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SUMÁRIO • *CONTENTS*

Programas de Formação em Anestesiologia

Training Programs in Anaesthesiology

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Prof. Doutor Manuel Vico

Desde que William Morton utilizou publicamente no anfiteatro do Massachusetts General Hospital o éter para anestesiar um paciente (a quem lhe foi extirpado um tumor) até aos nossos dias a nossa especialidade tem evoluído a um ritmo vertiginoso como poucas especialidades o tem feito. Devido à natureza do nosso trabalho, estamos numa posição privilegiada que nos permite ajudar a reduzir o custo da prestação de cuidados de saúde, já que temos uma perspetiva única sobre o fluxo do paciente, utilização de recursos, segurança do paciente e qualidade que é um recurso inestimável.[1] A melhoria contínua da segurança do paciente ao longo dos anos, da qualidade e da eficiência são, ao meu entender, algo que nos tem levado a atingir o nível 6-sigma, o que se traduz numa eficiência de 99,99966% se olharmos para os níveis atuais de mortalidade atribuída à anestesia.[2] É por isto que a nossa especialidade tem sido considerada como pioneira na segurança do paciente durante décadas.[3]
Estes níveis de segurança exigem que os programas de formação em Anestesiologia sejam cada vez mais exigentes para que nos permitam continuar a melhorar na qualidade dos cuidados anestésicos, na segurança dos pacientes, assim como também na eficiência das nossas decisões. De este modo, para treinar os anestesiologistas do futuro, que vão lidar com as complexidades futuras dos cuidados de saúde, devemos também preocupar-nos em que a formação em melhoria da qualidade, segurança do paciente e financiamento de cuidados de saúde seja uma formação robusta.[1]

Assim, para formar profissionais capazes de responder aos inúmeros desafios de nossa prática de saúde, muitas mudanças foram propostas e implementadas, como diferentes ferramentas de avaliação, formatos de aprendizagem, implementação de educação interprofissional, desenvolvimento do corpo docente ou o desenvolvimento de uma estrutura educacional baseada em competências.
De este modo, Wisman-Zwarter N, et al publicaram em 2016 o artigo "Transforming the learning outcomes of anaesthesiology training into entrustable professional activities. The Delphi study" na European Journal of Anaesthesiology, onde identificam as entrustable professional activities (EPAs) para o ensino pós-graduado da Anestesiologia.[4] Nesta publicação foram definidos por consenso um total de 45 EPAs que descrevem o programa de formação pós-graduada nos Países Baixos. Se é possível descrever um curriculum por meio das EPAs, estes não são uma alternativa às competências e existem várias questões por responder sobre como descrever cada uma delas, sobre a sua avaliação e padrões de desempenho, quais as ferramentas devem ser desenvolvidas para avaliar cada uma das EPAs, etc.[5]

Também, tal como refere a Lesley Bromley no seu artigo, a figura do professor tem mudado ao longo do tempo até ser um facilitador de aprendizagem que utiliza o conhecimento de como aprendemos para ajudar o aluno a atingir os padrões exigidos.
São vários os modelos de formação e avaliação adotados em diferentes países, cada um deles com pontos

muito positivos. Esta edição especial tem dois objetivos principais. Em primeiro lugar, pretendemos reunir neste número informação sobre como estamos a formar os anestesiologistas em vários países do nosso entorno, e, em segundo lugar, ser um elemento de reflexão que nos ajude a seguir melhorando o nosso plano de formação da especialidade. A formação dos futuros médicos anestesistas é um pilar fundamental para continuar a melhorar na segurança dos pacientes e afrontar os desafios futuros da especialidade e a valiosa informação que contém este número pode ajudar a otimizar os programas de formação da especialidade.

Finalmente não posso deixar de agradecer aos autores a colaboração neste número, à Dra. Carmen Oliveira pelo seu empenho em que este número chegasse a bom porto, assim como a todos os colaboradores habituais da revista, esperando que seja de utilidade para o futuro.

Atenciosamente,

(Manuel Vico - Editor Chefe da Revista da Sociedade Portuguesa de Anestesiologia)

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ARTIGO DE PERSPECTIVA

Why do We Need to Learn to Teach?

Porque Precisamos de Aprender a Ensinar?

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Keywords
Anesthesiology/education; Clinical Competence; Curriculum; Simulation Training
Palavras-chave
Anestesiologia/educação; Competência Clínica; Currículo; Treino por Simulação

INTRODUCTION

For thousands of years, doctors learned their craft using an apprenticeship model, established practitioners took on an assistant, who started by sweeping the surgery and worked up over years to acquire the skills, knowledge and judgement of the master.

This model formed the basis of medical education from 1100 CE up until the end of the 18th century in Western Europe. There were broadly 2 tiers of medical practitioners in Europe. The first were graduates of the universities, who held a doctorate, whose knowledge was largely theoretical, but were also involved in drug preparation. The second was a mixed group of Barber surgeons, traveling surgeons, ship's surgeons tooth extractors, etc.

The Universities provided a series of lectures for the academic doctors. These were of variable length. In 1575 in Liden in the Netherlands the course was 4 years, of which the first 2 covered general science and the second 2 the art of Medicine. To graduate the student performed a public doctoral examination of knowledge and delivered a critical discussion on one of the theories of Galen or Hypocratus. By the 18th century, the student was asked to defend a thesis based on his studies. There was little regulation of the profession, and many did not complete the doctorate, and left the university to practice without certification.[1]

Meanwhile, the practical barber surgeons and their colleagues pursued an apprenticeship which took 5 years and ended with a theoretical and practical exam. Again, many left before completing this training and worked unregulated.

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In the UK and some other European countries, there was a third track to practicing medicine by becoming an Apothecary. The role was based on medicines and their preparation, but in the UK the Society of Apothecaries set examinations for basic medical qualification up to the mid-20th century.[2] As Regulation of medical practice expanded over the late nineteenth and early twentieth century the undergraduate training became more uniform in its timing and content. Postgraduate education, however, remained largely an apprenticeship model, and to some degree, so it remains.[3] Several factors in the late 20th and early 21st century have led to a rethinking of both undergraduate and postgraduate education. The traditional heavy bias of undergraduate education towards theory, i.e. knowing things, has shifted to some degree towards preparing for medical practice, i.e. doing things.[4] In the 1950s Bloom described a taxonomy and hierarchy of learning that has figured largely in educational thinking ever since. This useful hierarchy helps us to think about the process of moving from a novice

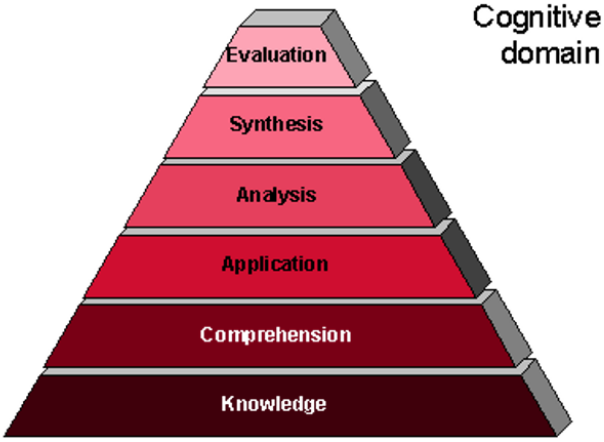

Figure 1. Cognitive domain

to an expert in any area of life. It started a change in thinking about educating doctors which moved from just purely remembering facts, to acquiring skills in using information, analysing and reasoning based on facts and problem-solving. Similar hierarchies are available in the domains of motor skills and nontechnical skills.[5]

As the theory of education was developing there was a parallel change in the delivery of health care, as economic pressures sought to fix the length of training programs and produce graduates from those programs who had all reached an acceptable standard of training. As medicine expanded more doctors were needed. Those doctors needed to be certificated and regulated in their practice. Postgraduate training was largely delivered by the Universities, but in the workplace, not in the lecture hall.

As we entered the 21st century a third group of players had become important in the delivery of education in medicine. The patients, who had formerly accepted passively the treatment they received, became better informed and aspired to high-quality care. Litigation has become more common, and standards of patient safety began to be set and individual doctors are expected to reach those standards.[6]

The role of the teacher has changed rapidly over the last 50 years. The master practitioner, who allowed apprentices to 'watch and learn' is being replaced by a facilitator of learning who uses the knowledge of how we learn to help the learner to achieve the required standards.[7]

Our understanding of what knowledge, skills and attitudes we need to have to perform at the required standard has greatly expanded over the last 20 years, and at the same time the neuroscience of how we process information and recall it has led to changes in the approach to learning.

Firstly it is now apparent that Adults learn differently from children. The classic view of the teaching of an adult standing up at the front of the class and telling children things is now no longer accepted as an effective form of teaching. We need to think about what we mean by teaching, what are we trying to do when we teach? A useful way to think about teaching is as 'A planned event that brings about change in the learner'.

The advantage of this definition is that it places emphasis on the learner, and what happens to change their knowledge skills and behaviours. In postgraduate medicine, our learners already have some knowledge and skills and have acquired some behaviours through the workplace. So when we teach them we are building on their previously acquired knowledge and experience. Secondly, we know that adult learning is more effective if it also involves active experiential learning, feedback, and reflection. This is reinforced by what we know about how the brain makes memories and how it recalls them. Some basic facts about moving information from immediate memory to working memory and then into long-term memory. Only 7 objects at a time, only 10 minutes before you change the stimulus, helps us plan effective teaching events. These and many other facts from the science of memory and behaviour can make us more effective teachers, because we are planning an experience that facilitates the learner.[8]

Thirdly we now understand that every learner needs feedback on how they have changed to move forward. We have moved from a situation, familiar to many older anaesthetists, where the only time anyone gave you 'feedback' was when you did something wrong, through early changes where feedback was 'given' to the learner and consisted of being told how the teacher would have performed, to a more developed Learning Conversation where the learner and teacher together discuss the learning and may a plan for moving forward to the next level.[9,10] Our objective is to produce a new generation of anaesthetists that provide anaesthesia to their patients to the highest standard of safety and effectiveness. We also want them to have motor skills, and non-technical skills in decision-making, situation awareness, team working, and leadership. To achieve this, we as teachers need to appreciate that every contact with an anaesthetist in training is a learning opportunity for that learner. Learning how to use these opportunities for that purpose is at the root of why we need to learn to teach. We may not be experts in every aspect of the learner's needs, but we will all have something to offer from our knowledge and experience, and we need to learn how to teach, provide learning conversations, and encourage reflection for the learners.[11] There has been and still is a great emphasis on learning facts and motor skills, but the importance of non-technical skills is increasingly recognised. In addition to the challenges of providing effective best practices in teaching, as well as in anaesthesia new challenges are coming along.

We have barely got to grips with the Millennial Generation (those born between 1981 and 1996) when our newer graduates are Generation Z (those born between1997 and 2012) are arriving. The lived experience of these young people and their upbringing with the internet and digital technology, has earned them the title 'Digital Natives' As a generation they tend to be well educated, well behaved, but more stressed and with shorter attention spans, and more prone to depression and other mental illness. This group reads less than any other and has a smaller vocabulary, and they have had a disrupted education through the COVID-19 pandemic. This will present many challenges to the generation who will teach them not the least of which are these characteristics; they want to know the why, they prefer short and engaging content, technology-based learning, experiential learning, and personalized learning.[12] Teaching requires knowledge, skills and attitudes in the same way that anaesthesia requires them. We can all be more effective as teachers if we learn how to, and keep ourselves, up to date with teaching as we do with our clinical work.

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ARTIGO DE PERSPECTIVA

Anaesthesia Training in Serbia: How Far from European Training Requirements?

Programa de Formação em Anestesiologia na Sérvia: A que Distância dos Requisitos de Formação Europeus?

