

HOW TO PREPARE FOR THE EDA

A GUIDE FOR PROSPECTIVE CANDIDATES FOR THE DIPLOMA AND IN-TRAINING EXAMINATIONS

INTRODUCTION

What is the purpose of the European Diploma in Anaesthesiology and Intensive Care? Europe needs an international training and assessment structure for specialist recognition to allow maintenance of professional standards and quality, together with development of the Speciality. It must also allow free movement of clinicians and integration of European nationals into other countries' health care systems.

At present assessment, training and recognition varies between and within different Europe countries. Many have individual diplomas and specialist recognition, different periods of training required and there is variable recognition of other countries' qualifications and accreditation. Europe also has some special and unique problems, namely variations in language, individual practice, resources and in the supply and demand for doctors.

What is the examination designed to do? The EDA tests knowledge, but not skills or attitudes at a particular stage of training. It does not replace individual assessment, though it may contribute to it and it is really a Europe wide examination, which may also be used as part of an individual country's training programme. As an examination in its own right, it is also a qualification and a title of distinction, though the letters DESA after a doctor's name are not universally recognised as yet. It provides a framework of knowledge, an incentive to learn and to teach and may help in achieving promotion and in raising standards.

STRUCTURE OF THE EXAMINATION

The examination is a multilingual, end-of-training, two-part examination covering the relevant basic sciences and clinical subjects appropriate for a specialist anaesthesiologist. The European diploma in anaesthesiology and intensive care is currently offered in English, French, Spanish, German, Italian, Russian, Hungarian and Polish for the Part I examination, and English, French, Spanish, German and Scandinavian for the Part II examination.

PART I

a) The Part I examination is held annually in late September or early October simultaneously in several centres as listed in the annual examination calendar. The examination may be taken in English, French, German, Italian, Spanish, Russian, Hungarian and Polish.

b) The Part I examination comprises two multiple choice question (MCQ) papers. Each paper has sixty questions and is of two hours duration. The MCQ format adopted is that of a stem with five responses, each of which may be either true or false. Instructions to candidates on how to answer the MCQ's can be found on page 5. The two papers examine different areas of knowledge:

Paper A - Basic Science (60 MCQ's), includes Physiology (20 MCQ's), Pharmacology (20 MCQ's) and Physics, Clinical Measurement, Statistics (20 MCQ's)

Paper B - Clinical Practice (60 MCQ's), including General anaesthesia, Special anaesthetic techniques, Local / regional anaesthesia, Intensive care, Internal medicine and Emergency medicine

c) The candidate enters his/her answers on special, pre-printed answer sheets which are computer marked. The marking method is that each correct answer earns one positive mark. Incorrect answers or those left blank score 0 marks. The use of negative marking for incorrect answers has been withdrawn from the exam with effect from 2008. The computer assessment produced is then analysed by the Examination Committee. At the discretion of the examination committee chairman, **the MCQ papers** may be made **available to candidates after the examination** in countries where Part I is mandatory .

d) We are frequently asked questions such as how is the pass mark set and is the pass mark/percentage of successful candidates always the same? This effectively asks whether the candidates are in competition with each other, either for that particular sitting of the exam or from one year to the next? In deciding the pass marks for the two multiple choice question papers, the Examination Committee take into account two important variables:

i. The use of new and altered MCQ's each year can result in slight variations in the standard of the papers. This may result in higher or lower marks being achieved as a result of the standard of the paper rather than variation in the quality of the candidates.

ii. The actual standard of candidates entering the examination may also vary between years. It would be wrong to fail one candidate simply as a result of comparison with others in a particularly strong year when he/she might have appeared comparatively better in a weaker group of candidates at another time. Because of these variables, it is inappropriate to have a fixed pass mark for the examination. In practice, however, the derived pass mark is usually between 70% and 80% of the possible all-correct score.

e) Computer assessment of individual parts of every question and also of each question as a whole produces indices both of facility and difficulty. This allows direct comparisons to be made between the performance of good and bad candidates in a particular year. In addition, the judicious use of unchanged discriminator questions, which have been set in previous papers, allows comparison between the performance of different

groups of candidates in different years. This, when combined with an analysis of the distribution of the marks achieved, is utilised by the examiners in determining the pass mark in relation to the standard achieved in that particular sitting of the examination in comparison to that in previous years.

f) In order to provide some “feed-back” information, both successful and unsuccessful candidates are provided with a Candidate Report, similar to that produced for the in-training examination candidates. From this, candidates can see how well or badly they have performed in each part of the examination and in various subject areas. This information can be of particular value to those who have failed the examination and wish to prepare themselves to re-sit. **It should be noted that pass/fail marks are evaluated on the paper as a whole and candidates must pass both papers in order to pass the Part I examination.**

