European Diploma in Intensive Care Medicine

Exam Guidelines and Regulations

1. Introduction

In 2014, the Union Européenne des Médecins Spécialistes (UEMS, European Union of Medical Specialists) Multidisciplinary Joint Committee and the European Board in Intensive Care Medicine (MJCICM and EBICM) established the training requirements for the Core Curriculum of Multidisciplinary Intensive Care Medicine as Common training requirements (CTR ICM) based on CoBaTrICE and other relevant documents and concepts. This CTR ICM has now been adopted by the UEMS Council and will be presented to the European Commission.

The European Society of Intensive Care Medicine (ESICM) aims to have Intensive Care Medicine as a multidisciplinary field accessible by several medical specialties and focusing on the competences required to provide high-quality care, irrespective of the primary specialty. The aim of the ESICM examination for the European Diploma in Intensive Care Medicine is to promote standards in education and training in intensive care medicine in Europe and across the world. The exam is intended to be complementary to specialist postgraduate medical training and the taking of the two components of the exam should correspond to stages of experience/training in Intensive Care Medicine. The aim of the written exam (EDIC Part I) is to test the specific theoretical Intensive Care Medicine knowledge, whereas the oral part (EDIC Part II) aims to test the competencies, expertise and professional conduct at the end of the specific training (2-3 years) in Intensive Care Medicine.

Both parts (EDIC part I and II) of the exam must be passed to be awarded the EDIC diploma.

2. General Concept

2.1. Eligibility

Candidates for the exam need to be fully registered Medical Doctors (i.e. internship completed). They should be enrolled in, or have completed, a national training programme in a primary specialty. These may include Anaesthesiology, General/Internal Medicine (and other medical specialities), General Surgery (and other surgical specialities), Accident & Emergency Medicine, Paediatrics or Intensive

Care Medicine (if it is a primary speciality).

Intensive Care Medicine training should be undertaken in modules of dedicated, full-time, supervised training in Intensive Care Medicine. Admission criteria are:

- EDIC Part I entry criteria are:
  1) Fully-registered Medical Doctor (i.e. internship completed),
  2) Entry into or completion of a national training programme in a primary specialty and
  3) Entry into a national training programme in Intensive Care Medicine or satisfactory completion of 18 months' training in Intensive Care Medicine. (Criteria 2) and 3) are fulfilled if Intensive Care Medicine is recognised as a primary specialty).
- EDIC Part II: Successful completion of EDIC Part I, and 24 months of training in Intensive Care Medicine.

The required documents for registration to EDIC Part I are:

- Copy of University-awarded medical degree
- Letter of confirmation from national or regional primary specialty Training Authority (e.g. College or Society),
- Document/letter confirming your training in ICM or completion of ICM training programme signed by
  - ✓ if you are in ICM training, the Training Authority, supervisor/mentor or Head of training
  - ✓ if you have completed your ICM training, the Head of Department or Head of Training Programme or other representative who certify your completion of ICM training.

To minimise the failure rate and to accommodate requests for candidates from outside Europe, it is recommended that candidates should acquire a thorough understanding of European ICM practice. It is recommended that this is best facilitated by working in an academic European ICU for a period of at least six months.

2.2 Structure of the exam

The EDIC Exam is a two-step exam, based on a set of competences for medical specialists in Intensive Care Medicine, as defined in the CoBaTrICE training programme. EDIC Part I and Part II have a common blue-print. The blue-print is based on the 12 areas of competence of CoBaTrICE, which include 102 competence statements. The CoBaTrICE competences define the minimum standard of knowledge, skills and attitude required for a doctor to be identified as a specialist in Intensive Care Medicine. They have been developed with the intention of being internationally applicable, but able to accommodate national practices and local constraints.

The Part I exam is a multiple choice questionnaire written examination with 100 questions. Candidates have 3 hours to answer all the questions.

The Part II exam has the format of an Objectively Structured Clinical Examination (OSCE) with six skill stations. These include three clinical scenarios of 30 minutes each and three computer-based stations of 15 minutes each, which assess data interpretation, such as radiological images, ECGs, and biochemical scenarios.

To obtain the EDIC Diploma, candidates must pass the two components of the exam.

The EDIC exams are an English language based exam. In order to achieve standardisation across countries, no documents are translated into any other languages.

Information about the EDIC exam is provided to candidates on the ESICM web pages. To apply and register for the exam, the candidate accesses the registration web page. The registration process

occurs in three steps. First, the candidate creates his personal EDIC profile. Second, he books the exam centre of his choice. In a third and last step, the candidate receives confirmation once his application has been validated by the EDIC office.

Candidates cannot register for EDIC Part II until they have successfully completed EDIC Part I. During the registration process, candidates have to provide information on their personal profile, details of their postgraduate training in Intensive Care Medicine, with or without their primary specialty training and country of work.

Registration fee are published on the EDICM webpage. Candidates who are registered members of ESICM obtain a rebate. Candidates who have not paid their ESICM membership of the year of the exam when they are registering for the EDIC exam will automatically be billed the non-member's fee. To sit the EDIC Part I in a non-European centre (currently Dubai and Kolkata), the registration fee is slightly higher to cover for the additional costs for the organisation and supervision of the exam.

The accredited centres in Europe for EDIC Part I and II are published on the ESICM webpage. EDIC Part I is usually held in April and October and EDIC Part II in June and November each year. Annually, approximately 1000 seats for EDIC Part I and 500 seats for EDIC Part II are offered.

Each EDIC Part II centre can accommodate a maximum of 36 candidates. In the future, further centres may become available in accordance with the accreditation process detailed below.

After the EDIC Part I and Part II examination, candidates' answer sheets are transferred to the University of Heidelberg, Umbrella Consortium for Assessment Network (UCAN), where the data are analysed and the results reported to the ESICM Examinations Committee. Thereafter, the Examinations Committee meets to validate the results and agree on the pass mark. The pass mark relies on a content-based standard determined by the modified Angoff Method and anchoring questions.

Finally, a feedback letter is provided to candidates no later than four weeks after the examination date. The letter also informs candidates of their results.

2.3. Appeal procedure

2.6.1. Appeal Committee
The Appeal Committee's duty is to judge appeals from candidates aiming to achieve EDIC, independently of the Examination Committee. Candidates who are denied admission to either EDIC Part I or Part II, or who fail EDIC Parts I or II, may appeal.

The Appeal Committee is elected by the ESICM Council and comprises:
- Three former members of the Examination Committee, one of which is the chair
- A member of the NEXT Committee
- A representative of the ESICM Executive Committee

In order to avoid potential conflict of interest, an active member of the Examination Committee or the Division of Professional Development cannot become a member of the Appeal Committee. The term of an Appeal Committee member is three years, renewable once.

2.6.2. Appeal procedure

If a candidate has been unsuccessful in the exam, a complaint can be made to the ESICM office. This is discussed by the Examinations Committee and the decision of the Committee is communicated to the complainant once the final result had been communicated to the complainant.

If the complainant is not satisfied with the decision of the Examinations Committee, he/she can then pursue the appeal process as described below. Any candidate who has failed the exam has the right to make a formal appeal to the Appeal Committee.

The candidate can appeal up to 60 days after the release of the exam result (date on the feedback letter). The candidate cannot appeal if (s)he passed the EDIC Part I or Part II. In addition, candidates cannot appeal against the content of the exam. The questions in EDIC Parts I and II have been devised to examine established European standards of care, not local variations in practice. The content of both EDIC Part I and Part II exams has been revised by the Examinations Committee. The process of approval of the exam by the members of the Examinations Committee ensures that the content reflects appropriate clinical practice.