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ABSTRACT

The European Training Requirement in Anesthesiology Update (ETR), from the standing committee on Education and Professional Development (EPD) of the Section and Board of Anesthesiology of the European Union of Medical Specialties (UEMS) defines the standards and a basic structure of the training program for the specialization of anaesthesiology, pain therapy, and intensive care, which can be adapted in different countries according to their educational systems. Recommendations are based on modern pedagogical concepts of outcome or competency-based education. In Serbia, based on the Law on Health Care, The Ministry of Health establishes a lawful requirements and documents of rules on specialties and subspecialties for health workers and health associates, including the training program in anaesthesiology, resuscitation, and intensive care. Here we present the program of specialist training in Anaesthesia, Resuscitation, and Intensive Care in Serbia, comparing to ETR and pointing out the main strengths and places for improvement, to achieve a transparent, fair, reliable, and recognizable educational standard.

RESUMO

O *European Training Requirement in Anesthesiology Update* (ETR), do committee on Education and Professional Development (EPD) da Section and Board of Anesthesiology da European Union of Medical Specialties (UEMS) define os padrões e uma estrutura básica do programa de formação para a especialização em anestesiologia, terapia da dor e cuidados intensivos, que pode ser adaptado em diferentes países de acordo com os seus sistemas educativos. As recomendações baseiam-se em conceitos pedagógicos modernos de educação baseada em resultados ou competências. Na Sérvia, com base na Lei dos Cuidados de Saúde, o Ministério da Saúde estabelece requisitos legais e documentos de regras sobre especialidades e subespecialidades para profissionais de saúde e associados de saúde, incluindo o programa de formação em anestesiologia, reanimação e cuidados intensivos. Apresentamos aqui o programa de formação de especialistas em Anestesiologia, Reanimação e Cuidados Intensivos na Sérvia, comparando-o com o ETR e apontando os principais pontos fortes e os pontos a melhorar, de modo a alcançar um padrão educativo transparente, justo, fiável e reconhecível.

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INTRODUCTION

Competences of the specialist role in anaesthesia and intensive care have expanded to areas of patient management beyond operating theatre.[1] The European Training Requirement in Anesthesiology Update (ETR), from the standing committee on Education and Professional Development (EPD) of the Section and Board of Anesthesiology of the European Union of Medical Specialties (UEMS) defines the standards and a basic structure of the training program for the specialization of anaesthesiology, pain therapy, and intensive care.[2] This document is a framework for developing training programs in different countries according to their educational systems. Recommendations are based on modern pedagogic concepts of outcome or competency-based education.[3]

In Serbia, based on the Law on Health Care, The Ministry of Health establishes a lawful requirements and documents of rules on specialties and subspecialties for health workers and health associates, including the training program in

anaesthesiology, resuscitation, and intensive care.[4] However, its structure is still not harmonized with the European standards. Here we present the program of specialist training in Anaesthesia, Resuscitation, and Intensive Care in Serbia, pointing out the main strengths and places for improvement, to achieve a transparent, fair, reliable, and recognizable educational standard.

The aim is to open a discussion within different training models and enlighten the present status of education within European countries.

TRAINING IN ANAESTHESIA AND INTENSIVE CARE SPECIALTY IN SERBIA

The Ministry of Health establishes not only the structure of specialisation itself but defines all requirements for medical training in Serbia, including the allowed number of trainees' posts and permits for training every year.[4]

Minimal standards for hospitals that may be involved in training are defined by the law and are as follows:

- At least two specialists with a minimum of 5 years of experience practicing in the working department (which must be established as a separate organizational unit within the hospital);
- A hospital must have a plan for professional education submitted;
- The number of trainees is limited to two per specialist.

There are six medical faculties in Serbia. Regarding specialty training, they are legislative of the organization of the residency track and its supervision.

Hospitals open positions for trainees according to estimated needs and permits issued by the Ministry of Health.

The hospitals guarantee the uninterrupted educational process for young doctors.[4]

Structure of the Residency Track

The duration of the specialisation is 4 years (48 months). The educational program is divided into 5 separate domains:

1. General anaesthesiology (10 months);
2. Internal medicine and surgery (9 months);
3. Anaesthesia within surgical subspecialties (18 months);
4. Resuscitation (3 months);
5. Intensive care (8 months).

General anaesthesia, internal medicine, and surgery may be completed in the hospitals which opened trainee positions and employ young doctors only if the minimal standards defined by the Ministry of Health are fulfilled. If not, the medical faculty refers the trainee to the appropriate teaching hospital for rotations. Training within the domains 3, 4 and 5 is only available at the University teaching hospitals, which are training centres related to the medical faculties.

During the third year of training, trainees attend two semesters of theoretical classes.[4]

A separate list of competencies is developed for educational units. However, they are mostly defined as a list of knowledge and skills that must be accomplished during the assigned time (Table 2). Training in intensive care is the last domain in the program. The priority is management of the patient in the surgical ICU (Table 3).

Table 1. Structure of training in Anaesthesia, Resuscitation, and Intensive Care specialization in Serbia

General anaesthesia	Internal medicine and surgery	Anaesthesia (specific)	Resuscitation	ICU	Exam
10 months	Cardiology and cardiac intensive care (6 months) Pulmology (1 month) Nephrology (1 month) Surgery(1 month)	Paediatric anaesthesia (4 months)	Emergency medicine (3 months)	8 months	2 months for preparation
		Anaesthesia in neurosurgery (2 months)			
		Anaesthesia in ophthalmology (1 month)			
		Anaesthesia in ORL (1 month)			
		Anaesthesia in maxillofacial surgery (1 month)			
		Anaesthesia in endocrinology (1 month)			
		Anaesthesia in thoracic surgery (1 month)			
		Anaesthesia in cardiac surgery (2 months)			
		Anaesthesia in orthopaedic surgery (1 month)			
		Anaesthesia in urology (1 month)			
		Anaesthesia in obstetrics and gynaecology (1,5 months)			
		Anaesthesia in plastic surgery (1 month)			
		Ambulatory anaesthesia (15 days)			

Table 2. List of competences: the first domain (General anaesthesia)

Domain – General anaesthesia: 10 months		
Competence	Assisting	Performance
Preoperative assessment	50	200
Preoperative preparation for surgery	50	200
Premedication	50	200
Vein puncture	10	50
Vein canulation	50	200
Preparation of the infusion systems	10	100
Medication preparation (for induction)	10	100
Arrangement and check of anaesthesia machine	50	200
Manual ventilation	50	200
Direct laryngoscopy	50	200
Endotracheal intubation	50	200
Oropharyngeal tube placement	50	200
Endotracheal and oropharyngeal aspiration	50	200
Nasogastric tube placement	10	20
Performance of general balanced anaesthesia	50	100
Inhalation anaesthesia performance	20	30
TIVA	10	25
Spinal and epidural anaesthesia	50	50
Non-invasive hemodynamic monitoring	50	200
Intraoperative respiratory monitoring	50	200
Pulse oximetry analysis	50	200
Capnography analysis	10	30
Monitoring of the neuromuscular function	10	30
Urinary catheter placement and monitoring of urine output	10	100
Fluid therapy	50	200
Perioperative blood management	10	30
Blood gas analysis	10	50
Use of defibrillator	5	20
Sterilisation and cleaning of anaesthesia equipment	5	20
Arrangement and check of mechanical ventilation	10	20
Basic modes of mechanical ventilation	20	20
Arterial punction	10	40
Post anaesthesia care	50	200
Oxygen support	10	40
Postoperative acute pain management	50	200
PONV management	10	40

Training Programs are Time and Number Based

Graduated medical students, with two years of clinical medicine experience may apply for hospital employment and residency position. Appointed young doctors are involved in everyday work of 40 working hours weekly with 24-hour duties included. There is an obligatory supervision by the attending specialist. The medical faculties assign mentors from the practicing Faculty who are responsible for supervising the training process and trainees' progress.

Formative assessment is formulated through 5 obligatory colloquiums: general anaesthesia, cardiology, anaesthesia within surgical subspecialties, paediatric anaesthesia, and intensive care. These assessments are performed as feedback on theoretical knowledge.

The final exam consists of a written test, direct observation of practice (practical exam – real case), and oral examination. Exams are organized by the medical faculties where the trainee is referred to for the specialist training. After passing exam successfully, doctors gain the title of Specialist in Anaesthesia, Resuscitation, and Intensive Care.

All specialist doctors are subjected to recertification

Table 3. List of competences: the last domain (Intensive Care)

Domain – Intensive Care: 8 months		
Competence	Assisting	Performing
Management of the patient after cardiac arrest	10	10
Management of the craniocerebral injury	30	10
Management of the patient in comma	20	20
Management of the polytrauma	50	50
Management of haemorrhagic shock	50	50
Management of the septic shock	20	30
Management of the neurogenic shock	10	10
Management of the acute pancreatitis	20	20
Mechanical ventilation: clinical management of different modes of ventilation	50	50
Management of the patient on the non-invasive mechanical ventilation	30	30
Weaning from mechanical ventilation	50	50
Management of the patient with ARDS	10	5
Quadriplegic patient	5	5
Diagnosis of brain death	Not defined	-
Diabetic patient	20	20
Acid-base disorders	20	20
Management of the acute endocrinology patient	5	5
Management of the acute cardiac failure	50	50
Postoperative intensive care: Major vascular surgery	50	50
Postoperative intensive care: Cardiac surgery	10	5

program.[5] Every 7 years, they` must document a defined number of continuous medical education points (the minimum for each year is defined as well) together with the prove of continuous practice in anaesthesia and intensive care. Medical chamber is the legislative body which approves renewal of the licence and the level of competence.[5]

THE WEAKEST AND THE STRONGEST POINTS WITHIN THE SERBIAN RESIDENCY TRACK

The lack of harmonization with the European training requirements and the expected educational framework in Serbia is evident.[6] Crucial differences are:

1. The duration of the specialization is 4 years;
2. The training is time and number based;
3. Technical skills and knowledge are defined, but the educational methodology is not;
4. Absence of the national level of examination (National Board).

The program anticipates skills and knowledge that the trainee must possess without the assessment tool that proves they have achieved them. Objective Structured Clinical Examination – OSCE as the assessment tool is absent. Due to lack of the high-fidelity simulation centres, simulation is rarely used, in a few learning environments and objectives (technical skills, BLS, ALS). One of the consequences is the lack of focus on non-technical skills, which are not defined within the list of competencies within the training program.[7] The advantage is in the mentorship program which is very well developed. The traditional apprentice approach to professional growth is the historical foundation for a more modern approach. Additionally, young doctors must work under direct supervision which builds relationships and support within the working environment, as well as many opportunities for individual, informal feedback. The doctors are encouraged to be responsible for their progression.

Of course, this is not enough, and fundamental reorganization of the specialization training should take place.[6] The major obstacle is faculty development. Mentorship is the cornerstone of our education, however, very few have any formal education in medical education or any clear instructions on how to assess, document, or adapt training according to the trainees' progression or a lack of it.[6] To improve educational programs and harmonize them with today's expectations and standards, specialists involved in the education of young anaesthesiologists must have additional knowledge and competencies for performing, above all, active forms of teaching.[8] It is assumed that placing the core of education within medical faculties guarantees the quality of training. Unfortunately, it seems that medical faculties are not investing enough in faculty development and the role of the teacher (instructor) is transforming very slowly.

FUTURE DIRECTIONS

There is a large variability between the countries, cities, or even hospitals, in the existing infrastructure, technical and technological capabilities, number of medical personnel, teachers, mentors, and educational opportunities.

