The European Examination in General Cardiology for the UK (EEGC-UK)

Revised May 2020

Contents

Background

The European Examination in General Cardiology (EEGC) is a joint venture between the Union of European Medical Specialists (UEMS), the European Society of Cardiology (ESC) and the participating National Cardiac Societies, including the British Cardiovascular Society (BCS). It is a high-quality test of knowledge for cardiology trainees to support training. In the UK, the EEGC is taken in specialty training (ST)5, it can be retaken in ST6 and ST7 if necessary, and is approved by the GMC as a requirement for CCT.

The examination is designed to determine whether a trainee has gained sufficient knowledge of general cardiology for independent specialist practice; the score is not used to rank candidates or to determine their suitability for advanced training. This knowledge covers all aspects of cardiovascular medicine including general aspects of the 'advanced' curricular areas. The EEGC is only one component of the assessment strategy for trainee specialists in cardiology and sits alongside workplace-based techniques, logbooks and other indications of professional development. It is not an exit exam and not an assessment of overall competence.

A satisfactory performance in the EEGC is required before completion of training. Trainees who fail to achieve this standard on the first sitting should usually proceed with their training provided other elements of their performance are judged to be satisfactory.

Exam development

Development of the exam starts with a question writing meeting at the ESC Congress in August. Countries register in September and confirm the cities where the exam will be sat in October. UK candidates contact the BCS education team (Education@bcs.com) from November of their ST5 year to arrange registration. The EEGC Board meets in January, prior to the second question writing meeting of the year. In February, questions are selected equally from each of the 5 sections: general cardiology, valvular or myocardial disease, ischaemic heart disease, arrhythmias, adult congenital heart disease or non-invasive cardiology. 70% contain only text, 20% contain still images and 10% include video clips. The standard setting group reviews each question using a modified Angoff method to estimate its difficulty, and their collated scores inform the final pass mark. This process is repeated in the UK because of the UK-specific questions. In May, the final exam of 120 questions is reviewed by the EEGC Board chair and chair of the standard setting group to ensure that there are no errors before the exam is sat on computers at local test centres over 3 hours in June. 6 of the 120 questions that UK candidates sit are clearly identified as specific to UK guidance or law.

Registration for the EEGC

Enrolment in the UK is managed by the British Cardiovascular Society. Registration usually starts in September and closes in January – the exact dates are published on the BCS website. The exam is open only to cardiology trainees in recognised training programmes who will be in their third or later year of specialty training at the point they sit the exam. It is the responsibility of trainees to provide BCS with the necessary information for registration with PearsonVUE. The current fee for taking the exam is published on the BCS website. In the event of illness please inform the BCS and your training programme director (TPD) as soon as possible. After the exam, you will be asked to fill in an online feedback form. This information is used by the EEGC Board to improve the exam and has proved to be very helpful.

Exam format

Each question has a short clinical scenario, a single question and five possible answers shown in alphabetical order. The questions are written and edited by groups of cardiologists from a range of countries and subspecialties. The knowledge tested is mapped to the ESC core curriculum for the General Cardiologist in line with current guidelines and published clinical trials. Numerical investigation results are given in SI and/or mass units; commonly used reference ranges are provided in an on-screen document but less commonly used ones are given in the question text.

The exam is sat on computers in PearsonVUE centres around the world. Candidates will receive a registration confirmation email from PearsonVUE, which includes the date, time and place of the exam – candidates must contact the BCS and their TPD if they do not receive this at least a month before the exam. Candidates must arrive at the test centre at least 30 min before the scheduled start of the exam. They must bring a valid photographic identity document to the test centre that has exactly the same forename and surname as on your registration documents. You must follow the instructions of the PearsonVUE staff - no personal items, food or water are allowed in test rooms. Candidates taking the exam in the morning, will not be allowed to leave the test centre until the afternoon exam has started. Any incidents must be reported at the test centre and to the BCS immediately. If there are any special circumstances such as dyslexia, candidates should inform the BCS as soon as possible.

A short explanatory video is shown before the exam starts. The screen has a timer showing how much time has elapsed. The question stem and the options appear on the screen. Any images or video loops will run in a separate window. It is possible to mark questions as unanswered/uncertain to allow you to return to them later.