Candidates are informed about appeal regulations in the feedback letter of both EDIC exams. Candidates can appeal in case of any irregularities in the following processes:

- If the candidate is denied participation in an exam after the registration process has been completed and all requested documents have been provided
- Violation of the exam rules written in the EDIC Parts I and II guidelines
- Violation of the rules of exam results calculation and communication

If a candidate appeals against his/her examination result, he/she has the right to obtain access to a copy of his/her personal answer sheet, together with the reference answer sheet, in order to see whether there is a mistake in the calculation of the number of points obtained in either EDIC Part I or Part II.

For EDIC Part I, only the answers submitted by the candidate on the answer sheet are taken into account, and not any notes or markings in the exam booklet.
For EDIC Part II, the screenshots generated during the exam are saved on the iPad and are used to calculate the scores for the CCS and CBS.

For confidentiality reasons, the exam booklet and the iPad generated screenshots cannot be handed out to the candidate. If the candidate appeals against the quality of the examination material, he/she can ask to consult his booklet or screenshots for a limited period of time at the EDIC office in Brussels, under the supervision of a member of the Examinations Committee.

It is forbidden to make copies, to scan or to take pictures of the EDIC Part I booklet, or the EDIC Part II screenshots. The candidate is allowed to make personal notes in order to improve the quality of his appeal document but not for training purposes. If it is impossible for the candidate to consult his/her documents at the EDIC office within 60 days of the release of his/her exam results, he/she has to send his/her appeal documents asking to see his/her exam documents.

The appeal documents have to be addressed to the Chair of the Appeal Committee and mailed to the EDIC office in Brussels within 60 days of the release of the exam results. The date on the email or the envelope postal stamp counts. The Appeal Committee refuses formally incorrect and incomplete appeal documents.

The formal appeal documents must include

- Dated and signed appeal letter
- A statement clearly describing the violation of a specific exam regulation
- A copy of the examination regulation subject of the appeal

- If possible, documents proving violation of the examination regulation

Candidates' subjective impressions of having made mistakes while under stress due to the exam situation, or time constraints while transferring answers to the answer sheet at the end of the exam in EDIC Part I, or during CCS or CBS, are insufficient grounds to initiate the process of an appeal. Similarly, candidates' subjective impressions that the EDIC II examiner made a mistake by clicking on the answers on the iPad are an insufficient reason to initiate an appeal.

The Appeal Committee is not there to verify the validity of the examination content, or alter the score to influence the final examination result. The task of the Appeal Committee is to verify whether irregularities happened in the conduct of the exam processes.

A procedural fee of €400 is charged to the candidate as soon the appeal documents are received by the EDIC office. In case the candidate wins, the costs are reimbursed. If not, depending on the amount of work caused by the appeal, additional procedural costs can be added to the initial fee.

As long as the appeal process is pending, the candidate cannot repeat the exam, or sit the next one. To repeat the failed exam, the candidate has to retract his appeal.

The candidate cannot make an appeal against the decision of the Appeal Committee.

3. EDIC Part I

3.1. MCQ Exam

EDIC Part I is a 100 multiple-choice question written examination in English. The exam contains type A questions – out of the five options (A to E) available, the single best answer has to be chosen – and type K' questions (max 50). The type K' questions require an individual answer T (true) or F (false), to each of the four statements, A to D. In two thirds of the exam questions, a question stem is composed by a vignette, which may include an image. Each year, approximately 60 to 70% of the questions are renewed. 25-30 old questions serve as anchoring questions. After each question, pass difficulty and discriminatory power are calculated and recorded.
The exam pass mark is content-based. To set the pass mark, the modified Angoff Method is used. The process of pass-mark setting involves the whole Examinations Committee (jury) and is repeated every 3-5 years. Each year, by the means of Anchoring questions, the exam difficulty is compared with previous editions. If similar, then the same standard is applied. If the difference varies by more than 2%, a correction is applied.

3.2. Exam Blueprint

The blueprint of the exam is based on the CoBaTrICE competencies which define the minimum standard of knowledge, skills and attitudes required for a doctor to be identified as a specialist in Intensive Care Medicine. Whilst both EDIC Part I and EDIC Part II use the same blueprint, the weighting of the exam domains is different.

Our blueprint is a matrix of 3 sub-blueprints: blueprint 1, 2 and 3. Their composition is shown in the table 1.

Blueprint 1	Blueprint 2				Blueprint 3			Weighting %	
	Pathophysiology	Assessment, diagnosis and monitoring	Treatment	ICU-Management	General knowledge	Adult patients	Paediatric patients		Within domain
Disease management								50%	
Cardiovascular disorders									20%
Renal and genito-urinary disorders									10%
Neurological disorders									15%
Gastrointestinal disorders									10%
Respiratory disorders									15%
Infections									20%
Other disorders (haemato-oncologic; metabolic-toxic; endocrine; peri-partum)									10%
Therapeutic interventions / Organ system support								30%	
Medical treatment									50%
Organ system support									30%
Peri-operative care									20%
Practical procedures								10%	
Respiratory system									40%
Cardiovascular system									40%
Central nervous system									10%
Patient general care								10%	
Resuscitation & initial management of the critically ill patient									50%
Comfort and recovery									20%
End-of-life care									10%
Patient safety and health management system									20%

Table 1: EDIC 1 Blue prints domains and their respective weights.

The two last columns on the right indicate the weighting of each blueprint 1 domain or the relative number of questions to be included into the EDIC Part I exam for each domain.

These percentages reflect the emphasis placed by the Examinations Committee on particular items within the blueprint.

The blueprint has been created in collaboration with ESICM and the Swiss Society of Intensive Care Medicine (SSICM).

3.3. Preparation of the exam

Each Examination Committee member prepares annually 6-8 new MCQs. The need for new questions is determined by the consultant educationalist to ensure a balanced representation of exam items according to the blueprint. The consultant educationalist is also responsible for the supervision of the exam item database and the assessment of its completeness. He/she will assign to each Examinations Committee member the task of creating new questions (or revising old questions), according to the blueprint.

The Examinations Committee discusses the need for new/revised questions at a post-exam meeting, so called "key-validation" meeting. New MCQs are discussed in small working groups of 3-4 Committee members and then presented to the Committee for final approval. Approval is valid, if at least 6 of the 12 Examinations Committee members are present. The production of new questions is shared with the Examination Committee of SSICM.

Both Committees revise all new questions reciprocally. Thereafter, the consultant educationalist

(same person for both committees) prepares a first draft of the new exam, which consists of 60-70 new questions and 30-40 old questions. The latter includes the anchoring questions. Four months prior to the exam session, the representatives of both committees (Exam Editorial Board) meet to review and approve the new exam. It is the Exam Editorial Board's responsibility to ensure that the exam items are represented in accordance with the blueprint and that MCQs are consistent and grammatically correct. The Exam Editorial Board approves the final version of the exam booklet before printing and also checks the quality of printed booklets prior to the exam.

3.4. Exam venue

3.4.1. Centre Requirements Criteria
Recruitment of new EDIC exam centres is based on demand, determined by the Examination Committee. Applicants for new exam centres have to complete an application form within a specific time-frame. For approval, the Exam Centre Director has to prove his/her ability to fulfil all conditions necessary to conduct the exam with regard to its quality, safety and logistics. If approved, the Exam Centre Director signs a Code of Conduct, outlining the rules, regulations and organisational aspects of the exam. The term of the agreement is three years, renewable. The agreement form is co-signed by the Chairperson of the Examinations Committee and the Chairperson of the Division of Professional Development.
The requirements for the application are:

- Each exam centre must have a Director, who will be the person responsible for the centre, for administrative purposes
- Exam centres should have adequate facilities, equipment and resources to effectively deliver the examination to the specified standards
- The room(s) hosting the exam must be quiet and large enough to host all candidates, with sufficient light and a free radius around the candidate of at least 1.5 meters. A detailed floor plan of the exam facility and registration area must be a part of the application
- Toilets need to be available within a distance of 100 m
- Availability of computer(s) and overhead projector(s) is mandatory
- Adequate pencils with erasers must be provided to the candidates
- The process of the candidates' registration is specific to the exam centre and will be described in detail in the application form. The number of auxiliary staff should be sufficient so that the registration process should not last more than 30 minutes (until candidates are seated at their table)
- Exam centres will be expected to limit the costs of the venue, equipment hire and stay within a pre-defined budget that is approved by the Examinations Committee and the ESICM Treasurer. The budget is a part of the three-year signed agreement.