The presented structure of the training program in Serbia and disparities compared to the ETR do not mean that we do not have competent young anaesthesiologists in the country. Generations of doctors have been educated following programs that define the content of the teaching that is carried out, and not the goals that should be achieved or the competencies that society would like doctors to have. However, our anaesthesiology community needs some change in education to demonstrate that our physicians possess the quality that is expected of them today and that the educational process is objective, standardized, and transparent. In short, it is necessary to modernize the specialization and teaching plan and set clear goals that we want to achieve. First, as a society, we need to define what competencies our anaesthesiology and intensive care specialists should acquire during their education.

After that, we should direct our educational programs toward that goal. An important step is faculty development and more teachers that understand and perform modern, active forms of teaching and different, objective tools of assessment. The final aim is to make our doctors aware and responsible for acquiring all the knowledge, skills, and attitudes they should possess, and dedicate themselves to lifelong learning.

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ARTIGO DE PERSPECTIVA

Structure of Anaesthesia Specialty Training in the UK

Estrutura da Formação da Especialidade de Anestesiologia no Reino Unido

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ABSTRACT

The document provides an overview of the structure and process of anaesthesia specialty training in the UK. Anaesthesia is a highly subscribed training with competitive entry into the program. The Royal College of Anaesthetists (RCoA) is the professional body responsible for setting standards for anaesthetists and anaesthetists in training in the UK. The anaesthesia training curriculum is set by RCoA.

Anaesthesia training is outcome based rather than time based in the UK. The indicative length of training is seven years and is divided into three stages. Trainees must complete the Primary and Final Fellowship examinations of the RCoA. There is also an option for out of programme training or experience within the programme architecture.

Doctors undertaking dual training in Anaesthetics and Intensive Care Medicine have a programme that allows attainment of capabilities in both curricula. Trainees may also choose less than full time training flexible options at any point in their training.

RESUMO

O documento fornece uma visão geral da estrutura e do processo de formação da especialidade de Anestesiologia no Reino Unido. A especialidade de Anestesiologia é um formação altamente procurada e com entrada competitiva no programa. O Royal College of Anaesthetists (RCoA) é o organismo profissional responsável pelo estabelecimento de normas para anestesistas e anestesistas em formação no Reino Unido. O currículo de formação em Anestesiologia é definido pela RCoA. No Reino Unido, a formação em Anestesiologia baseia-se nos resultados e não no tempo. A duração da especialidade é de sete anos e divide-se em três fases. Os internos devem realizar os exames de Primary e de Final Fellowship RCoA. Há também uma opção de treino fora do programa ou experiência dentro da arquitetura do programa.

Os médicos em formação dual em Anestesiologia e Medicina Intensiva têm um programa que permite a obtenção de competências em ambos currículos. Os internos também podem escolher opções flexíveis de formação a tempo inteiro em qualquer momento da sua formação.

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INTRODUCTION

Anaesthesia is a large acute specialty with the biggest workforce in a hospital. There are typically around 4000 anaesthesia trainees of various grades, as recorded in the UK Medical Workforce Census Report 2020.[1] The number of training places nationally is determined by forecasts of the number of required specialists in the country.

The anaesthesia training curriculum is set by the Royal College of Anaesthetists (RCoA). It is then ratified by the General Medical Council (GMC) to ensure that it meets the national requirements for completion of training.

Local Education Training Boards and Deaneries are organisations in the UK that are responsible for all National Health Service (NHS) postgraduate medical training. Geographical regions are governed by Deaneries, which cover all the training hospitals within that area. These regions have a mixture of large multi-specialty hospitals and smaller district general hospitals. Trainees rotate between hospitals whilst training within a Deanery. NHS England (NHSE) oversees training and development of the medical workforce through the Local Education Training Boards.

Anaesthesia training requires rotation between different hospitals to allow trainees to acquire the breadth of anaesthetic experience necessary for independent practice. These rotations can occur every few months or annually, depending on one's deanery.

Table 1. Training Governing Bodies and their Roles

Competence	Role
General Medical Council (GMC)	Responsible for regulating doctors and ensuring they have the right knowledge, skills, qualifications and experience to work across the UK. Done by maintaining an official list called the medical register.
NHS England (NHSE)	It leads the National Health Service (NHS) in England and is the national leadership organisation for education, training and workforce development in the health sector.
Royal College of Anaesthetists (RCOA)	The professional body responsible for the specialty throughout the UK. They ensure the quality of patient care by safeguarding standards in the three specialties of anaesthesia, intensive care and pain medicine.
Deaneries	Organisations in the UK that are responsible for all NHS postgraduate medical training. They are categorised by the different regions in the UK, with 20 in total. In England, all deaneries fall under the Local Education Boards (LETB), which is managed by NHSE.

THE SELECTION PROCESS TO JOIN ANAESTHESIA TRAINING

Entry into anaesthesia training (Stage 1) begins at Core Training (CT) or Acute Common Care Stem (ACCS). Following successful completion of Stage 1, trainees undergo a second selection process for Higher Specialty Training (ST) or Stages 2&3. The Anaesthesia National Recruitment Office is the responsible organisation for coordinating recruitment to Core and Anaesthetics specialty training posts including ACCS training.[2] Eligibility criteria for CT are:

- Completed a two-year Foundation training programme. For overseas candidates a Certificate of Readiness to Enter Specialty Training (CREST) form must be completed;
- Full General Medical Council (GMC) Registration;
- Less than 18 months of anaesthesia experience.

The Multi-Specialty Recruitment Assessment (MSRA) is a computer-based assessment used by multiple specialties to assess for entry into postgraduate training.

It tests clinical problem solving at foundation level. The candidates must score high enough to be invited for the interview. Once successful at interview, rotational preferences are ranked and a place is offered dependant on the candidate's score. The CT programme is 3 years that includes Anaesthesia and Intensive Care Medicine (ICM); whilst the ACCS programme is 4 years in length. In the ACCS programme, in addition to anaesthesia and ICM, trainees also rotate through acute and emergency medicine. The programme design enables trainees to acquire a more rounded experience.

THE SELECTION PROCESS FOR HIGHER SPECIALTY TRAINING

Entry into higher Specialty Training (ST) is competitive and has the following requirements:[3]

- MBBS or equivalent medical qualification;
- Primary FRCA;
- Full GMC registration;
- Be a current UK anaesthesia or ACCS trainee and have evidence of Stage 1 certificate completion or a Stage 1 equivalence certificate.

The application process involves a self-assessment section and applicants are asked to upload evidence supporting their scores. Applicants are then invited to attend an interview. Once successful at the interview, rotational preferences are ranked, and a place is offered.

THE ANAESTHESIA TRAINING PROGRAMME IN THE UK

The Anaesthesia training in the UK is overseen by RCoA. The programme is competency based and includes Core and Specialty Training. It uses two broad assessment tools: RCoA examinations[4] and workplace based assessments. The RCoA introduced a new curriculum from 2021, where training is divided into 3 stages with a combined length of seven years: Stage 1 (three years), stage 2 (two years) and stage 3 (two years).[5] For ACCS trainees this becomes eight years (Stage 1 is four years)). Stage 1 (CT years 1-3/ACCS years 1-4): The first 3-6 months of training is known as the novice

Figure 1. Selection Process for Core Anaesthesia/ACCS Training

Figure 2. Selection Process for Higher Specialty Training

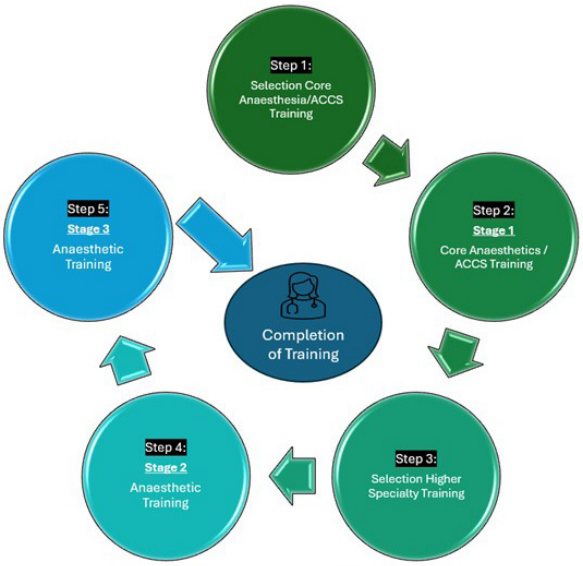

Figure 3. Steps required to obtain a CCT in Anaesthesia

period. A trainee is taught the basics of anaesthesia and once they have achieved the required competence are given an Initial Assessment of Competency (IAC) certificate. The trainees are exposed to elective and emergency 'generalist' anaesthetic practice, obstetric anaesthesia and intensive care. Trainees will complete the Primary Fellowship of the Royal College of Anaesthetist (FRCA) examination during this stage of training.[4] After completion of all required training modules, trainees are given a "Stage 1 Certificate". Stage 2 (ST years 4-5): This stage encompasses subspecialty training in cardiothoracic and neurosurgical and paediatric anaesthesia, as well as a further opportunity to develop a greater independence in the practice of a broad range of general and regional anaesthesia. Trainees will complete the Final FRCA examination during this stage of training.

Stage 3 (ST years 6-7): This is the final stage of training, with the focus being on preparation for consultant practice. It consists of 12 months of general anaesthesia training and 12 months of Specialty Interest Areas (SIA). SIAs can be completed in a number of clinical and non-clinical subspecialties including regional, peri-operative medicine, cardiac, pain etc and may be either 3 to 6-month placements or one 12-month placement depending on the SIA. SIA prepares trainees for specialised areas of anaesthetic practice that they want to pursue as a consultant eg. cardiac anaesthesia or paediatric anaesthesia. Some trainees may choose non-clinical subspecialties like research, education, safety and quality improvement. SIAs are delivered in specialist centres undertaking a wide variety of elective and emergency procedures with necessary critical care facilities. Emphasis is on demonstrating multi-disciplinary leadership, communication and team- working skills necessary to manage complex cases.

On completion of all three stages of training, a trainee is recommended for the Certificate of Completion of Training (CCT). This is ratified and agreed upon by the RCOA followed by submission to the GMC, for entry into the specialist register. This allows the trainee to practice anaesthesia independently as a consultant anaesthetist in the UK.

OUT OF PROGRAMME TRAINING

There is an option to undertake part of training outside of the structured training programme. This is referred to as either Out Of Programme Training (OOPT) or Out Of Programme Experience (OOPE). OOPT allows training outside the deanery, either within the UK or internationally and counts towards training time. An OOPE is similar to OOPT except that it does not count towards training.

INTENSIVE CARE MEDICINE (ICM) TRAINING

Anaesthesia training includes a minimum of nine months of Intensive Care Medicine training. To practice as an Intensivist, a trainee should achieve a dual CCT in anaesthesia and ICM.[6] The ICM training is completed within the anaesthesia training time by replacing the 12-month SIA time with ICM training. If a trainee would like to do an anaesthesia SIA, this would need to be completed as either an OOPE or a post CCT fellowship.

LESS THAN FULL TIME TRAINING (LTFT)

Full time training in anaesthetics is between 45 - 48 hours per week. Trainees are allowed to be LTFT, and ranges from 60% – 90% of full-time equivalence. The Gold Guide, which is a reference guide for postgraduate specialty training in the UK, defines the eligibility criteria for a trainee to be LTFT, examples include a trainee with a disability or ill health, with caring responsibilities, or for a trainees' wellbeing.[7,8] This is now an increasingly popular choice among trainees. As the RCOA curriculum is competency and time based[7], this allows parts of training to be completed within the LTFT percentage, but other parts need to be completed as a whole time equivalent (WTE) e.g. a 12-month neuroanaesthesia SIA would require an 80% LTFT trainee to complete it in 15 months.