How to prepare

Cardiology trainees are highly experienced at passing exams during medical school and in postgraduate training. However, the EEGC may be the first exam they have sat in over 4 years. In addition, the challenging nature of cardiology training can allow little time or energy for revision. Finally, personal circumstances and responsibilities change as we get older, and this can pose additional difficulties, and at times conflict, when preparing for the exam.

The BCS e-mails all cardiology trainees about the EEGC in November of their 5th Specialty Training year (ST5)—if you are in ST5 and don't receive this email, you should contact the BCS and inform your training programme director. It is important that trainees understand the structure of the exam and the topics covered. This information is covered in detail in Behind the scenes of the European Examination in General Cardiology and on the BCS, European Society of Cardiology (ESC) and the Union of European Medical Specialists (UEMS) websites.

Adult learners should be independent and self-directed, possessing an internal drive for learning, but trainees need support from their trainers and peers during revision for the EEGC. Trainers can support learning by providing experiences that will allow trainees to 'construct' knowledge based on what they already know. These experiences should be relevant and applicable to real-life situations to optimise learning. Trainees should encourage their colleagues and supervisors to challenge them on topics covered by the exam, for example, asking about relevant guidelines and evidence, to help strengthen their understanding of the topics.

Trainees are encouraged to read widely. There is a plethora of tips available on how to pass the EEGC, but the list of recommended resources for exam preparation may appear daunting. Learning

should be a social and collective process. Trainees are encouraged to talk to colleagues who have passed the EEGC and consider joining or creating a study group of trainees preparing for the exam.

We recommend starting revision early to allow time to use as many resources as possible. The ESC provides a study module on the ESCel platform specifically to help candidates prepare for the EEGC. This is available to all those registered to sit them exam but requires registration with the ESC which is organised by the BCS.

Keeping notes from study materials is advised in order to be able to revise key points from a wide variety of sources. Obtaining study leave to attend courses that provide focused teaching on updated guidelines and general cardiology topics can be extremely useful for revision. Finally, maintaining a healthy study–life balance is crucial to avoid becoming tired and unproductive.

EEGC: Sample questions

Please note that **these example questions are relatively easy** compared to the EEGC and are provided only for illustrative purposes - it is not possible to share past examination papers with candidates. The answers to these Questions are at the end of this document.

Question 1

A 56-year-old man was admitted for elective PCI which was performed using conventional angiography equipment. To reduce her radiation exposure, the operator moved from 50 cm away from the centre of the X-ray tube to 100cm away.

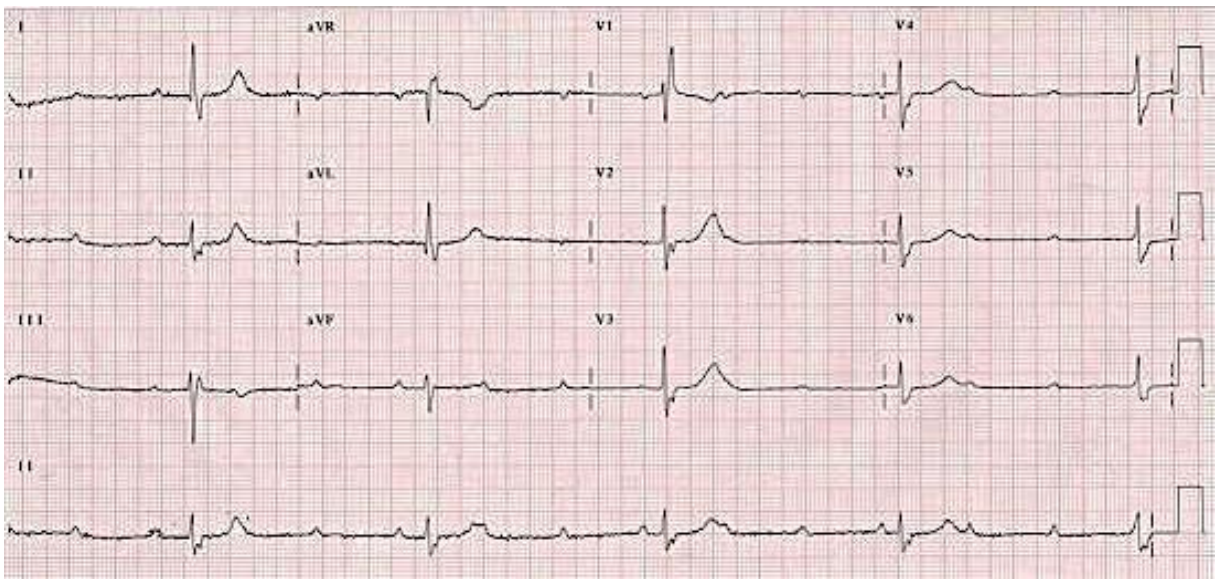
What is the best estimate of the % reduction of her radiation exposure?