3.4.2. Exam Centre Director
The Exam Centre Director must be an experienced intensive care physician, educator, and a holder of the EDIC diploma, or other comparable postgraduate specialist accreditation in Intensive Care Medicine.

She/he is responsible for the choice of the exam venue, the local organisation, the conduct of the exam and the adherence to all safety and confidentiality rules described in the three-year agreement. In addition, she/he is responsible for the choice, training and number of examiners and auxiliary staff to deal with the local logistics of the exam. Examiners should be selected on the basis of their reputation in the field, credibility and aptitude for teaching/education.

She/he is not responsible for the selection of the exam questions or the registration of the candidates. The EDIC office will provide the complete set of exam materials, incl. the list of candidates. All exam documents must be kept and locked in Director's office till the day of the exam.

The EDIC office will have provided the candidates with all information about the exam location and its address.

If the Exam Centre Director is organising the exam for the first time, she/he agrees to assist once in a previous EDIC Part I session and to be supervised and locally supported either by a person of the ESICM office, or a member of the Examinations Committee.

The Exam Centre Director must be present during the exam at all times. At the end of the exam, she/he is responsible for the collection of all the exam materials and candidates' registration lists. Mailing to the EDIC office of this material must be done within 24 hours after the end of the exam. She/he has to answer any queries from the Examinations Committee and Appeal Committee. She/he is not allowed to exchange any correspondence with the exam candidates assigned to his/her centre. This correspondence is made via the EDIC office. The Exam Centre Director accepts to be audited by members of the Examinations Committee at any time.

3.4.3. Examiners
Examiners assisting the Exam Centre Director during the exam session have to fulfil the following criteria:

- All examiners should be experienced intensive care clinicians
- Examiners are trained by the Exam Centre Director, who teaches them about the structure and the organisation of the exam, how to supervise examinees during the exam session and how to answer their questions

A database of qualified European and non-European examiners will be kept at the ESICM office.

3.4.4. EDIC office administrative responsibilities
All the following responsibilities belong to the EDIC office

- The registration process for examinees, including all payments and the provision of all necessary exam information
- Responding to the exam centre requests in a timely manner
- Keeping information about active exam centres up to date
- Liaising with the Exam Centre Directors and ensuring that the reports from the centres are submitted to the Examination Committee for review and approval
- Keeping a log of all EDIC trained examiners
- Keeping a log of all candidates who attended/passed the EDIC Part I exam

3.4.5. Cost reimbursement
ESICM will cover the costs of the renting of exam room(s) and audio-visual equipment. The Exam Centre Director is responsible for sending a quote to the EDIC office for approval of the costs. Travel costs for the local organising team, supervisors from the Examination Committee and external observers appointed by the Examinations Committee will be covered by ESICM, according to its internal rules. In addition, to cover the expenses for the local organisers and exam supervision, an amount of EUR 200 will be paid for up to 20 candidates, EUR 300 (20-50 candidates), EUR 500 (51-100 candidates), EUR 700 (more than 100 candidates).

3.4.6. Audit
Supervisors appointed by the Examinations Committee will report on the following quality and safety criteria:

- Exam registration: At the entrance of the exam room, the candidate's identity is verified
- Registration process: Sufficient registration points to proceed with registration within 30 minutes
- After registration, all candidates' belongings must be placed at the designated location
- Mobile phones must be switched off and stored among the personal belongings in bags, or

must be visible on a separate table placed at the back of the room
- Candidates are guided to their seats. The seats are arranged in alphabetical order to help candidates find their seats
- The free radius around a candidate must be at least 1.5 m
- The question paper, answer sheets, and appropriate stationery are the only materials allowed on the candidate's desk. No examination aids are permitted e.g. calculator or dictionary. The exam booklet and answer sheet must be filled in with a pencil (no pens)
- Candidates are supervised at all time by one or more examiners while waiting at their exam tables
- Candidates are not allowed to open the exam booklet prior to the official exam start
- Clocks are placed, or projected, in front of the room - visible and readable for all candidates
- A beamer and a computer are present to show the exam instructions. A Power Point presentation will be provided by the EDIC office.
- The Exam Centre Director, or one of the examiners, provides information about exam rules. Sufficient time must be planned for this presentation (approx. 10 min).
- Candidates' queries are answered. Candidates must check that the question booklet matches the answer sheet. Both must be signed immediately. Candidates should announce any incorrectness immediately. Both question papers and answer sheets must be signed immediately
- Candidates should be instructed that toilet breaks are only allowed if accompanied by an examiner
- The exam starts at 11 a.m. local time. Any deviation needs to be explained in the exam report. The exam always lasts 180 minutes
- Remaining exam time is announced after 90, 120, 150 and 165 minutes of exam
- The signed exam booklets and answer sheets must be returned to the supervisors at the end of the examination
- Any candidates who finish the exam before the end of the three hours are advised to leave the room immediately
- All exam booklets and answer sheets collected are then checked for completeness and stored in the appropriate box. The return checklist is ticked and signed by the Exam Centre Director
- It is the responsibility of both the examiner and the candidate to ensure that the booklets and answer sheets are signed. All exam materials and documents are sent back to the Brussels office within 24h hours after the end of the exam.

3.5. Procedures and security during the exam

The following measures are taken to ensure security and confidentiality of the exam:
- At the start of the mandate in the Examinations Committee, all members sign a confidentiality agreement
- MCQs are securely stored on the UCAN IMS-Data server. Access to this database is password-protected. Access to this database is granted only to active Examinations Committee members and is immediately cancelled at the end of the term
- Exam paper documents are stored in the EDIC office, which is responsible for the secure storage and mailing of the documents to the Exam Centre Directors one week before the exam. The exam booklets and answer sheets are archived for 5 years.
- Exam Centre Directors sign a three-year contract, which includes a confidentiality agreement
- At on-site exam registration, candidates have to provide a valid proof of identity, along with the letter of invitation
- During the exam, candidates' mobile phones are switched off and stored at a designated place
- During the exam, candidates are supervised at all times and they are not allowed to leave

the examination room unaccompanied
- At the end of the exam session, the Exam Centre Director is responsible for the collection of all exam documents and for sending the materials back to the EDIC office, which will check the documents again before mailing the exam answer sheets to UCAN for analyses.

3.6. After the Exam

3.6.1. Objective Score Calculation
The EDIC Part I exam has 100 MCQs, including questions of the Type A and Type K'. A correct answer of a Type A question scores 1 point. Type K' questions have 4 answers, each being correct or false. A Type K' question scores 1 point if candidate's statement to all four answers is correct, a half-point if three of the four statements are answered correctly, or zero points if less than three statements are answered correctly. Accordingly, the maximal number of points a candidate can be awarded is 100.

3.6.2. Clinical and Statistical Validity Analysis of EDIC Part I Exam
The exam is analysed by the UCAN institute at the University of Heidelberg. Difficulty and discriminatory power is calculated for each item and reported graphically. Exam reliability is assessed by the calculation of Cronbachs Alpha. The results of the exam are analysed and discussed by the Examination Committee during the "key-validation meeting", which is a joint meeting of the Examination Committees of ESICM and SSICM. At this meeting, all items with a low discriminatory power ($r < 0.05$), excessively easy or difficult items ($p < 0.2$ or > 0.95) are analysed and discussed.