TYPES OF ASSESSMENT DURING ANAESTHESIA TRAINING

At each hospital during the trainee's rotation, they are assigned an Educational Supervisor (responsible for the overall supervision of a doctor's educational progress) and a College Tutor (local lead for training within the anaesthesia department); both of whom will oversee training at the hospital. Anaesthesia training assessments consist of[9]:

- Supervised learning events (SLEs) – are designed to illustrate learning events and supervision levels during the training period. SLEs are further subdivided and detailed

below;

- Personal activity – e.g. courses attended, logbook activity, quality improvement projects etc.;
- Personal reflection – A free text form that allows the trainee to reflect on complex cases or those with good outcomes from which something has been learnt;
- Personal development plan – Completed at the start of each placement and outlines the trainee's learning goals;
- Multisource feedback – Completed minimum once a year, collating feedback from colleagues and other healthcare professionals;
- Multiple trainer reports – Completed minimum once a year, requiring feedback from consultant colleagues.

The curriculum and assessments are designed to include non-clinical modules like research, education, audits and quality and safety at every stage during training. Trainees are mandated to keep a logbook of all their clinical cases. The logbook is reviewed regularly with the Educational Supervisor (educational mentor and assessor) or College Tutor (department educational lead and liaison with RCoA) to ensure trainees are receiving a broad range of clinical experience, as well as appropriate levels of supervision for their stage of training. At the end of each year a comprehensive summary of training activity called an Educational Supervisor Structured Report (ESSR) is completed by the trainee and their Education Supervisor. The focus is on structured feedback and supervision levels, for progress to the next level of training. This is then submitted as part of the Annual Review of Competency Progression (ARCP) process. Trainees successful at ARCP are allowed to progress to the following year or stage of training. SLEs are subdivided into:

- Anaesthesia Clinical Evaluation Exercise – is an assessment based on observed clinical practice of a trainee;
- Direct Observation for Procedural Skills – assessment of a procedure and involves feedback based on the trainee's skills;
- Anaesthesia List Management Assessment Tool – used to assess the clinical skills and management of a list with varying levels of independence and/or supervision;
- Case Based Discussion – in depth discussion between the trainee and the assessor about the management of a clinical case;
- Anaesthesia Quality Improvement Project Assessment Tool – formative assessment of Quality Improvement activities;
- Capability Cluster Completion – normally completed for a specialty sub-module e.g. paediatrics, cardiac etc.

EXAMINATIONS AND MANDATORY COURSES

To complete Stage 1 training a trainee must have completed the Primary Fellowship of the Royal College of Anaesthesia (FRCA).[4] This consists of 3 parts; the written Multiple Choice Questions (performed online); the Objective Structured Clinical Exam (OSCE) and the Structured Oral Examination (SOE), are both done in person at the Royal College of Anaesthesia. The OSCE and SOE can only be taken after having passed the written MCQ.

Completion of stage 2 training requires the trainee to pass the Final FRCA[4] examination. Candidates must pass the Primary FRCA or have a recognised exemption before applying for the Final FRCA. The examination comprises of two components: the written (performed online) and the SOE (done in person at the RCoA).

PORTFOLIO PATHWAY

The UK is an attractive destination for doctors from across the world. Anaesthetists that have trained outside the European Union (EU) or European economic Area (EEA) or who have not completed training in the UK national training programme, that wish to practice as a Consultant, must prove equivalency to UK training through the Portfolio Pathway.[10] This process is run exclusively by the GMC. It allows applicants to provide evidence that they have acquired the necessary knowledge, skills and experience to practice as a consultant in the UK. Some hospitals across the UK now run Portfolio Pathway programmes, for doctors who are in non-training posts. The programme consists of structured rotations through anaesthesia modules to allow the candidate to accrue the evidence needed for a successful Certificate of Eligibility for Specialist Registration (CESR) application. Once completed it enables the anaesthetist to achieve the CESR and to join the GMC's specialist register.

THE APPRAISAL AND REVALIDATION PROCESS FOR LICENCED DOCTORS AND SPECIALISTS

All practising anaesthetists in the UK, maintain a portfolio of supporting information from their scope of work. This includes continuing professional development, quality improvement activities, feedback from patients and colleagues, as well as review of compliments and complaints. Annually, anaesthetists are required to review and discuss their scope of practice with a specially trained doctor called an Appraiser. The aim of the appraisal meeting is to reflect on individual practice, performance and identify areas for personal development. Anaesthetists, and all UK doctors, are required to undergo the revalidation process every 5 years.[11] Through this formal process, every licensed doctor must demonstrate that they are keeping their skills and knowledge up to date to maintain their licence to work. It is based on an evaluation of a doctor's performance through reviewing their annual appraisals.

STRENGTHS & WEAKNESSES OF UK ANAESTHETIC TRAINING (AS ASSESSED BY TRAINEES)

14 anaesthetic trainees replied to a survey by the author on their views on the positive and negative aspects of training.

The strengths highlighted included:

1. One-on-one training providing direct supervision and constructive feedback between the clinical supervisor and trainee;
2. LTFT training allows better work life balance;
3. Breadth of clinical experience - gained through NHS hospital rotations, with specialised training taking place in specialist hospitals. Trainees have the opportunity to work in different hospitals over their training years, and are exposed to new ideas, skills and best practice in a variety of settings; thus, providing well rounded experience;
4. At higher stages of training, the programme is flexible and individualised to the trainee's career plan.

The weak areas identified were:

1. Service provision of covering on-calls for ICM or obstetric anaesthesia;
2. Rotational training – The geographical spread of deaneries with the need to commute to training hospitals within it. This change in hospitals could be for a period as short as three months. This frequent change can prove challenging for trainees with caring responsibilities and for those that have young families;
3. The length of training is quite long compared to other developed countries.

CONCLUSION

The acceptance process for anaesthesia training is a detailed with a competitive pathway, and entry starts at CT/ACCS. The training can span over seven years and incorporates diverse rotations, assessments, examinations, and mandatory courses. The curriculum is organised around the abilities of the anaesthetist in terms of professional and clinical outcomes. Trainees must demonstrate these outcomes as they progress through training. The process is regulated by the RCOA and GMC, ensuring compliance with national standards for CCT. Anaesthetists maintain portfolios and undergo revalidation every five years to sustain their license. Feedback from trainees highlights advantages like personalised consultant training and LTFT options but also points out challenges like rotational training and service provision issues.

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Between Mountains and Modern Medicine: Adaptability in Anesthesia Training in Switzerland

Entre Montanhas e a Medicina Moderna: Adaptabilidade na Formação em Anestesia na Suíça

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ABSTRACT

Switzerland's healthcare system is globally recognised for its access to care, supported by a robust network of hospitals and private healthcare providers. The Swiss anaesthesia workforce consists of approximately 2700 physicians, including specialists and trainees, with a notable presence of international medical graduates, predominantly from Germany. The country also relies heavily on nurse anaesthetists, who undergo extensive training to support anaesthesia procedures under physician supervision. Becoming an anaesthesia trainee in Switzerland requires a medical degree compliant with EU or EFTA standards and proficiency in one of the three official languages (German, French, or Italian). The residency program is regionally divided, with different structures in the German-speaking and French-Italian regions. The Swiss anaesthesia residency spans five years and emphasises a competency-based curriculum that includes mandatory anesthesiology and intensive care rotations. Training facilities are categorised into four levels (A1, A2, B, C) based on their training quality and scope. Residents undergo rigorous assessment through continuous evaluations, practical and written exams, and contributions to medical literature. The Swiss Institute for Post-Graduate and Continuous Medical Education (SIWF/FMH) oversees the certification process. Challenges in the training system include managing workload and stress, with ongoing campaigns to reduce clinical hours from 50 to 42 per week and ensure teaching time. Long waiting times for rotations in A Level clinics and the need to match the growing elderly population with sufficient trained anesthesiologists also present significant challenges. Addressing these issues through curriculum development, workload management, and increased training opportunities is crucial for maintaining the high standards of anesthesiology in Switzerland and meeting future healthcare demands. Addressing these issues through curriculum development, workload management, and increased training opportunities is crucial for maintaining the high standards of anesthesiology in Switzerland and meeting future healthcare demands.

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RESUMO

O sistema de saúde da Suíça é globalmente reconhecido pelo seu acesso aos cuidados, apoiado por uma robusta rede de hospitais e prestadores de serviços de saúde privados. A força de trabalho em Anestesiologia na Suíça consiste em aproximadamente 2700 médicos, incluindo especialistas e internos, com uma presença notável de graduados médicos internacionais, predominantemente da Alemanha. O país também depende fortemente de enfermeiros anestesistas, que passam por um extenso treino para apoiar os procedimentos de anestesia sob supervisão médica. Tornar-se um interno em Anestesiologia na Suíça requer um diploma de medicina compatível com os padrões da UE ou EFTA e proficiência em um dos três idiomas oficiais (alemão, francês ou italiano). O programa de residência é regionalmente dividido, com estruturas diferentes nas regiões de língua alemã e nas regiões de língua francesa e italiana. O internato de Anestesiologia na Suíça dura cinco anos e enfatiza um currículo baseado em competências que inclui rotações obrigatórias em anestesiologia e cuidados intensivos. As instalações formativas são categorizadas em quatro níveis (A1, A2, B, C) com base na qualidade e abrangência da oferta anestésica. Os internos passam por uma rigorosa avaliação através de avaliações contínuas, exames práticos e escritos, e contribuições para a literatura médica. O Swiss Institute for Post-Graduate and Continuous Medical Education (SIWF/FMH) supervisiona o processo de certificação. Os desafios no sistema de ensino incluem a gestão da carga de trabalho e do stress, com campanhas em andamento para reduzir as horas clínicas de 50 para 42 por semana e garantir tempo de ensino. Longos tempos de espera para rotações em clínicas de Nível A e a necessidade de corresponder à crescente população idosa com anestesiologistas treinados suficientes também apresentam desafios significativos. Abordar essas questões por meio do desenvolvimento curricular, gestão da carga de trabalho e aumento das oportunidades de formação é crucial para manter os altos padrões da anestesiologia na Suíça e atender às necessidades futuras de saúde.

INTRODUCTION

The healthcare system in Switzerland ranks among the top five globally in terms of access to care.[1,2] This high ranking is attributed to the country's extensive hospital network and the frequent availability of private healthcare, which provide broad access to general and specialist care. The Swiss anaesthesia workforce comprises around 2700 physicians, including specialists and trainees, with an average age of 45 years, 44% of them being women. While 68% of these anesthesiologists are Swiss, a significant portion of international medical graduates (IMGs) in this field come from Germany.[3] In addition to physician anaesthesia providers, Switzerland is one of the European countries relying heavily on nurse anaesthetists as part of the anaesthesia workforce. These healthcare professionals receive two years of specific training as nurse anaesthetists in addition to a Bachelor's degree in nursing (https://siga-fsia.ch/anaesthesiepflege/nds/) and assist in technical aspects of anaesthesia (including intubation), preparation for and administration of anaesthesia (including opioids), and monitoring of anaesthesia under the direct supervision of a physician specialist anesthesiologist.

Over the past 20 years, the Treaty on the European Union has facilitated the freedom of movement within the EU and EFTA countries, simplifying the transition for foreign medical graduates and specialists to Switzerland.[4] As of 2022, more than 3000 IMGs had obtained licenses to practice in Switzerland, with most coming from neighbouring countries such as Germany, Italy, France, Austria, and Romania.[5]

The Swiss Institute for Post-Graduate and Continuous Medical Education (SIWF/FMH) is responsible for recognising foreign specialist diplomas or subspecialties and processing applications according to national societies' curricula. Recently, the Swiss Society for Anesthesiology and Perioperative Medicine (SSAPM) has expanded its training curriculum to address the needs of an ageing population, incorporating aspects of perioperative medicine.[6] According to the annual sociodemographic evaluation of all physicians in post-graduate training,[7] in 2023 around 800 residents were training in anaesthesiology, of which 218 were international medical graduates from EU countries and 17 had graduated in non-EU countries.

