



European Certificate in Medical Genetics and Genomics (ECMGG)*

UEMS[†] Section of Medical Genetics (UEMS-SMG)
in collaboration with
the Branch of Medical Genetics and Genomics (BMGG)
of the European Board for Medical Genetics (EBMG)
& the European Society of Human Genetics (ESHG)

January 2020

The Rules, Description and Protocol of the
ECMGG Examination
Scheduled for June 5, 2020
Berlin, Germany

* *The specialty has different names in different countries, see EU document (EU) 2016/790, January 13 2016, and changes in attachment V, Directive 2005/36/EG. In this document, the specialty may be referred to as 'Clinical Genetics'.*

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1. GENERAL BACKGROUND

- 1.1 The European Certificate in Medical Genetics and Genomics (ECMGG), formerly a Diploma in 2019, is a joint development of the UEMS Section of Medical Genetics and the European Board for Medical Genetics (EBMG), Branch of Medical Genetics and Genomics (BMGG). It is intended to be the main knowledge-based assessment tool for Clinical / Medical Genetics and Genomics training in Europe, with the aim of establishing standards in the specialty to world class levels throughout all European countries.
- 1.2 The examination is overseen and supervised by the Examination Committee for the ECMGG of the UEMS-SMG and EBMG, and is also observed by representative(s) of the European Society of Human Genetics (ESHG). The EBMG is the umbrella organization in Europe concerned with standards relating to the disciplines that jointly deliver medical genetic services throughout Europe, namely medical genetics and genomics, genetic nurse counselling, laboratory technicians, and laboratory genetics. The examination is also open to observation by central UEMS officials as appropriate.
- 1.3 The inaugural examination took place in June 2019 as a satellite event of the European Human Genetics Conference in Gothenburg, as a Diploma – the EDMGG. The exam was subject to a rigorous Angoff standard setting process with a full statistical analysis of the outcomes, and final results were approved by the Examination Board. The forthcoming exam is scheduled for June 5 2020 as a satellite event of the European Human Genetics Conference in Berlin, Germany. It will be open to candidates worldwide, including trainee and fully trained Clinical Geneticists. The application system for the ECMGG 2020 will open in January 2020.
- 1.4 No post-nominals are awarded with the ECMGG but the certification is valid for life. It will be valid for practice only in countries where it is ratified and recognized as an official certificate for this purpose.
- 1.5 The UEMS promotes continuing good medical practice through Continuing Medical Education and Continuing Professional Development (CME / CPD) systems and certification. This is strongly recommended for active practitioners; indeed, in many countries it is mandatory through official bodies at national level, usually conducted by a recurring process of record review and appraisal.
- 1.6 CME / CPD will also be possible via the Registry system of the EBMG-BMGG, which is under development. This system will be open to holders of national and/or EU specialty examinations/certificates, subject to approval of eligibility, and will be inclusive of Clinical Geneticists from nations that already have their own approved specialist CME systems, as well as those that do not.
- 1.7 It is planned to open the EBMG-BMGG CME system and associated Registry for Medical Genetics in 2020.

2. WHY TAKE A EUROPEAN EXAMINATION IN MEDICAL GENETICS AND GENOMICS?

- 2.1 The UEMS is striving to harmonize higher medical training across the nations of Europe in order to raise standards to world class levels equitably across its member states, and indeed

beyond. This in turn is aimed at translation into the highest standards of health care service delivery equitably across European nation states.

- 2.2 In the field of Clinical / Medical / Human Genetics and Genomics, the ECMGG thus represents a significant step towards harmonization of standards in this specialty across Europe, with the improvement and equitable provision of services which are currently very varied across Europe. It is anticipated this will contribute to the global mobility of specialists in Clinical / Medical / Human Genetics and Genomics.
- 2.3 To achieve a 'Pass' in the ECMGG examination is an indication that the candidate has a suitable knowledge base to practice as a Clinical Geneticist. However, certification at this level does not in itself equate to having sufficient competences and/or experience to practice Clinical Genetics at senior (consultant) level. Appointment at senior level is subject to formal criteria established by each nation's official medical authorities, which may, or may not, include recognition of the ECMGG.
- 2.4 Recognition of the ECMGG throughout European nations will be sought by the UEMS and the EBMG, something which has already been achieved for several other medical specialties. The aim is that certification will form a significant part of the candidate's fitness to practice, wherever they seek employment, recognizing that it is primarily the knowledge base that is being assessed. Indeed, it is intended to be a mark of excellence in knowledge.
- 2.5 Taking and passing the examination should be an indication of commitment to life-long learning, combined with a continuing record of CME. Skills (*or* competences) and attitudes (*or* professionalism), the other essential components and qualities for fully trained practitioners, can only be adequately assessed through continuous clinic-based supervision and evaluation, together with evidence of ability to work collaboratively in teams. The oral part of this examination aims to partially assess some of these skills and attitudes.