Due to formal mistakes or unclear formulation, some questions may be eliminated from the final exam evaluation. To eliminate an item, the Examination Committee members present at the meeting (at least 8 members) need to agree.

3.6.3. Determination of Pass/Fail mark
The exam pass mark is set by the Examinations Committee every 3-5 years using the modified Angoff method. At least 25 anchoring MCQs are used to compare - from session to session - exam difficulty and the performance of the candidate population. Exam difficulty and performance of the exam population on marker questions is compared to the previous exams. If necessary, the pass mark is adjusted to account for the differences in exam difficulty.

3.6.4. Dissemination of Results and Counselling for failed candidates
After the "key-validation" meeting and after the final exam report is obtained (in general 3 weeks after the exam session), a candidate feedback letter is generated and sent to the candidates electronically.

The letter informs the candidate about the total of points necessary to pass the exam, how many points she/he achieved and whether the result is pass or fail. In addition, personal performance of the candidate in relation to the exam population in the different domains of blue print 1 is disclosed. Candidates who fail are informed that they have to wait 12 months for the next attempt.

3.6.5. Exam Centre Directors' Feedback
Exam Centre Directors will receive feedback about the performance of the candidates population in his/her centre in comparison to the whole cohort.

In case of a formal audit, an audit report will be sent to the Exam Centre Director.

An Exam Centre Directors meeting is organised every second year, during the ESICM LIVES Annual Congress.

3.6.6. Planning Next Exam

Candidates who passed EDIC Part I are given access to registration for EDIC Part II. If the candidate fulfils registration criteria for EDIC Part II exam, he/she can register as soon as the next registration period opens. Candidates who fail have to wait 12 months before they can apply for the next exam.

4. EDIC Part II

4.1. OSCE Exam

EDIC Part II is a high-quality standard exam for the assessment of knowledge-related competences in Intensive Care Medicine at the end of training provided by ESICM. To assure the quality of a high-level exam, the Examinations Committee decided to implement the "objective structured clinical examination" (OSCE) model lasting at least 2 hours. The EDIC Part II exam will take place outside of the ICU environment. The exam content follows the EDIC blueprint (see point 3.2) derived from competences listed in the CoBaTrICE syllabus.

Candidates will have to pass several skill stations, including three different clinical scenarios using imitation patient charts and three computer stations where reading and interpretation of imaging, curves and biochemical scenarios is tested. Marking within clinical case scenarios (CCS) and computer-based scenarios (CBS) is standardised, which means that for a given clinical problem or a vignette with a CT-scan of the abdomen, expected answers are prepared and scored by the Examinations Committee in advance. To avoid examiner-candidate bias, a candidate is seen by 9 different examiners, two different examiners for each CCS station and three different examiners in the CBS section (one per each different CBS).

Candidates may start their exam either with the clinical skill stations or the computer stations first, depending on the group allocated by the examining centre. Before passing through the CCS stations, the candidate will enter an exam preparation room, where he/she receives the material to prepare for the three clinical scenarios. After 30 minutes, the candidate will move to the first exam room/table. No preparation time is allocated for the CBS stations.

4.1.1. Clinical Case Scenario
The aim of the CCS is to test candidate attitude, competences and professionalism in context of a clinical scenario derived from a patient chart within 25 minutes. In principle a CCS should not contain more than 3-4 main competence domains. Each domain is introduced by a vignette, followed by 1-5 questions with a maximum of five possible answers.

The clinical case is centred on the management of a well-defined main clinical condition with failure of a maximum of three organs. Accordingly, the case will focus either around ICU admission and the following days, a particular event during the ICU stay, or around the weaning phase from organ support therapy in the ICU. At the end, the candidate will be evaluated on whether he/she has sufficient knowledge and skills to manage this particular clinical scenario safely and competently.

4.1.2 Computer-based scenario
The CBS section includes three stations, each one testing candidates' knowledge and diagnostic skills in three different Intensive Care Medicine competence domains.

The aim of the CBS is to broaden the spectrum of medical knowledge and skills tested in the exam. Each CBS session will last 15 minutes, 12 of which are reserved for answering questions. The number of picture/scenarios expected answers pairs per CBS may vary between 8 and 12, depending on their complexity, but should not be less than 8.

The last three minutes are dedicated to the rotation from one CBS station to the other.

4.1.3 Rating and Standard Setting

The standard setting and hence the pass mark of CCS and CBS are calculated using recognised techniques, such as Angoff and Borderline Regression. These most widely used techniques for standard setting, allow adjustment of the pass mark for each examination, in response to the difficulty of the examination.

4.2. Exam venue

4.2.1. Requirements Criteria

The architecture, structure and organisation of an EDIC Part II exam centre are essential for the purpose of standardisation of the EDIC Part II exam. EDIC Part II exam centres are located in cities close to an airport hub, easily accessible from abroad. Applications have to be addressed to the Chair of the Examinations Committee. Application documents need to include:

- An application and motivation letter
- A description and plan of the exam building
- A description of accommodation facilities for examiners and examinees
- A tentative budget for the exam
- A list of potential examiners, including the Centre Director

The Examinations Committee, based on the application file and according to their needs, will first express a provisional acceptance. Once the Exam Centre Director and all the examiners have fulfilled all the criteria listed in this chapter and the first exam has taken place, the final approval of the Exam Centre will be given and a certificate handed out to the Centre Director.

The following has to be granted in order to allow for a fair exam for all candidates.

- Candidates entering the exam and those leaving the exam need to be physically separated.
- Accordingly, separated areas for the reception/introduction of the candidates to the exam and candidates waiting/break zone are necessary. The reception area should be large enough to receive candidates, check their documents and accommodate them for the exam's introduction session.
- A quiet CCS preparation room, separated from other rooms, is needed to allow candidates to prepare for their 3 CCS.
- Ideally the building where the exam will take place should offer separate rooms for CCS (6) and CBS (6) in order to offer several parallel lines for examination. If the exam building structure does not allow it, CCSs or CBSs can be grouped in one room, allowing enough separation to avoid any disturbance from another exam station. However, CCSs and CBSs cannot be merged in one room, because of the different rotation schedules.
- An examiners' room - or area that is separated from all other rooms - is needed. This area is reserved for examiners' coffee breaks and lunch.
- At the exam location, space should be reserved for the pre-exam workshop. This may be within the exam building or in a separate one. For this event, a conference room (to accommodate up to 25 persons) and two separate workshop rooms/areas are needed.
- To run the exam, the exam centre needs 6 laptops for the CBS stations and 12 iPads. The iPads are provided by the EDIC office.
- Candidate exam performance in CCS and CBS stations is recorded on the iPad and via web transferred directly to the exam server in Heidelberg. An example of an ideal exam location is shown in figure 2.
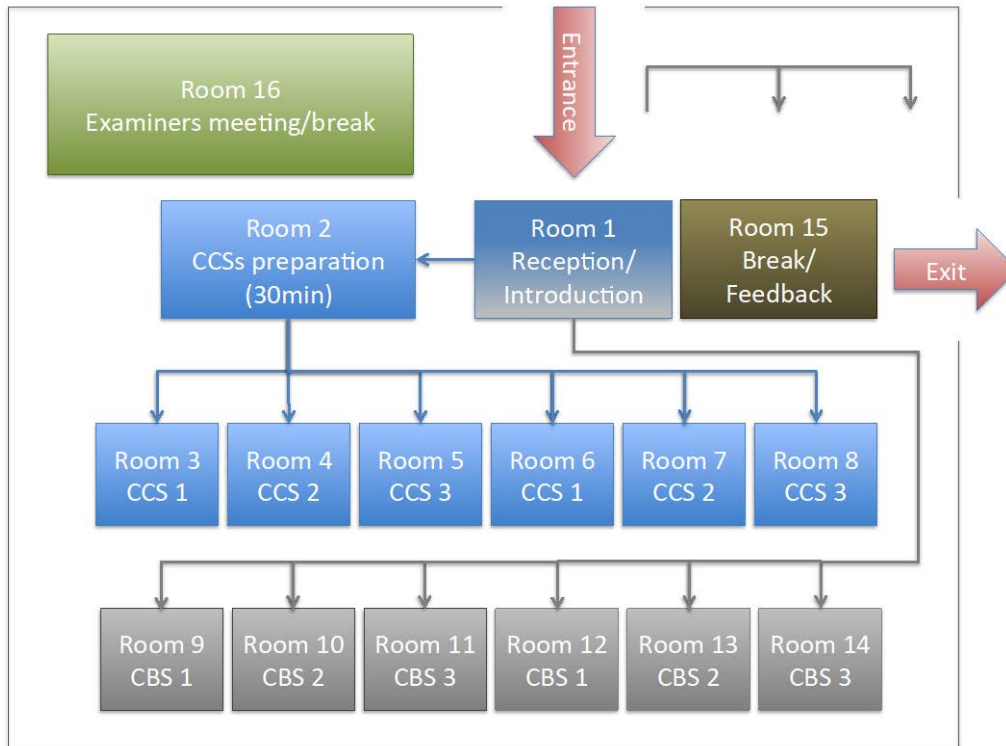
Figure 2: Ideal exam location with separate rooms for the reception and introduction of the candidates to the exam, a preparation room for CCS, separate rooms for each CCS and CBS, a candidate break and feedback room and an examiners' meeting room for breaks and lunch.