A 25%
B 50%
C 66%
D 75%
E 90%

Question 2

A 60-year-old woman presented to the Emergency Department with a 3-week history of fatigue and episodes of pre-syncope. She was previously well, active and had no significant past medical history.

Her ECG is as shown (see image).



What is the most appropriate treatment?

A dual chamber pacemaker in DDDR mode
B dual chamber pacemaker in DDIR mode
C single chamber pacemaker in AAIR mode
D single chamber pacemaker in VVI mode
E single chamber pacemaker in VVIR mode

Question 3

A 25-year-old woman was seen in the cardiology clinic with a 1-month history of recurrent syncope during exercise. She had no other cardiovascular symptoms or significant past medical history and took no regular medication. She was a non-smoker. Her aunt had died suddenly at the age of 32. There was no other family history of cardiovascular disease. Her physical examination was normal.

Her ECG showed inverted T-waves in leads V1-V3, with a PR interval of 180ms and a QTc interval of 440ms. A 24-hour ECG recording revealed several episodes of non-sustained, regular broad complex tachycardia at 180-220 beats per minute with a left bundle branch block configuration. A transthoracic echocardiogram suggested a structurally normal heart but the images were reported to have limited endocardial definition.

What investigation is most likely to help in making the diagnosis?

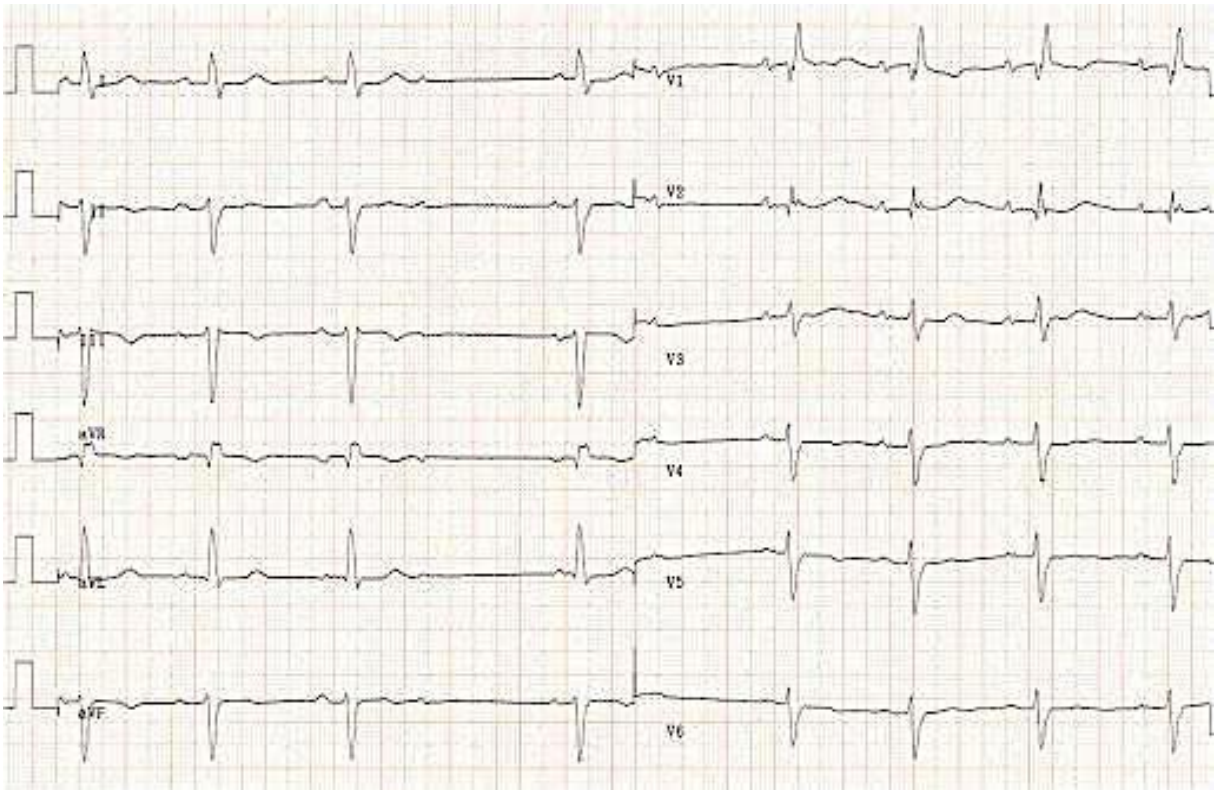
A cardiac CT scan
B cardiac MRI scan
C contrast enhanced transthoracic echocardiogram
D right and left heart catheterisation with biopsy
E myocardial perfusion scan