THE EUROPEAN DIPLOMA IN- TRAINING ASSESSMENT EXAMINATION

This is a training exercise in which trainees sit the actual diploma paper annually or when desired. It is designed to allow those with no experience of this type of examination, those who are uncertain as to whether their level of training is sufficient, and those who wish to use it as examination preparation. The in-training exam can be sat in any department, which has been approved for training in Europe. A minimum number of 6 candidates in each centre is required. Applications have to come from the Head of Department, rather than from individual trainees. Individual trainees can sit the ITA in one of the Part I centre. In-training candidates declare their level of experience in terms of years of training and the exam fee is lower than that for the Diploma. Achieving the equivalent of a pass mark, however, does not allow a candidate to pass the actual European Diploma. Sponsorship arrangements for further reduction in fees (possibly paid by individual member states) may be available in some departments.

The In-Training assessment examination report provides “feed-back” to candidates in key areas to allow them to assess their strong and weak areas of knowledge. The subdivisions reported are as follows:

Paper A

Physiology - Cardio-respiratory, General, Neurophysiology
Pharmacology - Cardiovascular, C.N.S., General
General Physics, Clinical measurement, Statistics

Paper B

General anaesthesia, Special anaesthetic techniques, Local / regional anaesthesia, Intensive care, Internal medicine, Emergency medicine

These reports are only released to individual candidates and the Head of Department, who is then asked to discuss them with their trainers as they wish. This ensures involvement of trainers who are also given a complete listing of the average marks of trainees from the same training group, in that country, Europe-wide and for the actual Diploma examination, to allow comparison and assessment of a candidate’s progress year on year. The composite list does not include statistics from any certified Specialists who may be sitting

the in-training examination. Although such assessments may be used to affect promotion, it must be remembered that the examination is only really a test of knowledge.

PREPARATION FOR THE PART I EXAM

When should the candidate sit the Part I exam and are there specific entry requirements? Although there are no specific requirements in terms of duration of training, the level of knowledge is appropriate to that of a 4th year trainee. There are a number of common questions and misconceptions, such as, what preparation do I need, what should I read, is locally organised teaching sufficient or do I need to attend formal lectures as part of a course? Preparation for the Part I examination is about first acquiring the knowledge and this can be done in a number of ways, both by reading, discussion, local tutorials, formal lectures and courses and practicing examination technique. We are also often asked whether the Society should publish the MCQ bank? The examination is designed to test more than just learning hundreds of disjointed facts, and involves reasoning and decision making too. There are many books of sample questions available, but be sure to use ones which are in the correct, multiple true/false format.

HOW DOES ONE PRACTISE MCQ QUESTIONS?

At the outset it is essential to understand the question format of a stem followed by a response. The questions are designed to be read as stem, response A, stem, response B, etc. In other words, response A has no bearing on response B and response B only makes sense if preceded by the stem. Reading them in this way is crucial to avoid double negatives, etc. Questions are of the multiple true/false variety. With effect from October 2008 the marking system has changed to Positive marking where only the questions answered correctly receive a mark. **There is no longer negative marking of incorrect answers.** Candidates will need to develop their own MCQ answering strategy. Candidates should answer all the questions as there is no longer a penalty for getting an answer incorrect

MCQ STRATEGY FOR THE PART I EDA

There are two things that a candidate must do to pass the examinations for the European Diploma. He/she must reach a certain level of knowledge and must know how to present it to the examiners. Books of test questions help a candidate assess their level of knowledge, but they should not be treated as sources of knowledge.

The standard textbooks are the best source books of basic knowledge for the EDA. The more specialised texts, reviews in the journals, and discussion with others should be used to build upon this knowledge, to update it, and to find faults in it. The candidate cannot expect to pass an exam unless he or she works for it. The more clinically orientated is the exam, then the more importance must be placed on gaining wide experience in clinical anaesthesia. Candidates must avoid the danger of working too much "at the books."

Many people think that the key to these exams is to go on a course, and there is no doubt that courses can be extremely useful. They should, however, be thought of as a means of aiming one's studies in the right direction; it is disappointing to find that many people will attend a course 2-3 months before the hurdle of a major examination apparently without

having done any work. This is a waste of time. To get the most out of a course, one should have covered some of the groundwork beforehand. Having acquired what one hopes to be sufficient knowledge, then is the time that these books should be of help.