In order to test the highest possible number of candidates per day and hence minimise the number of exam centres running in parallel and exam costs, an exam centre needs to accommodate 36 candidates per exam day. The ideal layout of an exam centre shown in figure 2, in conjunction with the rotation schedule shown in figure 3. The ideal exam centre has 16 rooms. To run this Exam Centre, besides the Centre Director - who should ideally not act as an examiner - 18 examiners are needed, plus a minimum of three staff members - one at the reception and two following the groups of candidates.

In case the number of rooms to host an exam station is limited, CCS and/or CBS stations can be grouped in two separate large rooms, provided enough separation between exam stations is available, to avoid any disturbance from one exam station to the other. The most challenging but cost-effective way of running an Exam Centre is to hire 11 rooms and engage 15 examiners. Using the exam schedule shown in figure 4, the centre, during a long examination day, from 08:15 till 19:30 hrs, can examine 36 candidates.

Cand. Welcome Time	Cand. Group Nr	Cand Nr	Prep. Time start (30 min.)	Cand Nr (Room 1 CCS Prep.)	CCS start time	Exam time (min)	Room 2 CCS 1	Room 3 CCS 2	Room 4 CCS 3	Room 5 CCS 1	Room 6 CCS 2	Room 7 CCS 3	CBA start time	Exam time (min)	Room 8 CBA 1	Room 9 CBA 2	Room 10 CBA 3	Room 11 CBA 1	Room 12 CBA 2	Room 13 CBA 3
08:15	G1	Cand 1-6	08:30	Cand 1-6																
08:45	G1	Cand 7-12			09:00	30	Cand 1	Cand 2	Cand 3	Cand 4	Cand 5	Cand 6	09:00	15	Cand 7	Cand 8	Cand 9	Cand 10	Cand 11	Cand 12
					09:30	30	Cand 3	Cand 1	Cand 2	Cand 6	Cand 4	Cand 5	09:15	15	Cand 9	Cand 7	Cand 8	Cand 12	Cand 10	Cand 11
					10:00	30	Cand 2	Cand 3	Cand 1	Cand 5	Cand 6	Cand 4	09:30	15	Cand 8	Cand 9	Cand 7	Cand 11	Cand 12	Cand 10
			10:00	Cand 7-12																
					10:30	30	Cand 7	Cand 8	Cand 9	Cand 10	Cand 11	Cand 12	10:45	15	Cand 1	Cand 2	Cand 3	Cand 4	Cand 5	Cand 6
					11:00	30	Cand 9	Cand 7	Cand 8	Cand 12	Cand 10	Cand 11	11:00	15	Cand 3	Cand 1	Cand 2	Cand 6	Cand 4	Cand 5
					11:30	30	Cand 8	Cand 9	Cand 7	Cand 11	Cand 12	Cand 10	11:15	15	Cand 2	Cand 3	Cand 1	Cand 5	Cand 6	Cand 4
11:45	G2	Cand 13-18	12:00	Cand 13-18																
12:15	G2	Cand 19-24			12:30	30	Cand 13	Cand 14	Cand 15	Cand 16	Cand 17	Cand 18	12:30	15	Cand 19	Cand 20	Cand 21	Cand 22	Cand 23	Cand 24
					13:00	30	Cand 15	Cand 13	Cand 14	Cand 18	Cand 16	Cand 17	12:45	15	Cand 21	Cand 19	Cand 20	Cand 24	Cand 22	Cand 23
					13:30	30	Cand 14	Cand 15	Cand 13	Cand 17	Cand 18	Cand 16	13:00	15	Cand 20	Cand 21	Cand 19	Cand 23	Cand 24	Cand 22
			13:30	Cand 19-24																
					14:00	30	Cand 19	Cand 20	Cand 21	Cand 22	Cand 23	Cand 24	14:15	15	Cand 13	Cand 14	Cand 15	Cand 16	Cand 17	Cand 18
					14:30	30	Cand 21	Cand 19	Cand 20	Cand 24	Cand 22	Cand 23	14:30	15	Cand 15	Cand 13	Cand 14	Cand 18	Cand 16	Cand 17
					15:00	30	Cand 20	Cand 21	Cand 19	Cand 23	Cand 24	Cand 22	14:45	15	Cand 14	Cand 15	Cand 13	Cand 17	Cand 18	Cand 16
14:45	G3	Cand 25-30	15:00	Cand 25-30																
15:15	G3	Cand 31-36			15:30	30	Cand 25	Cand 26	Cand 27	Cand 28	Cand 29	Cand 30	15:30	15	Cand 31	Cand 32	Cand 33	Cand 34	Cand 35	Cand 36
					16:00	30	Cand 27	Cand 25	Cand 26	Cand 30	Cand 28	Cand 29	15:45	15	Cand 33	Cand 31	Cand 32	Cand 36	Cand 34	Cand 35
					16:30	30	Cand 26	Cand 27	Cand 25	Cand 29	Cand 30	Cand 28	16:00	15	Cand 32	Cand 33	Cand 31	Cand 35	Cand 36	Cand 34
			16:15	Cand 31-36																
					16:45	30	Cand 31	Cand 32	Cand 33	Cand 34	Cand 35	Cand 36	17:15	15	Cand 25	Cand 26	Cand 27	Cand 28	Cand 29	Cand 30
					17:15	30	Cand 33	Cand 31	Cand 32	Cand 36	Cand 34	Cand 35	17:30	15	Cand 27	Cand 25	Cand 26	Cand 30	Cand 28	Cand 29
					17:45	30	Cand 32	Cand 33	Cand 31	Cand 35	Cand 36	Cand 34	17:45	15	Cand 26	Cand 27	Cand 25	Cand 29	Cand 30	Cand 28

Figure 3: Exam schedule for the ideal exam centre coping with 36 examinees rotating between 13 exam rooms, 18 examiners and a minimum of 3 staff members in conjunction with the Centre Director.