Question 4

An 85-year-old woman presented with dizzy spells over the previous 3 weeks. The episodes were not related to physical activity and she had no chest pain. She took no regular medication.

On examination her pulse was 40 bpm and irregular. Her blood pressure was 150/90 mmHg when supine and 135/80 mmHg when erect. Her physical examination was otherwise normal.

Her ECG is as shown (see image).



What is the most likely cause of her dizziness?

A carotid sinus hypersensitivity
B intermittent high degree AV block
C orthostatic hypotension
D paroxysmal atrial fibrillation
E sinus node dysfunction

Question 5

A 52-year-old man was reviewed in the out-patient clinic having been lost to follow-up for several years. He had a past history of aortic valve endocarditis 10 years earlier which had been successfully treated with antibiotics. He was asymptomatic but his family doctor had noted a murmur on routine examination.

On examination his pulse was 60 bpm and his blood pressure was 155/55 mmHg. Auscultation revealed systolic and diastolic murmurs at the left sternal border. There was no clinical evidence of heart failure.

An echocardiogram revealed a left ventricular end-systolic dimension of 55mm, an end-diastolic dimension of 65mm, a left ventricular ejection fraction of 53% and an aortic root diameter 46mm. The aortic valve was bicuspid with severe regurgitation and a peak trans-valvular pressure gradient of 30 mmHg.

What is the most appropriate management at this stage?

A aortic valve and root replacement
B aortic valve replacement
C no treatment is indicated
D start bisoprolol
E start ramipril

Question 6

A 28-year-old man with Down's syndrome was seen in the Emergency Department complaining of breathlessness. On examination he had pitting oedema of his ankles and clubbing of his fingers and toes. The JVP was elevated to +7cm. He had a parasternal heave, a widely split second heart sound and a grade 2 systolic murmur loudest in the pulmonary area and at the left sternal border.

A transthoracic echocardiogram suggested an atrio-ventricular septal defect but imaging of the right heart was difficult and it was not possible to obtain an estimate of the right heart pressures.

What physical sign is most suggestive of pulmonary vascular disease?

A clubbing
B elevated JVP
C fixed splitting of second heart sound
D parasternal heave
E peripheral oedema

Question 7

A 42-year-old man attended the Emergency Department of a district hospital with a 60-minute history of central chest pain. On examination he was comfortable and there were no abnormal physical signs. His ECG showed an anterior ST elevation of >2mm in leads V2-V6, I and aVL. He had been given analgesia, 300mg of aspirin and 600mg of clopidogel by the paramedical team. There were no on-site facilities for PCI and emergency transfer was arranged to the regional heart attack centre with a transfer time of 90 minutes.

What is the most appropriate additional treatment to give before transfer?