THE PATH TO BECOMING AN ANESTHESIA RESIDENT

To become a medical doctor in Switzerland, one must have a medical degree according to EU Directive 2005/36/eg[8] or an equivalent according to the EFTA Convention. Additionally, one must prove proficiency in one of the three official languages: German, French or Italian. The required level is B2, according to the Common European Framework of Reference for Languages. Language knowledge can be proven in the following ways: an international knowledge Exam not older than 6 years, medical studies done in one of the languages or proof of using the language at work for at least three years. In comparison to Germany, there is no additional medical language knowledge exam.

In Switzerland, there are two regional systems of anaesthesia training. The structure in the German part is similar to that of Germany, and it is more liberal. The resident can create their residency path by applying to different hospitals for the necessary rotations and experience. In the french-italian part, the anaesthesia residency is organised by COMASUL (COMmission Latine d'engagement pour l'Anesthésie et Suisse Latine), a commission comprising the main hospitals in the region, which aims to regulate the entrance into the residency program and coordinate the clinical rotation along the whole residency. The pre-requisite to entering the program is two years of internal medicine experience because the trainees are usually prepared for the double specialisation of anesthesiology-intensive medicine. After entering the program, all the necessary clinical rotations will be organised in the main university, cantonal hospital, or peripheral affiliated hospitals. The trainees can work part-time during the training programme, depending on the hospital. The salary depends on the number of years of experience and the canton, which is public.

STRUCTURE AND DURATION OF THE ANESTHESIA TRAINING PROGRAM

The body coordinating the residency structure and the requirements for a specialist title, as well as subspecialties in anesthesiology, is the SSAPM through its Continuous Education Commission (https://www.ssapm.ch/fr/a-propos/organisation/commissions/commission-de-formation-postgraduee). The society is also in charge of organising exams, which take place yearly. The main objective of the Anaesthesiology training programme in Switzerland is to equip medical professionals with the specialised knowledge and skills required to perform independently across all aspects of anesthesiology. The curriculum is designed to enhance proficiency in critical competencies, from administering anaesthesia for various surgical procedures to managing emergencies and critical care. The Swiss curriculum for post-graduate training in anesthesiology by the Swiss Society for Anesthesiology and Perioperative Medicine (SSAPM) is based on the CanMEDs model,[9,10] which addresses the various roles of the physician as a medical expert, communicator, collaborator, manager, health advocate, scholar and professional and is currently under revision to develop into a competence-based curriculum involving entrustable professional activities (EPA) in anesthesiology as well as perioperative medicine.[11] Post-graduate training takes 5 years and consists of 2 mandatory components: a minimum of 4 years of training in anesthesiology and 6 months of training in intensive care medicine. Post-graduate training must occur in at least 2 different departments.[6] The first 2 years of training focus on acquiring general

competencies. The subsequent 2 to 2.5 years are dedicated to acquiring specific competencies and deepening the general ones. Most of the training must occur at recognised Category A training facilities, with at least one year at a top-tier Category A1 facility (Table 1). For scope, we recommend the recently published survey results by Abramovic *et al* on post-graduate training designs in anaesthesiology in Europe.[12] This structured categorisation helps ensure that all training facilities provide a certain baseline of education and practical experience tailored to their classification. It also helps prospective trainees choose their training sites based on the level of exposure and specialisation they are interested in pursuing. By adhering to these categories, the training program aims to maintain high standards across all training facilities, ensuring that all anesthesiology trainees in Switzerland receive quality education and hands-on experience commensurate with their training level. Trainees must rotate through different clinical settings, including at least one year at a secondary training site, to ensure a broad-based clinical experience. Additionally, trainees can spend up to one year on research relevant to anesthesiology, which can count towards their training. Participation in an MD/PhD program or similar academic pursuits can also be credited.

CONTENT AND COMPETENCIES

General Competencies

- Comprehensive understanding of diseases and their treatments;
- Skills in preoperative, intraoperative, and postoperative patient care;
- Expertise in emergency medicine and critical care situations;
- Proficiency in anesthetic techniques and pain management;
- Quality Management and Health Economics, Ethics;
- Anesthesia non-technical skills.

Specific Competencies

- Specialised skills in obstetric anaesthesia, neuroanesthesia, thoracic and cardiovascular surgery anaesthesia, and pediatric anaesthesia;
- Management of difficult airways and anesthesia in Ear-Nose-Throat and Oral and Maxillofacial Surgery;
- Knowledge and skills in managing anaesthesia outside the traditional operating room environment;
- Expertise in managing patients with chronic pain, including those in palliative care.

Practical Training and Hands-on Experience

- In Switzerland, simulation is currently available in large training centres. Simulation and technology play crucial roles in the training process, with plans to include simulation in the national curriculum. Residents learn through hands-on training in various procedures and techniques.[13]
- Regarding training in Point-of-Care Ultrasound, there are several courses offered through the SGUM(Swiss Society for Ultrasound in Medicine).

Table 1. The categorisation of training facilities into four levels - A1, A2, B, C - is a method used to standardise the quality and scope of training provided in the field of anesthesiology in Switzerland. This categorisation ensures that trainees receive consistent and comprehensive education and training across various institutions

Category	Characteristics
Category A1	Facilities in this category represent the highest level of training excellence and are expected to offer the most comprehensive range of services and training opportunities. These facilities must cover all nine general competencies and meet high standards for specific competencies. They must also handle a large volume of cases, generally exceeding 12 500 anesthesias per year. Expected to have advanced educational and technical resources for training in all specialized areas of anesthesiology. Typically involved in cutting-edge research and may have academic affiliations.
Category A2	Slightly less comprehensive than A1, but still offering a broad range of training opportunities and substantial case loads. Must cover at least eight out of the nine general competencies and have a substantial case load (between 7500 and 12 499 anesthesias per year). Well-equipped for most anesthesiology procedures and scenarios, though may not have the same breadth of research opportunities as A1 facilities.
Category B	These facilities offer a good range of training opportunities but on a smaller scale than A1 and A2. Must cover at least seven out of the nine general competencies and handle a moderate case load (between 3500 and 7499 anesthesias per year). Adequately equipped for a range of common anesthesiology practices and some specialized areas.
Category C	These are smaller facilities that provide foundational training in anesthesiology. Must cover at least six out of the nine general competencies and handle smaller case load (more than 1000 anesthesias per year). Focused more on general anesthesiology training, with fewer opportunities for specialized or high-complexity cases.

Assessment and Evaluation

Each candidate must maintain a detailed electronic logbook that tracks the progress of the specified learning objectives and competencies throughout the training period. This logbook serves as a personal record of skills development and is a crucial component of the assessment process. The continuous evaluation is done using a Mini-Clinical Evaluation Exercise (MiniCeX) or Direct Observation of Procedural Skills (DOPS) for each year of residency, at least four being mandatory.[14] Candidates must also complete specific courses, including a mandatory two-day course in emergency medicine. In addition, they are required to contribute to the medical literature as first authors, co-authors, or last authors on peer-reviewed scientific papers or produce a thesis as part of a university degree program.

The program culminates in a rigorous examination process including written and oral components. The written exam

is conducted under the auspices of the European Society of Anaesthesiology and Intensive Care (ESAIC). The oral exam tests the candidate's practical and theoretical knowledge through case discussions based on the curriculum, and is run by the SSAPM.

Licensing and Certification

The Swiss Institute for Post-Graduate and Continuous Medical Education (SIWF/FMH) is the national structure regulating continuous education programs. The Institute also provides the platform for the eLogbook. Its Title Commission evaluates applications for the specialist title.

Challenges and Opportunities in the Training System

In Switzerland, the official working time for trainees is 50 hours/week, with day shifts usually lasting 10 hours and night shifts of 12 hours. Challenges include managing workload and stress with ongoing campaigns to reduce clinical hours and ensure teaching time. Additionally, long waiting times for rotations in A Level clinics pose issues. Currently, there is a nationwide campaign entitled `42+4 hours week` organised by the Association of Swiss Assistant and Senior Physicians (Verband Schweizerischer Assistenz- und Oberärztinnen und -ärzte VSAO) which aims to reduce the number of clinical hours at 42 hours/week and assure 4 hours of teaching (https://vsao.ch/arbeitsbedingungen/42plus4/#pll_switcher).

CONCLUSION

Switzerland's anaesthesia training program is robust, offering comprehensive training and numerous opportunities for specialisation. However, challenges such as workload management and clinic rotations need addressing. Prospects include continued curriculum development and potential reforms to enhance training quality further.

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IC, TD e JBE: Conceção do estudo, escrita do artigo, revisão final e aprovação da versão a ser publicada

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ARTIGO DE PERSPECTIVA

Anaesthesia Training and Continuous Education in Greece: Current Situation and Future Perspectives

Formação em Anestesia e Educação Contínua na Grécia: Situação Atual e Perspectivas Futuras

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INTRODUCTION

The field of anaesthesiology has evolved from being primarily focused on the operating room towards taking a more comprehensive approach to care throughout the entire perioperative period. Intensive care medicine, emergency medicine, and pain medicine are integrated into the clinical specialty in many countries. As a result, additional universal competencies and shared principles need to be established.

In Greece the ultimate goal of anaesthesia training, as stated in the relevant governmental document, is to ensure specialists with a high level of competence and skills. These specialists should be able to work independently in various clinical contexts, including perioperative medicine, emergency and intensive care medicine, chronic pain and palliative care, without jeopardizing patient safety.[1] The updated 2019 Educational Program follows the guidelines of the European Board of Anaesthesiology, encompassing all theoretical and practical learning objectives, including the management of simple and complex cases. The internship is always supervised by a qualified anaesthetist, ensuring responsible and hands-on experience.[1]

TRAINING OF RESIDENTS

Training is time- and count-based, lasts for 5 years and consists of 2 cycles, one basic (2 years) and one advanced (3 years).[1] The former can be attended in any training centre, whereas the latter only in full specialisation centres and/or special training centres, for training in specific anaesthetic techniques and types of operations. Residents also have the option to train abroad for up to 6 months, subject to approval from the Central Health Council.[1,2] Throughout the training period, residents must maintain a logbook documenting their anaesthetic practice in compliance with Greek safety and anaesthesia training laws.[1,3] By the end of the training period the trainee must provide evidence of accomplishments in the relevant logbook. Table 1 summarizes the training per specialty and the allocated time period for each one and Table 2 lists the minimum number of specific anaesthetic techniques required to complete the training. Moreover, during the training period the resident must participate in 100 invasive procedures (eg cardiac, gastrointestinal) carried under anaesthesia out of the operating theatre.[1] A minimum number of 500 emergency cases, 100 operations for life-threatening situations, 100 day cases and 220 on-call shifts are also required.[1] Training focuses on knowledge and skills. The residents have to follow courses and seminars on basic and advanced knowledge and skills, such as basic and advanced life support, trauma and paediatric life support, use of anaesthesia machine, haemodynamic control and electrocardiography, lung tests and chest imaging, airway management, mechanical ventilation, perioperative ultrasonography and non-technical skills.[1] In terms of practical skills, the logbook has to provide evidence for at least 100 cases of cardiopulmonary resuscitation, 80 central venous catheters' insertion, 100 arterial catheters' insertion, 30 double-lumen endotracheal tubes' or endobronchial blockers' insertions and 20 cases of bronchoscopy and fibreoptic intubation.[1] Training can take place in 4 types of training centres: full, partial, special and short-term training centres.[1] Full training centres are the ones with a minimum number of 4000 operations per year, covering all surgical domains. In full training centres the trainees are entitled to

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Table 1. Training by Specialty (*Modified from*[1])