General Time scale	Cand Group Nr	Candidates Nr Room 1 Welcome	Candidates Nr Room 1 Warting	Candidates Nr Room 1 End	General Time scale	Candidates Nr Room 2 CCS Prep.	General Time scale	Exam time (min)	Room 3 CCS 1	Room 4 CCS 2	Room 5 CCS 3	Room 6 CCS 1	Room 7 CCS 2	Room 8 CCS 3	General Time scale	Exam time (min)	Room 9 CBA 1	Room 10 CBA 2	Room 11 CBA 3
08:00					08:00		08:00								08:00				
08:15	G1	Cand 1-9			08:15		08:15								08:15				
08:30					08:30	Cand 1-6	08:30								08:30	15	Cand 7	Cand 8	Cand 9
08:45					08:45		08:45								08:45	15	Cand 9	Cand 7	Cand 8
09:00	G1	Cand 10-12			09:00		09:00	30	Cand 1	Cand 2	Cand 3	Cand 4	Cand 5	Cand 6	09:00	15	Cand 8	Cand 9	Cand 7
09:15			Cand 7-9		09:15		09:15								09:15	15	Cand 10	Cand 11	Cand 12
09:30			Cand 7-9		09:30		09:30	30	Cand 3	Cand 1	Cand 2	Cand 6	Cand 4	Cand 5	09:30	15	Cand 12	Cand 10	Cand 11
09:45			Cand 7-9		09:45		09:45								09:45	15	Cand 11	Cand 12	Cand 10
10:00					10:00		10:00	30	Cand 2	Cand 3	Cand 1	Cand 5	Cand 6	Cand 4	10:00				
10:15					10:15	Cand 7-12	10:15								10:15				
10:30					10:30		10:30								10:30				
10:45			Cand 4-6		10:45		10:45	30	Cand 7	Cand 8	Cand 9	Cand 10	Cand 11	Cand 12	10:45	15	Cand 1	Cand 2	Cand 3
11:00			Cand 4-6		11:00		11:00								11:00	15	Cand 3	Cand 1	Cand 2
11:15			Cand 4-6		11:15		11:15	30	Cand 9	Cand 7	Cand 8	Cand 12	Cand 10	Cand 11	11:15	15	Cand 2	Cand 3	Cand 1
11:30				Cand 1-3	11:30		11:30								11:30	15	Cand 4	Cand 5	Cand 6
11:45	G2	Cand 13-18			11:45		11:45	30	Cand 8	Cand 9	Cand 7	Cand 11	Cand 12	Cand 10	11:45	15	Cand 6	Cand 4	Cand 5
12:00	G2	Cand 19-21			12:00	Cand 13-18	12:00								12:00	15	Cand 5	Cand 6	Cand 4
12:15				Cand 4-12	12:15		12:15								12:15	15	Cand 19	Cand 20	Cand 21
12:30					12:30		12:30	30	Cand 13	Cand 14	Cand 15	Cand 16	Cand 17	Cand 18	12:30	15	Cand 21	Cand 19	Cand 20
12:45	G2	Cand 22-24			12:45		12:45								12:45	15	Cand 20	Cand 21	Cand 19
13:00			Cand 19-21		13:00		13:00	30	Cand 15	Cand 13	Cand 14	Cand 18	Cand 16	Cand 17	13:00	15	Cand 22	Cand 23	Cand 24
13:15			Cand 19-21		13:15		13:15								13:15	15	Cand 24	Cand 22	Cand 23
13:30			Cand 19-21		13:30		13:30	30	Cand 14	Cand 15	Cand 13	Cand 17	Cand 18	Cand 16	13:30	15	Cand 23	Cand 24	Cand 22
13:45					13:45		13:45								13:45				
14:00					14:00	Cand 19-24	14:00								14:00				
14:15			Cand 16-18		14:15		14:15								14:15	15	Cand 13	Cand 14	Cand 15
14:30			Cand 16-18		14:30		14:30	25	Cand 19	Cand 20	Cand 21	Cand 22	Cand 23	Cand 24	14:30	15	Cand 15	Cand 13	Cand 14
14:45			Cand 16-18		14:45		14:45								14:45	15	Cand 14	Cand 15	Cand 13
15:00				Cand 13-15	15:00		15:00	25	Cand 21	Cand 19	Cand 20	Cand 24	Cand 22	Cand 23	15:00	15	Cand 16	Cand 17	Cand 18
15:15	G3	Cand 25-30			15:15		15:15								15:15	15	Cand 18	Cand 16	Cand 17
15:30	G3	Cand 31-33			15:30	Cand 25-30	15:30	25	Cand 20	Cand 21	Cand 19	Cand 23	Cand 24	Cand 22	15:30	15	Cand 17	Cand 18	Cand 16
15:45				Cand 16-18	15:45		15:45								15:45	15	Cand 31	Cand 32	Cand 33
16:00				Cand 19-24	16:00		16:00	25	Cand 25	Cand 26	Cand 27	Cand 28	Cand 29	Cand 30	16:00	15	Cand 33	Cand 31	Cand 32
16:15	G3	Cand 34-36			16:15		16:15								16:15	15	Cand 32	Cand 33	Cand 31
16:30			Cand 31-33		16:30		16:30	25	Cand 27	Cand 25	Cand 26	Cand 30	Cand 28	Cand 29	16:30	15	Cand 34	Cand 35	Cand 36
16:45			Cand 31-33		16:45		16:45								16:45	15	Cand 36	Cand 34	Cand 35
17:00			Cand 31-33		17:00		17:00	25	Cand 26	Cand 27	Cand 25	Cand 29	Cand 30	Cand 28	17:00	15	Cand 35	Cand 36	Cand 34
17:15					17:15		17:15								17:15				
17:30					17:30	Cand 31-36	17:30								17:30				
17:45			Cand 28-30		17:45		17:45								17:45	15	Cand 25	Cand 26	Cand 27
18:00			Cand 28-30		18:00		18:00	25	Cand 31	Cand 32	Cand 33	Cand 34	Cand 35	Cand 36	18:00	15	Cand 27	Cand 25	Cand 26
18:15			Cand 28-30		18:15		18:15								18:15	15	Cand 26	Cand 27	Cand 25
18:30				Cand 25-27	18:30		18:30	25	Cand 33	Cand 31	Cand 32	Cand 36	Cand 34	Cand 35	18:30	15	Cand 28	Cand 29	Cand 30
18:45					18:45		18:45								18:45	15	Cand 30	Cand 28	Cand 29
19:00					19:00		19:00	25	Cand 32	Cand 33	Cand 31	Cand 35	Cand 36	Cand 34	19:00	15	Cand 29	Cand 30	Cand 28
19:15				Cand 28-30	19:15		19:15								19:15				
19:30				Cand 31-36	19:30		19:30								19:30				

Figure 4: Exam schedule for a large centre, coping with 36 examinees, using only 11 rooms and 15 examiners.