HOW TO ANSWER MULTIPLE CHOICE QUESTIONS

The format of the MCQ's in the EDA examination is a stem and five responses. The stem may be short ("Opiates are:"), or may be a few lines, for example when presenting a clinical problem. Each of the five responses that follow may be true or false. The candidate scores one mark for each correct answer. There is no penalty for incorrect answers or those left blank. The actual answer sheets are marked by computer, and so the candidate must put their answers onto special cards that are supplied separately. These cards have the question numbers printed on them and the preferred answer is indicated by filling in a "true" or a "false" box in pencil.

Candidates should answer all the questions. With the removal of negative marking there is no advantage to leaving questions unanswered.

The candidate should also think very carefully if they think a response (or a stem) is ambiguous. Each stem should be read very carefully, watching out for qualifying words such as "commonly", "rarely", "always", etc. because they can turn what would otherwise be a "false" into a "true" answer and vice versa. Re-read the stem with each response, as it is all too easy to forget the emphasis and exact wording of the stem as one works down the five responses. Watch out for negative words - in the heat of the moment it is easy to fail to see "not" in a response. "May" is an awkward word; one can argue that anything "may" cause anything else. Try to give the answer relevant to clinical practice. For instance, it is "true" that atropine may cause bradycardia, but not that propranolol may relieve bronchospasm.

There are some subjects about which questions tend to be particularly confusing. The oxyhaemoglobin dissociation curve is one and the ionic dissociation of drugs is another. These are both subjects in which the wording of stem and response are crucial. If an option states, "The saturated vapour pressure of halothane is 243 mm Hg", then the answer is clear (if the candidate happens to know!), but the concept and consequences of "The oxyhaemoglobin dissociation curve is shifted to the left by hypercarbia" can be expressed in a number of different ways and, even then, the wording of the stem may alter the answer. It is impossible to write an MCQ paper without some of the questions being ambiguous, or seeming ambiguous to some people. Some of the other questions may be ambiguous without one having realised or intended it and in the examination the candidate must learn how to deal with them. The examiners try to ensure that questions are not ambiguous. Candidates should appreciate that an ambiguous leaf affects all those taking the exam.

It is often more difficult to think of false responses than true responses when compiling MCQ questions. Questions tend to fall into two basic types: the straightforward factual type, and the deductive type. Many pharmacology questions present facts, for example a drug and five effects that may or may not be properties of that drug. A false response must appear to some candidates to be true or else the question will not discriminate between the good and poor candidate. The false responses are likely to be: the exact opposite of the true answer (e.g. **hyperkalaemia** for **hypokalaemia**), an association with another similar or

similar-sounding drug (e.g. a property of **chlorpropamide** appended to a question on **chlorpromazine**), or a complete red herring. These last can be very difficult to answer, and the candidate may not be able to find the correct answer in the literature because the connection does not exist. False answers in the deductive type of question include these types, although they may not be so obvious, but also include answers of false logic.

A STRATEGY FOR A MULTIPLE CHOICE PAPER

The candidate should have a general strategy for answering an MCQ paper. For those who do not, one is suggested below. While it is certainly not the only one, it should allow efficient use of the time spent answering the paper.

First, read through the questions from the first to the last answering quickly those of which one is certain of the answers. Mark the options T or F on the question paper; it is not a good idea to mark the computer marking answer card as you progress because it is then not as easy to check your answers.

The candidate will probably find that he/she can tell from the stem whether or not they will be able to answer a question. If you cannot answer a question immediately on this first read-through, put a question mark by it if you will need to think about it (and also by any answers that you do make, but about which you are still a little uncertain). Similarly put a cross against those that you think you will probably not be able to answer at all. It is very important not to dwell on doubtful questions at all, in your first read-through or you may find yourself short of time before you have answered all the questions that you **DO** know.

On the second read-through, tackle those that you marked with a question mark. Don't be afraid to scribble formulae or graphs on scrap paper to help with confusing questions. After this second read-through, it is worth going back and rechecking the answers, but don't dwell on those that you answered on the first read-through or you will find yourself doubting even your most cast-iron certainties. At this stage, transfer the answers that you have made so far, to the computer cards **and make sure that you mark the cards correctly** - it is easy to get out of phase between the question numbers and answer numbers. You should now regard these answers as final and unchangeable: don't look at the questions again and get on with answering those that you marked with a cross. You can transfer your answers to these questions to the computer marking cards right away because you will have had plenty of time to think around the subject.

When you have answered all you can, check that you have written your name in every place that you should have done, and then it may be better to leave the examination hall. With essay questions, you should always be able to add more to your answers, and you should stay for every precious minute; staying and staring at MCQ answers induces neurosis!