Specialty	Duration of Training (months)	Minimum Number of Operations or Procedures
General Surgery	18	650
Orthopaedics	3	100
Ear-Nose-Throat & Mandibular Surgery	3	60
Ophthalmology	1	20
Neurosurgery	3	30
Thoracic Surgery	3	100
Cardiac Surgery	3	30
Vascular Surgery	3	50
Obstetrics	4	100 (obstetric analgesia & caesarean sections)
Gynaecology	2	60
Urology	2	60
Paediatric Surgery	4	100
Emergency Medicine	2	–
Intensive Care	6	- 6 chest tube insertions - 6 cases of continuous veno-venous filtration - 6 tracheostomies (either surgical or percutaneous) - 12 bronchoscopies - 6 measurements of intraabdominal pressure - 6 measurements of intracranial pressure
Pain Clinic	3	40 chronic pain cases

study leave at least once a year. Partial training centres are the ones with a minimum number of 3000 operations per year in the fields of general surgery, orthopaedics, ear-nose-throat surgery, ophthalmology, urology and gynaecology. Special training centres offer the opportunity for training in paediatric anaesthesia, cardiac, thoracic and vascular surgery, obstetrics, pain treatment and palliative care. Short-term training centres focus on specific types of operations and anaesthetic techniques and offer up to 30 days of training, in order for the residents to fill in gaps in their logbook. The aforementioned classification of training centres also relies on their staff, infrastructure, equipment and training program. The minimum ratio of trainers to trainees is determined to 1:3 and the maximum number of trainees depends on the type of training centres.[1] The training program in each centre focuses both on theoretical knowledge and practical deeds. According to the relevant governmental document, there should be a yearly continuous education program with scientific meetings, literature review, clinical seminars and courses, morbidity and mortality meetings and auditing.[1]

At the end of the training period in each centre the director of the training centre must approve the training certificate based on the resident's logbook and portfolio.[1] It is not mandatory for the director to also be the education supervisor. In addition to the official approval, ongoing assessment must occur during both the basic and advanced specialization cycles. Knowledge, skills, judgment and attitude progress should be consistently monitored.[1-3]

Formal assessment takes place in order to become certified as specialist anaesthetist. Assessment consists of both written and oral exams and success in both is required in order to be accredited as specialist anaesthetist. There are only two organised examination centres, one in Athens and one in Thessaloniki. There are no specific criteria or interviews for selecting residents to start training in anaesthesia. Doctors simply submit their applications to a waiting list using a special electronic application accessible through the Unified Digital Portal of the Public Administration.[4] However, currently there is a shortage of anaesthetists in Greece. To address this matter, doctors with backgrounds in other medical specialties are allowed to train in anaesthesia as supernumerary trainees in salaried positions, while also receiving a small extra financial allowance.[5]

FURTHER EDUCATION OF SPECIALISTS

Review and assessment of anaesthetic practice, with an aim to improve it, is recommended by the Central Health Council in its guidelines for safe anaesthesia and sedation. In this direction, critical incidents' reporting, multidisciplinary morbidity and mortality meetings and local audits are encouraged.[6] Continuous education in anaesthesiology for specialists is mainly accomplished through the courses organized by the Committees for Continuous Education in Anaesthesiology and Intensive Care (CEEA committees) in two regional centres, one based in Athens and one in Thessaloniki. These two centres provide refresher courses according to the same schedule, a cycle of six courses covering all the fields of anaesthesia, intensive care, emergency

Table 2. Minimum Required Number of Anaesthetic Techniques[1]

Technique	Minimum Required Number
General Anaesthesia – Endotracheal Intubation	750
General Anaesthesia – Laryngeal Mask Airway (LMA)	50
Intubation through LMA or Second Generation Supraglottic Devices	10
Epidural Anaesthesia	100
Combined General – Epidural Anaesthesia	100
Spinal Anaesthesia	150
Peripheral Nerve Blocks	50
Acute Pain Treatment	100
Monitored Anaesthesia Care	50
Neonatal Tracheal Intubation	10

medicine and acute pain management, in compliance to the CEEA of the European Society of Anaesthesiology and Intensive Care (ESAIC). In Greece there is no recertification program for specialists, either mandatory or voluntary. In order to demonstrate their knowledge and engagement in lifelong learning, specialist anaesthetists are motivated to earn CME/CPD activities credits, for instance by participating in workshops and national or international conferences, teaching, writing scientific articles, spending time as visiting doctors and/or e-learning. For anaesthetists working in public health system, these credits are evaluated during a process of professional development in three steps. Firstly, after completing five years of continuous employment, secondly after eight and lastly after fifteen years of total employment in public health system. This process is accomplished in the hospital by local committees, but without strict and well described assessment methods.

DISCUSSION

The training in anaesthesia program, as regulated by the Greek legislature, is in many aspects in line with the European Training Requirements.[7] The practice of anaesthesiology in Europe has evolved towards focusing more on comprehensive and holistic perioperative care,[7] influencing the direction of anaesthesia training in Greece; nowadays there is a greater emphasis on non-technical skills, attitude, and professionalism. The field of anaesthesia continues to be poorly understood and underestimated as a career choice for graduating medical students. Highlighting the perioperative aspect of anaesthesiology can be a compelling draw for new physicians seeking a vibrant and varied work environment. This emphasis can help them avoid feeling isolated in the operating room and instead feel more visible and connected to patients and the public. The Greek Society of Anaesthesiology constantly highlights the need to align as much as possible with the European Training Requirements. To achieve this goal, the society provides educational opportunities, including theoretical updates through webinars and the organization of practical clinical courses. Additionally, the society offers trainees the chance to actively participate in national meetings and other educational activities. A major drawback in the training is the fact that it is time- and count-based instead of competence-based. However, it is competence-based training that actually assesses the final outcome of training; in the field of anaesthesiology this is of paramount importance within the context of patients' safety and quality of care.[8] Time- and count-based training focus on activities during training but do not guarantee the desired outcome.[8] Resources, both in terms of human resources and infrastructure, are major barriers for the training. Currently many hospitals are understaffed and have reduced their activities, while at the same time not all hospitals are equally equipped. At the same time, there is no established mentoring program, which could enhance learning and facilitate formative assessment throughout the training period. Mentorship is considered to have a constructive role in the improvement of educational goal achievements of anaesthesiology residents[9]; the lack of established mentoring programs is therefore a source of concern in the Greek curriculum.

The assessment of training centres and the trainers themselves is currently lacking. There is a notable absence of national auditing procedures to evaluate the standing and efficacy of our training curriculum. Furthermore, while all doctors undergo assessment by the clinical director of their unit, there is no structured revalidation or recertification program on a national level. In a field traditionally characterized by self-regulation, the implementation of revalidation programs is essential for identifying areas of poor performance.[10] It is reasonable to assume that the absence of revalidation for specialists could compromise the quality of training.

In conclusion, although there is a driving force to improve the new generation of anaesthetists' training in Greece, many challenges still exist. Compared to the past decades, training in anaesthesia has improved but we still have a long way to go. Comprehensive assessment of knowledge, skills and attitudes is vital to train competent anaesthetists and ensure safe care.

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GS: Conception, design and writing of the manuscript
PS: Designing and writing the manuscript
VN: Supervision and critical revision of the manuscript
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ARTIGO DE PERSPECTIVA

Navigating through the Restructured Anaesthesia Specialist Training in Bavaria, Germany: A Comprehensive Overview

Navegar na Formação Reestruturada de Especialistas em Anestesia na Baviera, Alemanha: Uma Visão Global

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Palavras-chave
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ABSTRACT

Anaesthesia training in Germany, particularly in Bavaria, is meticulously structured to equip medical professionals with the expertise needed to excel in this critical field of modern healthcare. This article provides a detailed examination of the anaesthesia specialist training process in Bavaria following the reorganisation of specialist training by the German Medical Association in 2018. The focus of this article is on the implementation of the new specialist training regulations (WBO 2021) by the Federal Association of Medical Doctors in Bavaria (BLAEK) since August 2022. The training duration, organization, assessment methods, regulatory bodies, recertification programs, and both strengths and future challenges are explored. Key elements include an individualised acceptance process, structured training duration of five to six years, competency-based learning with an electronic logbook, mandatory courses in specialized anaesthesia techniques, and periodic recertification through continuing medical education activities (CME). Strengths of the training curriculum encompass structured education, comprehensive clinical exposure, and interdisciplinary collaboration. However, future challenges include workforce shortages, technological advancements, and evolving healthcare landscapes, necessitating ongoing adaptation and innovation to ensure the delivery of high-quality anaesthesia care in Bavaria, Germany.

RESUMO

A formação em anestesia na Alemanha, particularmente na Baviera, é meticulosamente estruturada para equipar os médicos com os conhecimentos necessários para se destacarem neste domínio crítico dos cuidados de saúde modernos. Este artigo fornece uma análise detalhada do processo de formação de especialistas em anestesia na Baviera após a reorganização da formação de especialistas pela German Medical Association em 2018. O foco deste artigo é a implementação dos novos regulamentos de treino especializado (WBO 2021) pela Federal Association of Medical Doctors in Bavaria (BLAEK) desde agosto de 2022. São explorados a duração da formação, a organização, os métodos de avaliação, os organismos reguladores, os programas de recertificação, bem como os pontos fortes e os desafios futuros. Os elementos-chave incluem um processo de aceitação individualizado, uma duração de formação estruturada de cinco a seis anos, aprendizagem baseada em competências com um *electronic logbook*, cursos obrigatórios em técnicas especializadas de anestesia e recertificação periódica através de actividades de educação médica contínua (EMC). Os pontos fortes do currículo de formação abrangem o ensino estruturado, a exposição clínica abrangente e a colaboração interdisciplinar. No entanto, os desafios futuros incluem a escassez de mão de obra, os avanços tecnológicos e a evolução dos cenários dos cuidados de saúde, necessitando de adaptação e inovação contínuas para garantir a prestação de cuidados de anestesia de elevada qualidade na Baviera, Alemanha.

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INTRODUCTION

Anaesthesia, a critical component of modern healthcare, requires skilled professionals to ensure patient safety and comfort during surgical procedures. In Germany, anaesthesia training is meticulously structured to equip medical professionals with the expertise needed to excel in this specialized field. This article provides a detailed examination of the current anaesthesia specialist training process in Bavaria, Germany, after the reorganisation of this process was decided in principle by the board of directors of the German Medical Association (Bundesaerztekammer/ BAEK) on 15th. November 2018. The German Medical Association makes recommendations on how specialist medical training can be implemented in terms of organisation and content. However, according to national law, these proposed training models only have the character of recommendations to the German federal associations, which act as corporations under public law and are therefore responsible for all matters related to advanced medical training. This article focusses on the specific situation of anaesthesia training in Bavaria under regulation of the Federal Association of Medical Doctors in Bavaria (Bayerische Landesaerztekammer/ BLAEK) since the approval of the new version of the specialist training regulations (Weiterbildungsordnung 2021/ WBO 2021)[1] came into force on 1st August 2022. At the same time the previously valid continuing education regulation from 2004 was repealed. It covers training duration, assessment methods, regulatory bodies, recertification programs, as well as strengths and future challenges.

ACCEPTANCE PROCESS

Aspiring anaesthesiologists in Bavaria typically embark on their journey through an individual acceptance process. After completion of medical studies at a recognized medical university the candidates send their application to departments which are approved in anaesthesia training by the Federal Association of Medical Doctors in Bavaria (BLAEK) – ranging from outpatient departments and primary hospitals to tertiary hospitals and university hospitals.

The maximum duration of the specialist's training in an approved department is acknowledged by the BLAEK according to the degree and amount of specific training content. Admission criteria for the trainees may vary among institutions, but often include academic performance, clinical experience, and personal interviews.

TRAINING DURATION AND ORGANISATION

Anaesthesia training in Germany as well as in Bavaria spans typically five to six years. The training periods are extended individually if specialist training content cannot be achieved in the minimum time. The organisation of training is overseen by the Federal Association of Medical Doctors in Bavaria (BLAEK) to ensure adherence to standardized training protocols and quality assurance.

