergent
- Case complexity: simple; difficult (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 19: 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 findings

Basis for formal entrustment decisions:

Collect 20 observations of achievement:

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

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

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 20: Assessing and providing initial and ongoing management for patients with complex cardiac conditions in the acute care setting

Key Features: This EPA focuses on clinical assessment, interpretation of diagnostic investigations, and evidence-informed management of patients with a broad range of acute complex cardiac conditions.

- Complex conditions may include advanced cardiac disease or cardiac conditions in the context of multiple active comorbidities, multimorbidity, or frailty.
- It includes determining clinical status, balancing risks and benefits of interventions, integrating evolving clinical findings, and adapting management plans based on response to treatment.
- It requires consideration of patient goals of care, interactions between coexisting diseases and treatments, and judicious use of healthcare resources.
- It includes consultation/referral with other healthcare professionals, as needed, and coordination of integrated care across disciplines.
- It also includes effective communication of the management plan to the patient and family to support informed decision-making.
- This EPA may be observed in the CCU, cardiology ward, emergency room, or via consultation (including telephone consultation).

Assessment Plan:

Direct observation and/or case review by supervisor

Assessment form collects information on:

- Case mix (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 2 observations of achievement:

- At least 2 different presentations
- At least 2 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 Select, interpret, and apply results of investigations in diagnosis and ongoing monitoring
3. ME 2.2 Synthesize patient information to determine clinical status and response to treatment
4. ME 2.2 Integrate the patient's other medical problems, multimorbidity, and overall

health status into the clinical assessment
5. ME 3.3 Balance risk, effectiveness, and priority of interventions in complex clinical situations
6. S 3.4 Integrate best evidence and clinical expertise into decision-making
7. ME 2.4 Develop, implement, and adjust management plans based on evolving clinical circumstances
8. ME 4.1 Determine the need, urgency, and timing of referral to another physician or healthcare professional
9. ME 4.1 Establish plans for ongoing care, including follow-up investigations, monitoring response to treatment, and disease progression
10. COL 1.3 Integrate the patient's perspective and context into the care plan
11. COM 4.3 Use communication strategies and skills that support informed patient decision-making
12. COL 1.3 Work effectively with other physicians and healthcare professionals to plan and provide integrated care
13. HA 1.1 Identify barriers to access and care for individual patients
14. HA 1.3 Incorporate prevention, health promotion, and health surveillance into patient interactions
15. L 2.1 Demonstrate resource stewardship in complex clinical care

Cardiology

EPA 21: 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 regarding 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:

- Case mix (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 2 observations of achievement:

- At least 2 different presentations

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 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 the patient's health problems and needs
5 ME 2.4 Determine the setting of care appropriate for the patient's current heath 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 22: 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:

- Case mix (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: 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 23: 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:

- Case mix (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 4 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 24: 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 1 observation 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 25: 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):

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:

Part A: Supervising stress tests

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

Collect 3 observations of achievement:

- At least 2 batches containing abnormal cardiac findings

When is unsupervised practice expected to be achieved: F3

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 26: 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 5 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: F3

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 27: 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: F3

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 28: 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:

- 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: F3

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 29: 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):

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:

Part A: Supervising stress tests

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

Collect 5 observations of achievement:

- At least 2 batches containing abnormal cardiac findings

When is unsupervised practice expected to be achieved: 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 30: 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

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:

Part A: Image acquisition

Collect 5 observations of achievement.

Part B: Interpretation

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


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