PRACTISING TRIAL MCQ PAPERS

The format of each of the two EDA MCQ papers in the exam is 60 questions in 2 hours and the best way to test yourself is to try a whole "paper" from an appropriate book of questions, under examination conditions, unseen, in under two hours (say 1 hour 45 mins). If you take longer than this you may run out of time in the actual exam when transferring your answers to the computer cards. The index at the back of most books of MCQ's allows access to the questions under broad subject headings so that one could, if one wanted, answer a number

of questions from different papers on, say, endocrine physiology. The candidate will, however, gain nothing if he/she looks at the answers without trying the questions; and there is little to gain from trying a question if one has not done the work on the subject.

HOW TO SCORE ONE'S PERFORMANCE

For each response, score + 1 if you marked correctly True or False, and 0 if you marked incorrectly True or False or for any response for which you gave no answer. The maximum for each question is thus + 5, and the minimum is 0.

Your overall score on a "paper" will give some idea of your general level of knowledge. Since the pass mark is not fixed (see above) one cannot say what score corresponds to a "pass" in the MCQ of the actual exam.

The pass mark in 2008 will be considerably higher than in previous years due to the change in the marking system and removal of negative marking.

As well as your overall score it is worth calculating your "efficiency ratio", which is the number of your correct answers expressed as a percentage of your total number of attempted answers. Thus you can get an overall score of 50% by answering 150 responses correctly (an efficiency of 100%) or by answering 170 but getting 20 of them wrong: A low total score with a high efficiency implies that you are certain of what you do know but that your overall knowledge is not enough, while a low efficiency ratio means that your knowledge is faulty, or that you are guessing.

Often, candidates presenting for the exam ask how many responses they should aim to answer. It is important that candidates realise that they should answer all the questions as there is no penalty for incorrect answers or those left blank..

Your overall score will indicate the level of your knowledge, while your efficiency ratio will point out gross faults in technique of answering. You should also look very carefully at those individual questions at which you scored badly. Think carefully why you did poorly on a particular question. The usual reason is simply lack of knowledge and occasionally you will find a complete gap such that you are unable to answer any of the responses to a question

THE ANSWERS TO TRIAL MCQ PAPERS

It is very easy to become side-tracked and obsessed when one gets a particular response wrong which one feels one marked correctly and you may find a source which shows that you are indeed correct. However, nobody fails the MCQ paper because of one response that, according to the "correct" answer, they answered incorrectly. You must concentrate instead on those questions in which you did badly overall. If you get 3 or 4 incorrect answers on a question about acid-base balance it would be more valuable to go and read a good account of acid-base balance, and to seek help from others, than to feel aggrieved that you think the answer is wrong on one particular point and waste time laboriously checking each particular response.

THE LAST WORD

The examiners try to set questions on sensible, mainstream, subjects that are clear and unambiguous. They are not trying to be devious and trick you into giving incorrect answers. Remember that the level of knowledge required is that of a trainee at the end of their 3rd year of training and the examiners are constantly reminded of this. The safe way is to accept that conventional answers are correct and that thinking too deeply is dangerous!

It is often said that MCQ's are unfair because they penalise the candidate who has read very widely and who can always find a reason why "true" is actually "sometimes true" or "maybe true". MCQ's have to have black-or-white answers. When testing basic knowledge or general principles, what the examiner wants to know is whether you can distinguish the wood from the trees.

THE PART II EXAMINATION

INTRODUCTION

The Part II examinations are held annually between March and September in several centres as listed in the examination calendar. Candidates may be examined in English, French, German or Spanish provided there is sufficient demand. In the Scandinavian centre(s), Norwegian, Swedish, Danish and English are the languages used and it is hoped to offer Russian again soon.

- a) In order to qualify for entry to the Part II EDA, candidates must:
 - Have passed the Part I examination
 - Have been on a medical register in a European country for 6 years
 - Have completed 4 years training in anaesthesiology / intensive care
 - Be registered as specialist anaesthesiologist in a European country

- b) The examination of each candidate is held in a single day during which there are four separate 25-minute oral examinations (vivas). In each of these, the candidate is examined by a pair of examiners (each of different nationality), thereby meeting eight examiners in all. As far as possible, candidates are not examined by examiners to whom they are known.

- c) The oral examination embraces the same range of basic science and clinical subjects as is covered by the Part I.

- d) In the oral examinations, 'Guided Questions' are used in which candidates will be given a brief written basic science or clinical scenario (10 minutes) before meeting the examiners. The subsequent examination will then begin by concentrating on the problems arising from the scenario. Two of the oral examinations will concentrate on the basic sciences and two on clinical topics. In the clinical orals, X-rays and ECG's are also used.