3. ELIGIBILITY CRITERIA (ECMGG and CME)

- 3.1 The examination has been designed to be suitable for trainees in the late stages of their training, ie in the year prior to being appointed as a fully trained Clinical Geneticist. However, anyone with a bona fide medical qualification may take the exam subject to payment of the Admission Fee. Therefore, individuals are eligible to sit the ECMGG examination if they have a medical qualification (MD, or in some countries MB ChB/BS).
- 3.2 Proof of eligibility should be provided with the application by attachment of a notarised copy of the candidate's medical qualification (or specialist diploma / certificate in the case of senior doctors). On the day of the examination only personal identification documents are required (eg, passport).
- 3.3 Any individual found to be canvassing Examination Committee members for confidential information relating to any aspect of the examination will be disqualified from sitting the examination, and may forfeit their Admission Fee if this has already been paid.
- 3.4 Any individual who has received the ECMGG Certificate but was found to have used any unfair means to achieve their result will have their certificate revoked.

4. APPLICATION FOR THE EXAMINATION

- 4.1 When applying to sit the ECMGG, candidates will declare their consent to taking the examination in the established format and structure, and acknowledge that cancellations are only possible in accordance with the rulings of the cancellation policy.
- 4.2 An application form must be completed and submitted (see link to secure server at the bottom) by 1st April 2020.
- 4.3 Personal details must be correctly submitted, including full name, as the data requested will be used for the certificates. The application must be accompanied by the corresponding examination fee **in Euros** and contact details for informing the result. The date of transfer to the UEMS Section of Clinical Genetics bank account will serve as the application date.
- 4.4 The Bank details are as follows:
- | | |
|-----------------|---|
| Account name: | UEMS /S. CLINICAL GENETICS |
| Account number: | 001-6762413-37 |
| IBAN code: | BE35 0016 7624 1337 EUR |
| BIC code: | GEBABEBB |
| Bank address: | BNP Paribas Fortis
Montagne du Parc 3
1000 Brussels |
- 4.5 In order to comply with Belgian Law, please follow this procedure regarding the title of transfer:
- Please include the title of transfer:
"EXAM – THE NAME OF EXAMINEE / CANDIDATE - COUNTRY"
 - Please do not refer to 'payment' or 'invoice'
- 4.6 There is a reduced fee for candidates from low- and lower-middle income countries (see http://data.worldbank.org/about/country-and-lending-groups#Low_income) and for those who follow the earlybird registration procedure.
- 4.7 Earlybird fee registration and reduced rate registration require a full application via the website before the respective date stated below.
- 4.8 If a visa and/or a letter of invitation is required to enter Europe, the examination board should be informed after application for the examination has been completed. It is the candidate's responsibility to ensure there is sufficient time for their visa application to be processed when registering for the examination.

5. EXAMINATION ADMISSION FEES AND CATEGORIES (in EUROS):

5.1 The admission fees are given below. They apply for 2020 and will be reviewed annually. The fee will vary according to the candidate's place of work. Additional fees may apply in the event of irregularities that require further administrative work.

5.2 In the event of cancellations prior to 28 days preceding the examination, an application for a subsequent examination will be possible for a reduced fee. Cancellations less than 28 days prior to the examination will not qualify for a reduced fee at a subsequent sitting.

5.3 Examination fee structure:

Admission Fees (in Euros)	Earlybird fees	Regular fees
	Payment received by March 1 st 2020	Payment received by April 1 st 2020
Associate members from SMG (*Group 1)	450	550
Non-European countries	500	600
Associate members from SMG (#Group 2) and low and lower middle income countries according to the link below	350	450

* *Group 1: EAN - Associate Member societies from Austria, Belgium, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lithuania, Luxembourg, Norway, Poland, Portugal, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, The Netherlands, Turkey, United Kingdom*

Group 2: EAN - Associate Member societies from Albania, Algeria, Armenia, Azerbaijan, Belarus, Bosnia & Herzegovina, Bulgaria, Egypt, FYRO Macedonia, Georgia, Jordan, Kazakhstan, Kyrgyzstan, Lebanon, Libya, Moldova, Montenegro, Morocco, Palestine, Romania, Serbia, Syria, Tunisia, Ukraine, Uzbekistan