While the acquisition of theoretical knowledge happens mainly on the individual initiative of the trainee e.g. via certified courses, a characteristic feature of the new specialist training is the in-depth application of medical knowledge in professional practice, therefore the anaesthesiologic departments offer hands-on clinical experience under the supervision of experienced anaesthesiologists.

Before the restructuring of the training process the description of the required specialist's training content in the form of "knowledge, experience and skills" sometimes made it difficult to determine the expected level of specific competence. Now, there is a rather practical differentiation between the two main competencies. On the one hand there is "cognitive and methodological competence (knowledge)" and on the other hand there is "competence to act (experiences and skills)".[2] The assignment of the individual training content to a competency-based model emphasizes self-directed learning and enables the trainee to identify where to achieve still higher levels of competence.

Interestingly, there is no strictly defined roadmap for the trainees how to go through the different surgical specialties, but it is organised by each training hospital either on a day-to-day base or on an individual departmental curriculum.

To be eligible for the specialist exam the trainee must achieve the following learning objectives: (1) systematically classifying and explaining, (2) cognitive and methodological competence, (3) self-responsible implementation and (4) competence to act. This is documented in the eLogbook (Table 1), which is one of the key elements of this newly structured process. This electronic logbook is a web application from the German Medical Association (BAEK) and is adapted for any specialist discipline. It is also available in Bavaria, of course.

It is the trainee's responsibility to use the eLogbook to continuously document their training progress from the start of their specialist training. In addition, there is the possibility of completing a year outside the specific field in many areas to acquire skills that can be credited for the specialist training periods of at least three months, which contributes to making the individual training course more flexible. Those entitled to specialist education must provide the required skill set that was mentioned above as well as the capability to objectively check the documented number of benchmark figures in order to discuss them with the trainee.

ASSESSMENT AND EVALUATION

Throughout the training period, anaesthesiology residents undergo regular, but non-formal assessments and evaluations to gauge their progress and competence. These assessments

Table 1. Example of the eLogbook for Anaesthesia specialist training. (Translated and modified from WBO 2021)[1]

Specialist for: **Anaesthesiology**							
Specialty definition: **n.a.**							
Training time: ____ **months with an instructor at a certified specialist's training center (§5 p.1 s.2 with § 2a p.8)**							
Content of specialist training for specialist's competencies							
Cognitive and methodical competence	Decision-making and responsibility	required number	verified number	name and describe	systematically classify and explain	carry out under guidance	carry out independently
General content of the specialist training for Section B, considering area-specific characteristics							
Common/specific content of specialist training							
Training section							
aaa		**x**	**y**	■	■		
	bbb	**x**	**y**			■	■
Training section							
		x	**y**			■	■
ddd		**x**	**y**	■	■		
Further content, which exceeds the requirements							
Cognitive and methodical competence	Decision-making and responsibility	required number	verified number	name and describe	systematically classify and explain	carry out under guidance	carry out independently
				■	■	■	■
				■	■	■	■

may include written exams, practical skills assessments, oral examinations, and clinical evaluations, but are not (yet) mandatory. Feedback from supervising physicians and peers also contributes to the overall evaluation process, ensuring comprehensive and objective assessment of residents' capabilities.

MANDATORY COURSES

Anaesthesia training programs include mandatory courses covering e.g. crisis resource management (CRM) or transfer of ICU-patients. These courses may encompass special anaesthesia techniques like fiberoptic intubation, intraosseous access, pharmacology, patient safety, pain management, critical care, and medical ethics. Practical training in simulation labs further enhances residents' proficiency in handling complex clinical scenarios.

RECERTIFICATION PROGRAMS

Specialists in anaesthesia are required to undergo periodic recertification to maintain their professional competence like any other medical specialist in Germany. Recertification programs typically involve continuing medical education (CME) activities, at least 250 points have to be gained within 5 years. Participation in these programs ensures that anaesthesiologists stay abreast of advancements in the field and uphold the highest standards of practice.

STRENGTHS OF THE TRAINING CURRICULA

1. **Structured Curriculum:** The Bavarian anaesthesiology specialist training curriculum is well-structured, providing a clear roadmap for trainees to follow throughout their education. This structured approach ensures that residents receive comprehensive training in all relevant aspects of their specialty, covering essential knowledge, skills, and competencies;
2. **Comprehensive Clinical Exposure:** Anaesthesia training in Bavaria, Germany offers extensive clinical exposure, allowing residents to gain proficiency in diverse anaesthesiological specialties and critical care settings;
3. **Interdisciplinary Collaboration:** Emphasis on interdisciplinary collaboration fosters teamwork and communication skills essential for delivering integrated patient care.

FUTURE CHALLENGES

1. **Workforce Shortages:** The growing demand for anaesthesia services coupled with a shortage of qualified professionals poses a challenge to the healthcare system, necessitating strategies to recruit and retain talented individuals;
2. **Technological Advancements:** Rapid advancements in medical technology require ongoing training and

Table 2. Example of the curriculum for Anaesthesia specialist training. (Translated and modified from WBO 2021)[1]

Definition: The field of anaesthesiology includes general, regional and local anaesthesia including pre- and post-treatment, the maintenance of vital functions during surgical and diagnostic procedures as well as intensive care, emergency medicine and pain medicine measures.		
Duration of training: 60 months of anaesthesiology under authority at approved institutions, thereof: - must be completed 36 months in anaesthesiology; - must be completed 12 months in intensive care medicine, of which 6 months can be spent in intensive care medicine in another area; - in order to acquire competence, an additional 12 months of specialist training in anaesthesiology and/or other areas must be completed.		
Cognitive and methodical competence	**Decision-making and responsibility**	**Required number**
General content of the specialist training in anaesthesiology		
Essential laws, regulations, and guidelines		
	Counselling of patients requiring palliative care	
Preanaesthesiological preparation		
	e.g. informing patients about the risks of anaesthesia procedures and medications and obtaining legal consent (…)	
	e.g. identification and management of relevant cardiovascular pulmonary, neurological and muscular risk factors (…)	
Anaesthesiological procedures and techniques		
	Airway management, technical measures for the treatment of the easy and difficult airway including difficult intubation (difficult airway), thereof	
	- fiberoptic techniques including fiberoptic intubations, up to 50% of this can be done through simulation	25
	- video-assisted intubation procedures	20
Anaesthesia-relevant ultrasound procedures, in particular emergency sonography, (…)		
	Performing anaesthesia-relevant ultrasound procedures for various measures, in particular for CVC placement, pleural puncture, (…)	50
	General anaesthesia and intraoperative ventilation including induction, intraoperative monitoring, (…)	
	Performing anaesthesia procedures, thereof	1800
	- for abdominal procedures	300
	- in patients with at least ASA 3 classification	100
Anaesthesia in neurosurgical and neurointerventional procedures		

adaptation to ensure optimal utilization and integration into clinical practice;

3. **Evolving Healthcare Landscape:** Changing healthcare policies, economic constraints, and demographic shifts present challenges in resource allocation, patient management, and healthcare delivery models.

CONCLUSION

Anaesthesia training in Bavaria, Germany is characterised by a structured and comprehensive approach that equips medical professionals with the skills and knowledge needed to excel in this demanding field. While this training curriculum boasts strengths such as extensive clinical exposure, interdisciplinary collaboration, and gaining responsibility, future challenges including workforce shortages, technological advancements, and evolving healthcare landscapes necessitate ongoing adaptation and innovation to ensure the delivery of high-quality anaesthesia care.

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ARTIGO DE PERSPECTIVA

Perspetivas e Desafios na Formação Específica em Anestesiologia: Uma Análise Contemporânea e uma Visão para o Futuro

Perspectives and Challenges in Specific Training in Anesthesiology: A Contemporary Analysis and a Vision for the Future

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Nos últimos anos, temos assistido a um notável crescimento na oferta de recursos e na investigação em educação médica. O desenvolvimento da simulação médica, a utilização crescente de recursos educativos *online* e a integração de aplicações de inteligência artificial, transformaram radicalmente o paradigma da educação médica. Estes avanços criaram uma necessidade premente de atualização das técnicas de ensino para que se adequem às novas realidades e exigências desta área. Neste contexto, a educação médica, particularmente na Anestesiologia, enfrenta dois desafios principais. Primeiro, a necessidade de acompanhar os rápidos avanços tecnológicos que influenciam a prática médica e, segundo, a urgente atualização do currículo de ensino em Anestesiologia. Estes desafios são cruciais para garantir que a formação médica permaneça relevante e eficaz, preparando os futuros anestesiologistas para um ambiente clínico em constante evolução.

Em Portugal, a formação dos internos de Anestesiologia é regulada por diretrizes nacionais que procuram alinhar-se com as exigências europeias. Contudo, a implementação prática dessas diretrizes varia entre regiões e instituições, resultando numa formação desigual. Este desafio não é exclusivo de Portugal; muitos países europeus enfrentam dificuldades semelhantes na padronização da formação médica. Atualmente o internato médico de Anestesiologia é completado num prazo de 60 meses, após a concretização de diferentes estágios, refletindo assim períodos mínimos e máximos para a aquisição das competências nucleares e específicas que são repartidas por 3 campos: conhecimento, desempenho e atitudes.

Os atuais modelos de avaliação em Portugal incluem a avaliação contínua, abrangendo as avaliações de estágios e avaliações anuais; e a avaliação final do internato, com a realização de três provas distintas (curricular, prática e teórica). Estes modelos tentam avaliar as 19 diferentes áreas de competências necessárias em Anestesiologia (12 nucleares e 7 específicas), como a aquisição de conhecimentos clínicos específicos, competências técnicas e de comunicação, profissionalismo e ética, entre outros. Um dos atuais desafios é compreender e avaliar continuamente a aquisição destas competências durante todo o período de formação do interno. Nos diferentes estágios, são avaliados parâmetros que refletem o desempenho do médico interno, contudo esta apreciação é realizada muitas vezes com algumas limitações.

A implementação de modelos de avaliação contínua, centralizados e com *feedback* diário, é essencial; a implementação destes modelos possibilita a reflexão por parte dos internos, fomentando o maior trabalho nas suas insuficiências e melhor compreensão das suas qualidades.

Um método eficaz e comprovado de ensino e avaliação é o de *feedback* com reflexão. Após o final de uma tarefa, é pedido ao interno para refletir e efetuar a sua auto-avaliação; segue-se a avaliação/*feedback* do assistente. Finalmente é solicitado ao interno um plano de ação para a resolução dos desafios encontrados, o qual é discutido.

Outros métodos tais como a aprendizagem baseada em problemas e o ensino em simulação são também de

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extrema importância e atualmente utilizados em vários centros formativos em Portugal. Contudo, carecemos de uniformização destes métodos em todas as instituições do país, processo que é dificultado pelas diferentes realidades e limitações organizacionais destes centros e instituições. Novos métodos de ensino e avaliação também surgem no presente. Um exemplo é o método de *feedback* 360º (ou multiorigem); por exemplo, todos os elementos presentes na sala operatória (anestesiologistas, cirurgiões, enfermeiros, técnicos e até mesmo o doente) fornecem *feedback* através de uma *checklist*, avaliando competências de comunicação, profissionalismo, trabalho de equipa, entre outros.

Estão também a surgir conceitos centralizados de portefólios eletrónicos. Estes contemplam a avaliação por *feedback*, registo de atividades clínicas e científicas, entre outras. Permitem assim processos ricos e complexos de planeamento, síntese, partilha, discussão, reflexão e de respostas ao *feedback*. Além disso, alguns destes portefólios poderão permitir a ênfase na educação através da disponibilização e resolução de questões teóricas de treino e outros métodos de *e-learning*, discussão de casos clínicos e de projetos, e ainda permitir a autoavaliação e avaliação por pares.