- e) Part II examiners use a marking system, which is divided into four grades. The grades are 'good pass', 'pass', 'narrow fail' and 'bad fail'. Since there are four separate oral examinations, the candidate obtains four marks, agreed by each pair of examiners. Ideally, four 'passes' or better should be obtained. The candidate who obtains three 'passes' and one 'narrow fail' may be reconsidered and the examiners have the authority to recommend

a pass overall. Candidates who obtain two or more 'narrow fails' or who obtain one or more 'bad fails', fail the whole examination. It is therefore, most important that candidates should try to achieve a consistent and broad range of knowledge, rather than become experts in narrow fields.

f) At the end of each day, the examiners meet and the marks are declared and summated. Until this time, no examiner knows how the candidate has fared in other parts of the examination. Following this meeting, the results are handed to the candidates and a recommendation is made to the Examination Committee that, once all the regulations have been met, the successful candidates should receive their Diploma.

AREAS OF KNOWLEDGE COVERED IN THE EDA EXAMINATION

The examination aims to assess a candidate's knowledge of:

- The basic sciences
- Clinical anaesthesia (including obstetric anaesthesia & analgesia)
- Resuscitation and emergency medicine
- Specialist anaesthesia (e.g. neuro-, cardiac, thoracic, paediatric)
- Intensive care
- Management of chronic pain
- Current literature

THE BASIC SCIENCES RELEVANT TO ANAESTHESIOLOGY AND INTENSIVE CARE ARE EXAMINED AS FOLLOWS:

Anatomy: The anatomy of the head, neck, thorax, spine and spinal canal. The anatomy of the peripheral nervous and vascular systems, together with surface markings of relevant structures.

Pharmacology: Basic principles of drug action. Principles of pharmacokinetics and pharmacodynamics, receptor drug interaction, physicochemical properties of drugs and their formulations, drug actions and drug toxicity. Pharmacology of drugs used, especially in anaesthesia and in internal medicine.

Physiology and biochemistry (normal and pathological): Respiratory, cardiovascular and neurophysiology. Renal physiology and endocrinology.

Applied physiological measurement: Measurement of physiological variables such as blood pressure, cardiac output, lung function, renal function, hepatic function etc.

Physics and principles of measurement: SI system of units. Properties of liquids, gases and vapours. Physical laws governing gases and liquids as applied to anaesthetic equipment such as pressure gauges, pressure regulators, flowmeters, vapourisers and breathing systems. Relevant electricity, optics, spectrophotometry, and temperature measurement together with an understanding of the principles of commonly used anaesthetic and monitoring equipment. Electrical, fire and explosion hazards in the operating room.

Statistics: Basic principles of data handling, probability theory, population distribution and the application of both parametric and non-parametric tests of significance.

CLINICAL ANAESTHESIOLOGY IS EXAMINED AS FOLLOWS:

Preoperative assessment of the patient, their presenting condition and any intercurrent disease. Interpretation of relevant X-rays, ECG's, lung function tests, cardiac catheterisation data and biochemical results. Use of scoring systems (e.g. ASA grade).

Techniques of both general and regional anaesthesia, including agents, anaesthetic equipment, monitoring and monitoring equipment; and intravenous infusions. Complications of anaesthesia. Obstetric anaesthesia and analgesia including management of complications related to obstetric anaesthesia and analgesia. Neonatal resuscitation. Special requirements of anaesthesia for other surgical subgroups, such as paediatrics or the elderly; cardio-thoracic or neurosurgery.

Postoperative care of the patient including the management of postoperative analgesia.

RESUSCITATION AND EMERGENCY MEDICINE AS FOLLOWS:

Cardiopulmonary resuscitation. Techniques of Basic Life Support and Advanced Life Support.

Emergency medicine. Pre-hospital care. Immediate care of patients with medical or surgical emergencies, including trauma.

INTENSIVE CARE AS FOLLOWS:

Diagnosis and principles of management of patients admitted to a general intensive care unit with both acute surgical and medical conditions. Use of assessment and prognostic scoring systems.

Management of:

- Circulatory and respiratory insufficiency including artificial ventilation.
- Infection, sepsis and use of antimicrobial agents.
- Fluid and electrolyte balance. Administration of crystalloids and colloids including blood and blood products. Parenteral and enteral nutrition.
- Biochemical disturbances such as acid base imbalance, diabetic keto-acidosis, hyperosmolar syndrome and acute poisoning.
- Renal failure including dialysis.
- Acute neurosurgical/neurological conditions.
- Patients with multiple injury, burns and/or multi-organ failure.

Principles of ethical decision-making.