(**SMG**: Section of Medical Genetics; **EAN**: European Area Nations)

6. THE EXAMINATION STRUCTURE AND CONTENT

6.1 The examination is primarily a knowledge-based assessment, based on the curriculum and syllabus (<http://clinicalgenetics-uems.pt.e.hu/content/etr-specialty-medical-genetics>), but also seeks to partially assess skills (competencies) and attitudes (professionalism) relevant for Clinical / Medical Genetics and Genomics in respect of clinical reasoning, problem-solving, and ethics. This is consistent with the roles promoted by UEMS, namely Medical Expert, Communicator, Scholar, Health Advocate and Professional.

6.2 The examination will consist of two distinct sections: **Multiple Choice Questions (MCQs)** and **Structured Oral Assessments (SOAs)**.

6.3 Candidates must attend all sections of the examination. Literature resources and access to the internet will neither be permitted nor provided for any part of the examination. Before the examination commences candidates must hand in their tablets, smartphones, and any other electronic devices that facilitate internet access. The results of the two sections will be combined and converted to a final percentage score.

6.3 **MCQs: 100**

- i. 100 individual questions will test knowledge based on the EBMG-MD/UEMS SMG-Guidelines and the Syllabus in Clinical Genetics. The questions will be selected by the Examination Committee and assessed by independent reviewers two months before the examination. In this way *standard setting* of the MCQs will have been undertaken according to the Angoff rank ordering method. This process may result in some final amendments to the MCQs.
- ii. The examination paper is expected to be a hard copy, paper document. The answers will be entered by hand, in ink, onto a single sheet which will be scanned.
- iii. The format of the MCQs is a brief scenario (usually *clinical*), with or without *laboratory data*, with five answers provided, one of which is the *best correct answer*.
- iv. Some answers are definitely wrong whilst some are correct but not as good an answer as the best correct one.
- v. The candidate should therefore select one of the five which they consider the *best correct answer*.
- vi. This is illustrated by the following example, and more sample questions are available at: <http://clinicalgenetics-uems.pt.e.hu/content/edmgg-exam-sample-documents>

#	A 39-year-old lady delivers a male child who is suspected to have Down syndrome.		
	What is the most likely genetic basis of Down syndrome ?		
	a.	47,XXY	
	b.	Deletion 7q11.32	
	c.	Pathogenic variant in <i>CDH7</i>	
	d.	Trisomy 21	✓
	e.	Unbalanced Robertsonian translocation 14:21	

- vii. Time allowed for 100 MCQs: 2½ hours.
- viii. This part of the examination will comprise 60% of the overall mark.

6.4 **SOAs: 6**

- i. These will consist of 6 OSCE-style stations to be visited by all candidates, testing knowledge, interpretation of data, and attitudes.
- ii. At each station the candidate will be invited to read in silence a complex clinical scenario or set of data, which may include ethical issues, over a period of 3 minutes. They will then be asked a standardized set of questions over 8 minutes designed to assess clinical reasoning, problem solving, collaborative working and ethical insight. In order to minimize language difficulties between examiner and candidate, the candidate will be given the questions on paper as the question is being asked by the examiner. See link for example scenarios:
<http://clinicalgenetics-uems.pt.e.hu/content/edmgg-exam-sample-documents>
- iii. Each station will have two examiners, at least one of whom will be external, ie not a member of the Examination Committee.
- iv. Each candidate will be asked the set questions by one examiner while the other examiner takes notes. The two examiners will then independently score the candidate to generate 8 data points per candidate per question. The examiners may confer, and possibly adjust their score if persuaded by the arguments presented in the discussion. When the next candidate is questioned the examiners reverse the roles.
- v. The aims of this SOA format are to standardize the oral assessment process and minimize presentation differences between candidates, based on potential language difficulties, for example. The examination will be conducted in English and allowance made for those candidates who lack fluency.
- vi. The following grid describes the marking system and the domains to be assessed:

	Mark	(a) Understanding Basic Scientific Principles	(b) Demonstrating Clinical Management	(c) Demonstrating Clinical Communication	(d) Understanding ethical and legal considerations
Clear Fail	0				
Borderline Fail	1				
Borderline Pass	2				
Clear Pass	3				

- vii. For some SOAs it is possible that not all domains (a) – (d) will be assessed.
- viii. Total time allowed per station: 12 minutes (includes rotation between stations).
- ix. This part of the examination will comprise 40% of the overall mark.