A full dose fibrinolysis
B glycoprotein IIb/IIIa receptor antagonist
C glycoprotein IIb/IIIa receptor antagonist plus half dose fibrinolysis
D half dose fibrinolysis
E bivalirudin

Question 8

A 46-year-old man attended the Emergency Department with recurrent chest pain. He had presented 2-weeks earlier with a short history of fevers, generalised muscle aches including chest discomfort, shivers and mild diarrhoea. His ECG at that time had shown widespread concave upwards ST elevation and PR segment depression and he had been treated with ibuprofen 400 mg every 6 hours. His symptoms had settled and he had been discharged after 2 days feeling well and pain-free. Ibuprofen was stopped after 7 days. His chest pain had recurred on the day of his attendance. On examination he had a pericardial rub. His ECG was unchanged.

What is the most appropriate treatment?

A azathioprine
B ciclosporin
C colchicine
D ibuprofen
E prednisolone

Question 9

A 75-year-old man attended the Emergency Department with sudden onset of breathlessness. He had a history of chronic obstructive pulmonary disease and had had an inguinal hernia repair two weeks previously.

On examination his pulse was 110 beats per minute in sinus rhythm and his blood pressure was 140/80 mmHg. The JVP was not raised and there was no ankle oedema. Chest auscultation revealed scantly wheeze. His peak expiratory flow rate was 290 L/min. Pulmonary embolism was suspected.

What is the most appropriate next investigation?

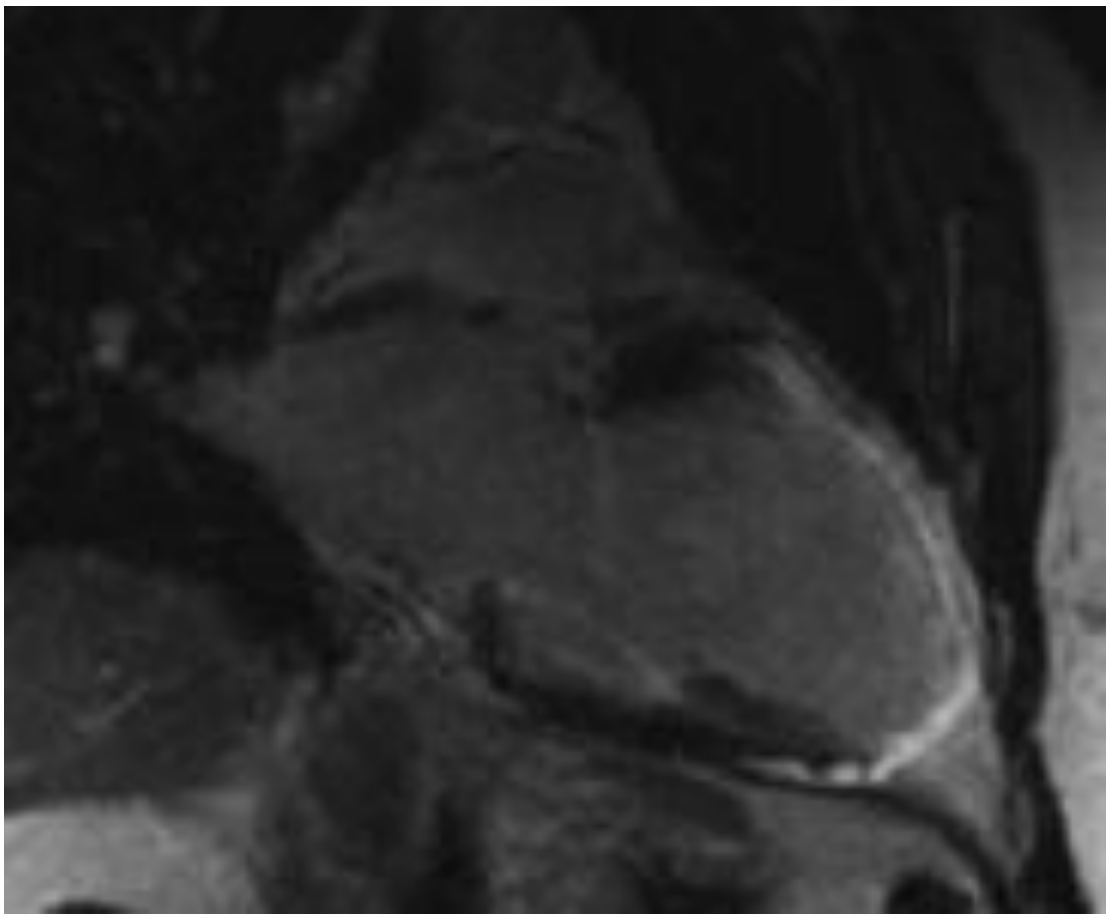
A CT pulmonary angiogram
B D dimer
C invasive pulmonary angiography
D venous Doppler ultrasound of the legs
E ventilation-perfusion lung scan