MANAGEMENT OF CHRONIC PAIN AS FOLLOWS:

- The physiology of pain.
- The range of therapeutic measures available for the management of pain.
- The psychological management of pain patients.
- The concept of multidisciplinary care.
- The principles of pain and symptom control in terminal care.

CURRENT LITERATURE

Candidates will be expected to be conversant with major topics appearing in current medical literature related to anaesthesia, pain relief and intensive care. Whilst national and linguistic differences are recognised, some knowledge is expected on topics of international importance (e.g. new agents) even if they are not in current use in all countries.

It must be stressed that the foregoing is NOT intended either as an examination syllabus or as a comprehensive list of topics covered by the examination. It is however, a guide, which it is hoped will prove useful to candidates preparing for the diploma examination.

GUIDANCE FOR CANDIDATES SITTING THE PART II EDA

The Part II EDA is an oral examination. Not all candidates are familiar with this type of examination and the following notes are intended to provide some guidance with regard both to preparation and to performance on the day.

The examination of each candidate is held in a single day during which there are four 25-minute oral examinations - (or vivas, as they are known) - two in the morning and two in the afternoon. In each of these, the candidate is examined by a pair of examiners, thereby meeting eight examiners in all. As far as possible, candidates are not examined by examiners from their own training hospital. The two morning vivas concentrate on applied basic sciences and the afternoon vivas relate to clinical topics.

Usually, but not invariably, each pair of examiners comprise one whose mother tongue is that of the language in which the candidate has chosen to be examined and the other who has a good working knowledge of the language. It is accepted that candidates may not be using their mother tongue and some allowance for linguistic difficulties is made.

In the vivas, the examiners use "Guided Questions" (GQ's) which have been set in advance by the examination committee. Each GQ opens with a brief scenario. Ten minutes before the viva, the scenario is handed to the candidate. It is written in his/her chosen language. This gives the candidate time to collect his/her thoughts and prepare to answer questions on the topic presented. These opening questions are then followed by questions on the other topics listed in the examiner's GQ. The first examiner asks questions for the first 12½ minutes after which a bell rings and the second examiner takes over.

Note that, whereas the Part I EDA basic science MCQ's are designed to test factual recall of relevant basic science knowledge, the Part II basic science vivas are designed to test that the candidate understands the relevance of basic science knowledge applied to the practice of anaesthesia and critical care. Thus pharmacology, physiology, anatomy and relevant clinical measurement and instrumentation will always be tested. Similarly, the Part I EDA clinical MCQ papers are mainly concerned with testing the candidate's factual clinical knowledge whereas the Part II clinical vivas are concerned with testing the understanding and application of that knowledge

CURRENT FORMAT OF THE EDA PART II EXAMINATION

The GQ's with which the examiners are supplied list topics to be discussed with indications as to the detail required. The general format of the exam is as set out below.

MORNING

Viva 1 (Applied Basic Science)

This will start with the scenario the candidate was given 10 minutes before the start of the viva and will include applied cardiovascular and/or respiratory physiology. It will then move on to applied pharmacology, applied anatomy, physiology and physiology/pharmacology combined.

Viva 2 (Applied Basic Science)

This will start with the scenario the candidate was given 10 minutes before the start of the viva and will include applied pharmacology. It will then move on to applied cardiovascular and/or respiratory physiology, clinical measurement, applied pharmacology/physiology combined.

AFTERNOON

Viva 3 (Clinical - Critical care subject)

This will start with questions on the intensive care or emergency medicine scenario the candidate was given 10 minutes before the start of the viva. Questions on the scenario will be followed by topics such as clinical management, X-ray interpretation, anaesthetic specialties and general questions.

Viva 4 (Clinical - Management of an anaesthetic problem)

This will start with questions on the anaesthetic problem scenario the candidate was given 10 minutes before the start of the viva. Questions on the scenario will be followed by questions on an internal medicine topic - possibly related to the scenario. There will also be questions on ECG interpretation, local or regional anaesthesia and some general questions.

MARKING

At the end of each viva, the examiners compare the mark that each has awarded and judge whether the candidate has:

- been tested in the required minimum number of topics as set by the examination committee.

- displayed an adequate knowledge and understanding of the principles and practice of anaesthesia & critical care.

The standard expected is that of a specialist anaesthesiologist who has completed his/her training. Examiners are looking as much to the candidate's approach to problems, based upon experience and understanding, as well as factual knowledge. Although this judgement will inevitably have a subjective element to it, long experience has shown that examiners, who come from completely different traditions of anaesthesia, seldom if ever have any difficulty in agreeing that a candidate has or has not reached the required standard.