4.2.2. Exam Centre Director

The Exam Centre Director must be an experienced intensive care physician and educator holder of the EDIC diploma, or other comparable postgraduate specialist accreditation in Intensive Care Medicine. In addition she/he

- is an experienced EDIC Part II examiner
- has previously held a position of an Exam Centre co-director
- has previous experience of organising educational/scientific meetings
- has the full support of his/her own institution

The Examinations Committee nominates the Exam Centre Director. His/her term is three years, renewable more than once. The Exam Centre Director signs a three-year contract, in which he/she accepts:

- To act as the person responsible for the choice of the exam centre and the execution of the exam in accordance with the EDIC Part II exam regulations.
- To act as a co-director at least once prior to running her/his first exam session.
- To be audited by members of the Examinations Committee and/or the CESMA.
- To provide the EDIC office with an exam centre budget 6 months prior to the exam.
- To provide the EDIC office with a list of local examiners large enough to cope with the needs of the Exam Centre and the yearly fluctuation of examiners' availability.
- To run a pre-exam examiners' workshop according to the EDIC regulations.
- To select and train a sufficient number of auxiliary staff members to cope with the Exam Centre's needs.
- To be present throughout the entire exam.
- To hand out and collect examinees' and examiners' feedback at the end of the exam.
- To transfer correctly all candidates' exam data from the iPad to the exam server in Heidelberg within 24 hours after the end of the exam.
- To mail the remaining exam materials to the EDIC office within 24 hours after the end of the exam.
- To be responsible for the secure and safe storage of the iPads and, at the request of the EDIC office, to ship them back to Brussels.
- To test and guarantee the correct functioning of the iPads sufficiently in advance of the exam, in order to guarantee their function during the exam session.
- To answer any queries from the Examinations Committee and Appeal Committee within the appropriate time-frame.
- Not to exchange any correspondence with the exam candidates assigned to the Exam Centre without the mandate of the EDIC office.
- To attend Exam Centre Directors' pre-exam meetings.
- To mail the Exam Centre report to the EDIC office within 5 working days after the end of the exam.

4.2.3. Exam Centre Directors' meeting

An Exam Centre Directors' pre-meeting is organised twice a year. The aim of the meeting is to brief the Exam Centre Directors about the upcoming exam session. During the meeting, the CCS and CBS are presented and discussed. This meeting is mandatory for Exam Centre Directors organising the next exam session.

4.2.4. Exam Centre audit

After provisional acceptance of the application documents by the Examinations Committee, to get final accreditation, an EDIC Part II Exam Centre needs to be visited by an Examinations Committee delegation during its first exam session. Thereafter, the Examinations Committee can organise, at any time with short notice, an audit of the Exam Centre. Visitors are members of the Examinations Committee, or experienced EDIC Part II examiners. The visiting team will write a report, which will focus on the following points:

- Structure and architecture of the exam location
- Logistics around the exam
- Correct development of the exam compliant with EDIC Part II regulations
- Conduct and appropriate development of the pre-examiners' workshop
- Respectful and friendly contact with the examiners and examinees

4.3. Preparing the exam
4.3.1. Selection of CCS and CBS
The authors and co-authors of the CCS and CBS are the Examinations Committee members or experienced examiners. The CCS and CBS are subject to review by experienced members of the Examinations Committee. The CCS section editor is responsible for ensuring that there is no thematic overlap between the CCS, the respect of CCS editing regulations, and compliance with the deadlines. In addition, a reviewer is assigned to each CCS.

The reviewer is responsible for the quality of the CCS and the correction of potential mistakes. The CBS section editor is, at the same time, a reviewer of all three CBS, and hence responsible for the internal consistence and quality of each CBS and the compliance with the deadlines. The Examinations Committee decides about the topics and the authorship of the three CCSs and three CBSs, six months prior to the exam.

The CCSs are selected out of the daily practice of its author. Ideally they should reflect the history and the course of a real patient of the ICU, experienced by the author, in order to use real diagnostic and therapeutic procedures. The latter usually includes picture of characteristic clinical findings, monitoring curves, values and information given by the different organ support devices used in the ICU, blood gas measurement, and other laboratory values, imaging, ECGs, and so on.

The three main domains of the CBSs are imaging, curves and biochemical scenarios. Ideally, vignettes are collected from daily ICU practice. The Examinations Committee may decide for, marking purposes, to re-use older vignettes, but the number of old vignettes should not exceed 40% of all vignettes within one CBS domain. Authors and co-authors are responsible for the production of new vignettes.

4.3.2. Selection of examiners
Examiners are selected on the basis of their knowledge of the subject, credibility and aptitude for teaching/education. The examiner is an established specialist in Intensive Care Medicine, with broad recognition among peers and practicing in Europe.
In addition, the examiner should also fulfil the following criteria:

- He/she is an ESICM member and successful holder of the EDIC diploma, or another comparable postgraduate specialist diploma in Intensive Care Medicine.
- He/she has an established track record in post-graduate training in Intensive Care Medicine in Europe.
- He/she is actively involved in the management of intensive care patients on a daily basis.
- He/she has been a formal observer of an EDIC Part II exam and is subsequently recommended by the Exam Centre Director.
- He/she has passed successfully an examiner-training course and is holder of the EDIC Part II examiners' certificate or other equivalent European examiner certificate. After acceptance, to maintain her/his certificate valid, she/he has to practice as an EDIC Part II examiner at least once during two consecutive years.

The Examinations Committee nominates examiners and, upon agreement with the examiner, enters his/her personal record into the EDIC Part II examiners' database. This information will only be used for the purpose of EDIC examinations. Upon request of an Exam Centre Director, the Examinations Committee can mandate one or more examiners to support an exam centre, if available.

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Examiners act on a voluntary basis. No honoraria will be paid by ESICM. However, ESICM will cover costs generated by travelling to and from the exam centre and lodging at the exam centre location for up to a maximum of two nights, according to the schedule of the exam day.

An examiner who would like to terminate his engagement for EDIC examinations has to provide a written notice of cancellation six month prior to the next exam date.

4.3.3. Training of examiners

It is essential that EDIC Part II examiners be trained to ensure a high quality exam and to standardise their behaviour across EDIC Part II exam centres. The aim is to train examiners to standardise the exam process, to discuss the CCS and CBS and to be able to assess the behaviour and attitudes of the different candidates, especially the borderline candidates.

The training concept of the Examinations Committee has two parts:

- Part 1: Introductory workshop for newcomers
- Part 2: Pre-Exam preparation workshop for all examiners

The aim of the introductory workshop for new examiners is to introduce new examiners to their future activity. The main topics of part 1 are:

- The general aspects, principals and aim of the EDIC exams
- The aim, structure, organisation and rules of the EDIC Part II exam
- Instructions and practical exercises in how to behave in front of a candidate during the CCS and CBS.

This introductory course can be delivered by an experienced Exam Centre Director, locally or centrally organised by the Examinations Committee. For this purpose, the teaching film on CCS and CBS examination is shown. The course is mandatory for new examiners.

The centre director organises the pre-exam preparation workshop for all examiners the afternoon before the exam session. This workshop is mandatory for all examiners acting in the specific session. The aim of this pre-exam workshop is:

- To familiarise examiners with the CCS cases, to highlight possible difficulties and to discuss how much prompting is allowed and for which situation
- To familiarise examiners with CBS vignettes and to highlight possible difficulties
- To refresh the examiners understanding of the regulations for examiners' behaviour
- To refresh examiners in the handling of iPads during the exam
- To remind examiners about the safety issues surrounding the exam
- To inform examiners about the logistics for the exam day.
- To inform examiners about potentially problematic candidate

A template for a pre-exam workshop, including a short introduction for new examiners, is shown in figure 5.