7. EXAMINATION VENUE AND SCHEDULE

- 7.1 The examination will take place in appropriate facilities without public access. Some basic refreshment, eg water, will be available, but lunch will not be provided for candidates.
- 7.2 The schedule for the examination on June 5, 2020, will be as follows (subject to minor change):

09:00 – 09:20	Arrive and register for examination
09:30 – 12:00	MCQ paper
12:00 – 13:00	Break
13:00 – 14:30	SOAs – maximum of 3 sessions, each 90 minutes in total allowing for time between each session Each candidate is present for 72 minutes (6 stations of 11 minutes, one minute to rotate to the next)
14:30 – 16:00	
16:00 – 17:30	
17:30 – 23:00	Marking of candidates
Sunday June 7 2020	
16:30: Meeting of the Examination Board	
19:00 – 20:00 (Approx): Announcement of Results by email and/or SMS to candidates	
The Award of Certificates – to be confirmed	

8. EXAMINATION OUTCOME

- 8.1 In registering for the examination the candidate accepts that the result of the examination is final. A legal debate on the final decision is not possible.
- 8.2 The pass mark will be calculated with help of an Angoff rank ordering evaluation as a control measurement, and possibly other statistical methods provided by a professional statistician with experience in examination methodology and analysis.
- 8.3 External, independent assessors may be appointed to advise and oversee fairness in the final allocation of marks.
- 8.4 In order to achieve an overall pass, candidates should achieve a 'Pass' in both sections of the examination.
- 8.5 Some feedback will be available for unsuccessful candidates and appealing the final decision is discouraged.
- 8.6 If a candidate does not achieve the pass mark, they may resit the examination at a later date, subject to payment of the corresponding Admission Fee.

9. THE EXAMINATION STEERING COMMITTEE (ESC)

- 9.1 The remit of the ESC is to design the examination, write and select questions, establish a standard setting process and quality control measures, identify examiners and independent assessors, and organize the examination itself.
- 9.2 The ESC comprises ~15 individuals, most of whom are national delegates to the UEMS Clinical Genetics Section. Some members have been invited to join because of their acknowledged expertise in examination methodology. At the time of writing 13 European nations are represented on the committee, covering all regions of Europe. The large majority of members are experienced Clinical Geneticists, and in addition the committee accommodates high achieving, committed colleagues who have recently completed their training.
- 9.3 The ESC writes MCQs and constructs SOAs for the ECMGG, as well as refining MCQs submitted voluntarily from many sources.
- 9.4 All members of the committee have pledged confidentiality in relation to question material. Any member of the ESC found to have divulged information inappropriately, ie broken confidentiality, will have their membership terminated with immediate effect.

10. INDEPENDENT ASSESSORS

- 10.1 Experienced Clinical Geneticists, independent of the ESC, are recruited to undertake a review of the examination questions in advance of the examination itself, a process leading to an Angoff rank ordering evaluation. In 2019 this exercise was undertaken by 11 individuals representing seven European nations.

- 10.2 These assessors are required to pledge their confidentiality in relation to all examination material.
- 10.3 It is anticipated that one or more representatives of the EBMG and ESHG, who are collaborators in the establishment and ongoing role of the examination for the promotion of quality in Medical Genetics services throughout Europe, will be present as Independent Assessor(s) of the examination.

11. EXAMINERS

11.1 A panel of independent, external examiners is being recruited, principally to participate in the SOA section of the examination. It is intended that each SOA station will have a minimum of one external examiner.

11.2 The minimum criteria for appointment as an external examiner are as follows:

- i. Their national specialist organisation is a member of the UEMS-SMG.
- ii. Medically qualified as a Clinical Geneticist with a minimum of five years' clinical experience after specialisation.

In addition, it is desirable that they have previous examination experience.

11.3 Examiners are required to pledge their confidentiality in relation to all examination material.

11.4 All examiners will be required to abide by the 'Rules of Procedure' for the examination (currently under development).

11.5 Recognizing that a conflict of interest may arise between examiner(s) and candidate(s), prior to the examination, examiners will be shown a list of candidates. Similarly, at registration for the examination, candidates will be shown a list of examiners. In the event of any conflict of interest being expressed every effort will be made to ensure that a candidate is not examined by the examiner with whom there is a real or perceived conflict.