Each pair of examiners can award one of three marks, which indicate respectively:

Pass There will be a wide range of excellence in this group and the examiners may indicate that a candidate is of outstanding merit.

Narrow fail The candidate has not quite reached the required standard in that viva. Provided the candidate obtains a pass in the other three vivas, he/she will pass the examination as a whole, otherwise he/she will fail.

Bad fail The candidate has been found so deficient in one or more important subjects examined in this viva that even if he/she is outstanding in the other three vivas, it is the opinion of the examiners that he/she requires a period of further study or training, before presenting themselves for a future examination.

Thus it can be seen that, at the meeting of examiners at the end of the day, in the majority of cases there need be no further discussion of individual candidates. If however a candidate has obtained a solitary "bad fail" and has otherwise reached an adequate standard in the other vivas, the examiners concerned would be asked to justify the mark.

Some reasons for candidates failing include:

- Inability to apply knowledge and/or basic science to clinical situations
- Inability to organise and express thoughts clearly
- Unsound judgement in decision-making and problem-solving
- Lack of knowledge and/or factual recall

In essence the examiners ask themselves the following questions:

- a) Does the candidate have a good foundation of knowledge? Can the candidate apply that knowledge and understand its relevance to the practice of anaesthesia and intensive care?
- b) How does the candidate approach a problem? Is the approach logical and well thought out?
- c) Have alternative options been explored and understood? Is the candidate dangerous?

The Part II examination may only be taken after the candidate has completed his/her training for specialist accreditation in their respective country. A wide general knowledge in anaesthesia, intensive care and subjects allied to anaesthesia is therefore expected.

Background Reading

Which books shall I read? How much detail is required? These are common questions. There is no simple answer particularly since the EDA is an international exam, and the examiners and candidates come from different backgrounds. A basis for reading is the standard text book(s) of anaesthesia favoured in the candidate's country. Familiarity with current topics from international and national journals is also be required. Access to journals may vary in different departments but the Internet now provides a wealth of new opportunities. In addition, a recommended reading is also at your disposal.

THE FOLLOWING ADDITIONAL POINTS MAY BE OF ASSISTANCE

Applied Basic Science Vivas

Physiology

It is obvious that the physiology of the cardiovascular and respiratory systems will be examined in some detail. A good knowledge of neuro, renal and hepatic physiology as applied to anaesthesia and intensive care will also be expected. Other areas relevant to anaesthesia will also be covered but great detail is not expected.

Pharmacology

The principles of pharmacokinetics and pharmacodynamics will be examined in some detail. An intimate knowledge of the pharmacology and toxicology of drugs used in anaesthesia is expected as well as many of the drugs in common use in intensive care. An informed anaesthetist who reads journals must have some understanding of research protocols and the relevance of statistical methods employed, in order to judge the value of articles.

Applied Anatomy

It is expected that anaesthetists will know the essential anatomy of areas into which they may insert needles cannulae and endotracheal and endo-bronchial tubes. Applied anatomy of the heart and lung is also examined.

Physics and Clinical Measurement

Anaesthetists monitor and measure numerous clinical parameters and take action on the information displayed. It is expected therefore that they should understand the principle of action, limitations, accuracy, and sources of error in these monitors. Some of the basic physics of gases and vapours, and principles of electrical safety are essential knowledge for the informed anaesthetist. The principle of action and causes of failure in anaesthetic machines and ventilators is also essential knowledge.

Clinical Anaesthesia & Intensive Care Vivas

Clinical Anaesthesia

As candidates will have completed their training to the standard required for specialist registration they should have experience in all types of anaesthesia and intensive care. These vivas will include questions on both general, regional and special anaesthetic techniques as applied to neuro-, cardiac and paediatric surgery, obstetric anaesthesia and the management of acute and chronic pain.

EXAMINATION TECHNIQUE

Sound knowledge and comprehensive training are the main pre-requisites for success in the Part II EDA but many candidates do not do themselves justice by having a poor exam technique.

Question. *"Demonstrate a logical structure in the presentation of management of a theoretical problem"*.

The examiners do not have direct experience of how the candidate would deal with an anaesthetic problem. They therefore have to make a judgement based upon the candidate's performance in the oral exam. The examiner cannot assume the candidate would have carried out a procedure or checked a clinical or electronic monitor. The candidate must mention it.

Clinical scenario

An example of the clinical scenario given in advance to a candidate would be as follows: *A 67-year-old man weighing 100kg, 1.67m in height is scheduled for an elective repair of a 10cm abdominal aortic aneurysm. He had myocardial infarction 6 months previously and has been a non-insulin dependent diabetic for over 10 years. Discuss your anaesthetic management of this case.*

The initial discussion on this sort of opening scenario will reveal much about the candidate's approach to the problem and an awareness of the potential dangers. Remember that the anaesthetic management starts in the ward!