Time	Presentation title	Room
13:15 - 15:30	**Introduction to the EDIC 2 exam**	Hoer B15
13:15 – 13:20	- Welcome	
13:20 – 13:40	- The EDIC exam general concept - Exam Logistics & Evaluation & Quality	
13:40 – 14:00	- Clinical case scenario (CCS) and computer based assessment (CBS): concept and scoring	
14:00 – 14:45	- Exam conduct: examiners and examinees behaviour - Video exercise	
14:45 – 15:30	- Scoring candidate performance using the iPad	

Coffee break		Dick & Davy

CCS and CBS familiarization workshop (all examiners)

Time	Presentation title	Room
16:00 – 16:30	**Introductory remarks**	Hoer B15
16:30 – 17:10	CCS reading (20') and discussion within groups (20')	
	Group 1: CCS 1	Hoer B15
	Group 2: CCS 2	Hoer D 6
	Group 3: CCS 3	Hoer D 3
17:15 – 17:45	CCS 1-3 presentation of key items and questions round	Hoer B15
17:45 – 18:00	Break	
18:00 – 18:30	CBS Reading and discussion in groups	
	Group 1: CBS 1	Hoer B15
	Group 2: CBS 2	Hoer D 6
	Group 3: CBS 3	Hoer D 3
18:30 – 18:50	CBS 1-3 presentation of key items and questions round	Hoer B15
20:00	**Examiners Dinner**	

Figure 5: Template for a pre-exam workshop organised at the Exam Centre by the Centre Director. Experienced examiners can be appointed as speakers and trainers. Examiners assigned to group 1-3 are those persons examining candidates CCS 1-3 and CBS 1-3, respectively.

This pre-exam workshop is followed by an examiners' dinner organised by the Exam Centre Director.

4.3.4. Auxiliary staff for the exam day

To cope with the local exam logistics, auxiliary personnel are necessary. These could be either students or other persons from the university/hospital. Auxiliary personnel is needed for reception, identification and registration of the examinees, for surveillance of candidates' personal belongings, for supervision of the examinees during the preparation of the CCSs, for guidance of examinees to find the correct skill station during rotation time and for candidates' surveillance during coffee breaks. Two different examples of how to organise the exam day are shown in figures 3 and 4.

4.4 Process and security during the exam

4.4.1 General remarks

The person responsible for the exam process is the Exam Centre Director. According to local needs, he/she decides upon the engagement of the auxiliary staff and the examiners. He/she is responsible to ensure that examiners, while examining a candidate, have no conflict of interest. For quality purposes, he/she agrees to follow the following general rules for the conduct of the exam:

- The exam needs to be performed simultaneously in all EDIC exam centres
- Exchange examiners between CCS and CBS after each group (12 candidates)
- Each candidate sees 9 different examiners
- Swap of interviewers within one CCS, each time
- Candidate performance is subjected to maximal confidentiality

In addition, the Exam Centre Director is responsible for the safety and confidentiality during the entire exam session. To grant safety and confidentiality, the following rules need to be applied:

- Exam centre directors, examiners and examinees are not allowed to keep any exam documents.
- Only the documents necessary for the relevant skill station should be present in each particular exam room/station.
- The exam materials provided to the candidates in the preparation room cannot be removed by the candidates. They are allowed to take notes on a neutral piece of paper to be used during the CCS exams.
- At the end of the exam, candidates are not allowed to take any notes with them.
- Candidates are not allowed to take pictures of the exam materials.
- During the exam session, candidates are permanently supervised by the Exam Centre Director and an examiner, or an auxiliary staff member.
- Candidates entering the exam and those leaving the exam are physically separated.

Violations of the exam rules have to be communicated to the Exam Centre Director immediately. This applies to all types of violation of the exam regulations, but in particular to

- Any irregularity that causes a time delay at a CCS or CBS station that has the potential to disadvantage a candidate
- Cheating by a candidate
- Inability of an examiner or a candidate to continue the examination because of a health-related issue
- Candidates that do not come for the exam, or any CCS or CBS station.

4.4.2. Candidates

Candidates who do not start their exam within 15 minutes have to stay away from the building entrance. At the registration desk, a member of the staff will check candidates' identification and hold onto candidates' cellular phones. The Exam Centre Director greets candidates personally as they sit down, to obtain the introductory information for the exam. The Exam Centre Director reminds candidate about the exam rules, the ID scanning process with the iPads, paper back-up work in case of a breakdown of the iPad, the plan of the exam building, any logistical information. He/she reminds them about the evaluation process of the exam and informs them about the provisional date for the communication of the results.

Candidates may start their exam, either by accessing the CCS stations or the CBS stations first.

Before passing through the three CCS, the candidate will enter the exam preparation room, where he/she will receive the materials to prepare for the three clinical cases. After 30 minutes, the candidate will move to the first CCS station. No preparation time is foreseen before passing through the CBS. Candidates access the skill stations directly after the introduction session.

Within the building, due to the limited time for rotation, candidates will need to be accompanied by a member of the staff while moving from one skill station to the other. At the end of the exam, the candidates fill in their feedback form. The Exam Centre Director disbands candidates thereafter. Candidates must leave the building immediately.

4.4.3. Examiners

During the examiners' workshops, examiners must have been informed about the importance of the standardisation of the exam process among exam centres in order to minimise differences between centres. The standardisation of the examiners behaviours during the exam is an important step of this process. Therefore examiners have been trained to adhere to the following rules of behaviour when questioning an examinee:

CCS
- Ask the candidate to summarise the case upfront (1min.)

- Watch time! 25 min allowed for each candidate
- Come to the point and focus on the question content
- Prompt 1-2 times
- At the end, the candidate cannot go back over any missed questions

CBS

- Instruction: Number of vignettes, time for each vignette, inform candidates about the option to go back to any missed vignette(s) at the end of the exam, if there is any time left
- Prompting 1x allowed, do not show anything with a finger on the computer screen
- At the end, if there is any time left, ask the following question to the candidate: "are there any images/slides you would like to see again?" without prompting!

The Exam Centre Director is responsible for the teaching and the compliance of his examiners to these rules.

4.5 After the Exam

4.5.1. Clinical and statistical validity analysis of the assessment questions

Rating and marking of the exam items has been described under point 4.1.3. The performance of the candidate is recorded on the iPad. During the CCS and the CBS discussion, the examiners click an expected correct answer as soon candidates mention it. Answers that are not provided by the candidates score zero points. At the end of the exam, this information is stored on the iPad and, as soon as an Internet connection is available, transferred to the exam server at the University of Heidelberg. For security reasons, and in the case of an appeal by the candidate, a print screen of the exam answer sheet is generated and stored on the iPad while saving the data. All print screens are transferred electronically to Heidelberg at the end of the exam day, before the iPad is switched off.

Once all exam results have been transferred to the server at the Heidelberg University, UCAN analyses the data using the Examiner software (same as for EDIC Part I) and a report is generated.

Difficulty and discriminatory power is calculated for each item and reported graphically. Exam reliability is assessed by the calculation of Cronbach's Alpha. The results of the exam are analysed and discussed by the Examinations Committee during the EDIC Part II "key-validation" meeting, which is held as soon as possible but no later than 15 days after the exam. At this meeting, all items with a low discriminatory power (r-value < 0.2) and excessively easy (p-value > 0.8) and difficult (p-value < 0.5) items are analysed and discussed. Due to formal mistakes and unclear formulation, some questions may be eliminated from the final exam evaluation. To eliminate an item, approx. 8-10 of the Examinations Committee members present at the meeting are needed to reach consent.

Thereafter the pass mark is re-calculated.

4.5.2. Determination of Pass/Fail mark

As outlined in section 4.1.3, the use of widely described standard setting techniques, such as Angoff and Borderline Regression, means the pass mark may vary for each examination. These standard setting techniques allow adjustment of the pass mark in response to the difficulty of the examination.

4.5.3. Dissemination of Pass/Fail results and counselling for failed candidates

After the EDIC Part II "key-validation" meeting and the final exam report has been obtained (in general three weeks after the exam session), a candidate feedback letter is generated and sent to the candidates electronically. The letter informs the candidate about the number of points necessary to pass the CCS section and the CBS section, how many points he/she has achieved in both sections and whether his/her result for the EDIC Part II exam is a pass or a fail. In addition, his/her personal performance compared to the exam population for the 3 CCSs and 3 CBSs is shown. Candidates who fail are informed that they are free to have another go. A maximum of three attempts is allowed.

5. Contact address
5.1. EDIC Office

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