Question 10

A 57-year-old man was seen in the out-patient clinic with a 6-month history of progressive breathlessness. There was no significant past medical history. On examination he was obese and had mild ankle oedema but no other abnormal physical signs.

Investigations

ECG: sinus rhythm with left bundle branch block
chest X-ray: borderline cardiomegaly
transthoracic echocardiography: images non-diagnostic due to poor windows
cardiac MR scan: see image



What is the most likely diagnosis?

A amyloid heart disease
B dilated cardiomyopathy
C haemochromatosis
D ischaemic heart disease
E sarcoidosis

Results analysis

Candidates are awarded 1 mark for each correct answer – there is no negative marking. The performance of each question in the exam is reviewed, and any questions where <30% or >90% of candidates answered correctly, as well as questions where there was a negative correlation with candidates' performance in the overall exam, are reviewed by representatives of participating national societies to ensure that the answer key was correct, that the question was not misleading and that it tested an important point of knowledge. Any question where there is concern is excluded from the exam. The marks are then passed to the EEGC Board and independent psychometricians to determine the pass mark. This is done using the Hofstee method, which allows for adjustment of the pass mark according to the difficulty of the examination. The exam board has determined that between 75% and 95% of candidates are expected to pass the EEGC. A rectangle is then formed by the 2 SD limits around the mean of the expected pass mark determined by the standard setting group. The final pass mark is at the intersection between the diagonal across this rectangle and the plot of the candidates' performance.

The results are sent to BCS in July and they are sent on to candidates with an indication or their performance in each of the 5 sections of the exam.

Sources of further information

There is no exclusive list or course covering all appropriate sources of information. Trainees are encouraged to read extensively and use the wide variety of available resources.

Examples of good sources of knowledge include:

- Textbooks e.g. ESC Textbook of Cardiovascular Medicine
- Guidelines e.g. from ESC, AHA/ACC, NICE, SIGN, BCS, DVLA
- Educational articles e.g. Education in Heart
- On-line reviews e.g. theheart.org
- On-line educational material e.g. ESCeL ; ESC webinars and cases;
- Academic journals e.g. EHJ; Heart; NEJM; Lancet; Circulation; JACC

Chris Plummer, Sarah Bowater, Jim Hall, Clive Lawson, Georgina Ooues, Susanna Price, Russell Smith, Ian Wilson, Rob Wright

Behind the scenes of the European Examination in General Cardiology
Heart Jun 2019, 105 (11) 889-890; DOI: 10.1136/heartjnl-2018-314495

Georgina Ooues, Chris Plummer, Jim Hall, Clive Lawson, Susanna Price, Russell Smith, Ian Wilson, Rob Wright, Sarah Bowater

How to succeed in the EEGC: a guide for trainees and their trainers
Heart Jul 2019, 105 (13) 1044-1045; DOI: 10.1136/heartjnl-2018-314496

ESC session 2019: The European Examination in General Cardiology: what it is and how to prepare for it. ESC Congress, 02 September 2019
Introduction. General Cardiology. Coronary artery disease. Arrhythmias. Valvular heart disease. Conclusion feedback and discussion.

Answers to sample questions

Question 1	D
Question 2	A
Question 3	B
Question 4	B
Question 5	E
Question 6	A
Question 7	A
Question 8	C
Question 9	B
Question 10	D