Definition of problems: Clearly, the primary problem is the presenting aneurysm and its repair. What will it involve?

Secondly the patient is obese and has, as yet unquantified, cardiovascular problems and diabetes.

This would lead to a full medical history with emphasis on the above with appropriate examination and investigation of potential complications. The anaesthetic management would involve choice of technique, appropriate monitoring, management of complications and post-operative pain relief.

A candidate who presents a logical well structured answer, explaining the reasons behind the proposed course of action, is more likely to find that the examiner says very little and does not have to interject continually. It cannot be emphasised enough that practice in presentation is essential and candidates should practice this skill with their trainers or fellow trainees. This is even more important for candidates not using their mother tongue

This topic alone, could take up more than the allotted time and so examiners may suddenly curtail discussion on a given subject and move on to something else. This is a necessary part of the examination process and does not indicate displeasure with the answers given.

Candidates should appreciate that the intention of the examiners is to enter into a dialogue with them regarding whatever topic is under discussion. The intention is not simply to find the candidate's areas of ignorance although, inevitably, these may become apparent - if they exist. Bearing this in mind, the candidate should try to discuss the topic knowledgeably and should not be afraid to say when the topic is completely outside his/her experience. The EDA being an international exam and not a collection of national exams, means inevitably, that a wide range of views will be held both by the candidates and examiners.

It is assumed that candidates have been trained in standard mainstream anaesthetic techniques. They would be wise therefore to base their answers on methods with which they are familiar and would be normal in their institution, rather than straying into unfamiliar territory in the mistaken belief that this might be the answer the examiners require. Examiners will sometimes query an answer to see whether the candidate is confident in their answer or can be swayed from their course of action. There will often be no right or wrong answer to a question and examiners will accept an answer or opinion that is based on sound evidence and justifies the proposed course of action.

Systematic Review of ECG's and X rays

ECG's: Candidates are expected to have a system for reading ECG's and to be able to describe their system to the examiner as well as recognising major abnormalities of morphology and of rhythm.

X-Rays: These are mostly radiographs of the thorax. Candidates are expected to have a systematic and logical approach to reading X-rays and should be able to describe their system to the examiner. A typical system would be:

- **Markings:** Look at writing on the film: name/age of the patient and projection of the radiograph.
- **Film Quality:** Penetration, rotation and inspiration (on a chest film)
- **Review Areas:** Lungs, diaphragm, pleura, upper abdomen, heart and mediastinum, bones of thoracic cage and soft tissues should be checked in turn.
- **Artifacts:** Note the presence of any equipment placed in the chest by anaesthetists or surgeons!

Recognition of Critical Incidents and taking prompt and appropriate action

One common cause for failure in the exam is a haphazard approach to dealing with critical situations that are posed and not following Advanced Life Support protocols. Airway, Breathing and Circulation should be the foundation of all resuscitation.

Diagrams & Graphs

Use of diagrams, graphs and other material to present answers. Pencils and paper are provided at all times during the Part II vivas. Candidates can use them to advantage in making presentations and explaining points. A typical scenario given in advance in the applied basic science exam might be: *Discuss the factors that influence carriage of oxygen in the blood.* A diagram of the various oxy-haemoglobin dissociation curves with some relevant values would create a good impression at the commencement of the exam and help the candidate settle into a structured answer. In pharmacology, the value of diagrams and graphs in explaining the principles of pharmacodynamics or pharmacokinetics is obvious .

Frequently Asked Questions

What happens if I do not pass?

At present, the possession of the EDA is not a necessary qualification for career progression in many countries. Nevertheless, the candidate has had the courage to submit him/herself to a

comprehensive examination and may have not quite reached the required standard. It must be understood that the possession of the EDA is only one step in a lifetime of learning and lack of success in the exam should serve as an encouragement to further study and/or training. While this may not be readily appreciated by the unsuccessful candidates at the time, when they subsequently pass the exam, they will readily admit to the benefits of further study.

Where can I get training for the exam?

Although there are at present no specific courses for the EDA exam, other courses of preparation for basic science and clinical exams, which are based on vivas will probably be perfectly appropriate. After all, the content of the EDA is based upon basic science and clinical practice applied to anaesthesia and intensive care, which does not vary greatly between different countries in Europe. Comprehensive practical experience of anaesthesia supported by wide background reading is the best preparation for the exam.

More specifically, practice the presentation and discussion of cases and viva questions with your tutors, colleagues and mentors.

Sir Peter Simpson
Dr Edward Hammond
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