Atualmente, a avaliação contínua dos 60 meses contribui apenas para 50% da classificação de uma das três provas finais (prova curricular). Apesar de ser possível avaliar as competências no campo do conhecimento, e algumas atitudes, através das provas finais teórica e prática, é um desafio distinguir eficazmente o desempenho nas competências do interno durante a sua formação. Uma única avaliação somativa no final do internato, não oferece a oportunidade para o interno melhorar ou superar insuficiências na sua formação. Novos modelos de avaliação poderão facilitar uma valorização dos internos com ênfase nas suas qualidades e desempenho diários.

Surge então a necessidade premente de atualizar o currículo de Anestesiologia em Portugal e privilegiar a competência ao invés de números. Esta possível reestruturação comporta vários desafios e questões:

1. Face aos avanços científicos, tecnológicos e novas práticas, os métodos de ensino atuais mantêm-se eficazes?;
2. Como introduzir novos modelos de ensino?;
3. Os vários centros de formação médica existentes em Portugal fornecerão igualdade de oportunidades para o desenvolvimento de todas as competências?;
4. Quais os modelos ideais para as avaliar?

A implementação de programas educativos que garantam uma exposição uniforme e abrangente a todas as competências é fundamental. Isso inclui assegurar que todos os internos tenham acesso a oportunidades práticas em todas as áreas nucleares e específicas da Anestesiologia. Planos estruturados entre hospitais, criação de novos modelos de ensino e de avaliação uniformes e a implementação de formações de simulação regulares e mandatórias poderão facilitar esse processo.

É também importante notar que os novos métodos de ensino e de avaliação não substituem os métodos tradicionais ou atuais, mas deverão ser combinados num conceito multidisciplinar de educação médica.

Determinar um equilíbrio adequado entre a atividade assistencial e a educação, continua a ser um desafio.

Quando aplicadas à educação médica, estes conceitos criam a perceção de que são entidades dicotómicas que não são complementares nem dependentes uma da outra. Como tal, são colocadas uma contra a outra, onde um lado ganha e o outro perde. Esta visão também estabelece uma expectativa irrealista para que os assistentes (educadores) e internos (aprendizes) consigam um equilíbrio entre a atividade assistencial e a educação, mantendo estratégias bem definidas e delimitadas para a aquisição de uma autonomia progressiva tendo em conta as competências dos internos.

O envolvimento ativo dos assistentes, com a discussão diária de objetivos claros a alcançar antes das atividades, e a discussão crítica após cada caso é essencial, mas muitas vezes dificultado por diversos fatores profissionais e organizacionais levam por exemplo à sobrecarga laboral com todas as consequências inerentes como a exaustão física e emocional, entre muitos outros.

O futuro do Internato em Anestesiologia em Portugal depende da nossa capacidade de ultrapassar novos desafios e de nos adaptar às limitações das realidades locais. Com um compromisso coletivo e uma visão clara, podemos continuar a melhorar ainda mais a qualidade da formação dos nossos internos, assegurando que estejam bem preparados para os desafios da prática clínica moderna. É essencial que continuemos a evoluir, promovendo uma educação médica de excelência que reflete as necessidades atuais e futuras da nossa sociedade.

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ARTIGO DE PERSPETIVA

Anaesthesiology in Spain: State of the Art

Anestesiologia em Espanha: Estado da Arte

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Palavras-chave
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Anaesthesiology is a medical specialty defined in Spain since 1984 to protect the patient from surgical aggression. Its scope was extended and expanded by the authorities within the National Specialty Commission and the State Secretariat for Universities and Research of the Ministry of Education and Science in 1996,[1] establishing the following objectives: the study, teaching, research and clinical application of the various methods and techniques for making the patients insensitive to pain and protecting them from surgical, obstetric or invasive tests of all kinds, maintain vital functions or treat them in critical situations and manage both acute and chronic pain. This definition of competences was revised in 2021 by the Spanish Society of Anaesthesiology and Resuscitation (SEDAR) updating it as: "Medical specialty responsible for perioperative medicine, competent in the knowledge and performance of all anaesthetic, analgesic and sedation techniques for diagnostic and therapeutic procedures, emergencies, resuscitation, patient care with critical pathology of any etiology and treatment of acute and chronic pain".[2] Access to the specialty is done through a general national exam which is offered annually. Spanish medical graduate students and other nationalities covered by international agreements with countries of the European Union and Latin America can register for the exam.

With the exam grade and the previous academic record, a final grade is obtained that will determine the position of each doctor to choose between the different specialities offered in the country. The total number of training places depends on the offer of each accredited training centre. Depending on the characteristics and dimensions of these hospitals, 1 to 15 residents can be formed per year. This offer has been growing exponentially in recent years due to the huge demand for care in the surgical field in our country, going from 70 places in 1988 to 427 in the last call of 2024 (Fig. 1). Training of residents is currently designed to be completed in 4 years, although the possibility of extending it to 5 years is being studied given the growth of responsibilities. During these years of training, a series of competences that are established in the national regulatory framework must be acquired progressively but these can be adapted to the teaching program of each hospital, adjusting the training periods in each case.

Competences are described in the following points:

1. Pre-operative assessment and premedication: At this visit, the patient's medical history is reviewed and an examination aimed at ruling out possible anesthetic problems (especially intubation) must be done. The chosen anesthetic plan is discuss with the patient and the possible complications arising from the anesthesia should be explained, as well as the stay in the critical care unit. Residents must learn to optimize the patients for surgery;
2. Intraoperative care: includes the period form the patient's arrival to the pre-operative holding area to the transfer to the recovery unit. The residents must check that all preoperative recommendations have been followed and plan an anaesthetic plan which should be discuss with the consultant. All surgical and anesthetic actions during surgery should remain reflected in the anesthesia graph;
3. Post-operative care: Once the patient arrives at the recovery unit (post-anaesthestic or critical care unit), the patient condition, the intervention, current state and possible complications and future plan must be discuss with the doctor and nurses in charge.

The training itinerary refers to the set of basic rotations, structured by year, to be fulfilled by every resident. An example of the training path is detailed in Table 1.

In addition to the mandatory rotations, different training courses are recommended as for example: advanced life support, mechanical ventilation, ultrasound regional anaesthesia, echocardiography, focus ultrasound or chronic pain management. Resident must attend and participate in the clinical sessions of the department and hospital. They must

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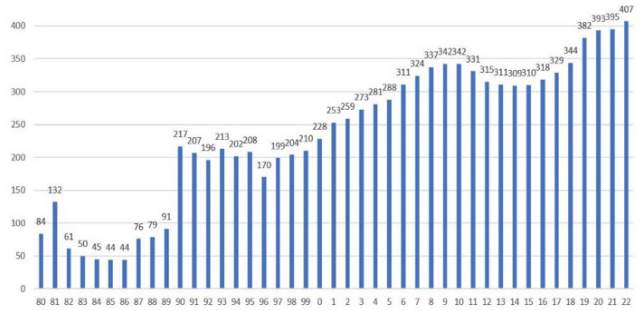

Figure 1. Number of training positions offered from 1980 to 2022

present at least one clinical session each year of residency. Residents are also encouraged to participate in the creation of protocols, publications and the completion of PhD. The assessment of the residents is carried out by the tutors. Each tutor guides and supervises 2-3 residentes during the training period. In Spain, there are no exams during the specialization period or at the end, the evaluation consists of two parts:

- Formative evaluation: consists of 4 interviews with the tutor a year:
- Summative evaluation including: evaluation sheets, external rotation reports, annual reports and satisfaction survey;

The future of the specialty is marked by several challenges:

- Optimize chronic and acute pain management in order to achieve a pain free hospital;
- Standarize attention outside the operating room, with the generalization and expansion of procedures under sedation;
- Implement perioperative medicine to improve perioperative optimization;
- Promote anaesthesia free of pollutants with reduced carbon footprint;
- Extension of residence to 5 years as in most European countries and establish a more objective assessment by carrying out examinations which can be compared with those which area mandatory in the rest of Europe.

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Table 1. Training itinerary

First year	Number of months
Cardiology	2
Pneumology	1
Nephrology	2
Radiology	1
Gynaecological surgery	2
General surgery	2
Traumatology and Orthopedic surgery	2
Second year	**Number of months**
Maxillary surgery	1
Otolaryngologic surgery	2
Plastic and repair surgery	1
Pre-operative assessment	1
Post-anaesthetic Unit	1
Acute pain management	1
Obstetric anaesthesia	3
Chronic pain management	2
Third year	**Number of months**
Maxillary surgery	5
Otolaryngologic surgery	1
Plastic and repair surgery	4
Pre-operative assessment	2
Third year	**Number of months**
Cardiac surgery	2
Vascular surgery	1
Out of operating room anaesthesia	2
Major ambulatory surgery	1
General surgery	1
Eye surgery	1
Traumatology and Orthopedic surgery	1
Free rotation	3

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Postgraduate Specialist Medical Training in Anaesthesiology & Intensive Care in Estonia

Programa de Formação Pós-Graduada em Anestesiologia e Medicina Intensiva na Estónia

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PRECONDITIONS AND ACCEPTANCE TO ENTERING A RESIDENCY TRAINING

The prerequisite for entering residency training is a degree in medicine (from medical schools with a medical programme accepted by European Union standards) and registration as a physician at Estonian Health Board. An accepted candidate is required to be proficient (C1 level) in Estonian language.

To be accepted to the anaesthesiology residency programme, the candidate has to pass an entrance exam that takes place once a year. The evaluation process takes into account the results from previous medical studies together with on-site written and oral examination on basic knowledge on applied anatomy, pharmacology and physiology and anaesthesiology and intensive care.

MAIN PRINCIPLES OF THE CURRICULUM

The postgraduate medical training programme in Anaesthesiology and Intensive Care in Estonia has been developed according to the recommendations defined in the European Training Requirements in Anaesthesiology (ETR) by the European Board of Anaesthesiology (EBA) of the European Union of Medical Specialists (EUMS) and recommendations defined by the European Society of Anaesthesiologists and Intensive care (ESAIC) and European Society of Intensive Care Medicine (ESICM). Postgraduate medical training in anaesthesiology and intensive care is supervised and regulated by the Anaesthesiology and Intensive Care Clinic at the University of Tartu and carried out in academic and non-academic hospitals across Estonia. The duration of anaesthesiology and intensive care residency training is currently 5 years. During the first year, all residents will learn and practice anaesthesia at Tartu University Hospital. Starting from the second year every resident will have an individual training programme including all subspecialities. In general, the programme consists of anaesthesia and intensive care modules (each 15 months), paediatric anaesthesia and intensive care (5 months), acute and chronic pain medicine and palliative care (3 months), emergency medicine (2 months), practical skill modules focusing on echocardiography, radiology, bronchoscopy (each 1 month). Most of the postgraduate training is carried out in tertiary care hospitals, but practice in general hospitals is also required to a lesser extent. All residents are also entitled to training in cardiac surgery operating theater and intensive care settings. The postgraduate specialist programme has been revised and updated lately reflecting the need for competence-based development, including thorough descriptions of expected competencies in clinical fields categorized to domains and competence levels.

Defining expected competences will guide and help the developing specialist and trainers toward clearer and more focused learning objectives. The programme is still in development, for example, the assessment and evaluation protocols need to be changed accordingly and the whole process implemented taking into account the needs and requirements of all stakeholders. Simulation training is a crucial part of postgraduate training and is carried out in a dedicated simulation center at the Tartu University Hospital and to a lesser extent also in other hospitals.Residents will demonstrate their practical skills and application of non-technical skills once a year. In addition to developing practical professional skills also theoretical courses are organized throughout residency. The theoretical programme covers a broad spectrum of topics and is highly valued by residents.

During the first year, 2-hour seminars are carried out weekly, and during 2-5th year 2-3 full day seminars take place monthly. In addition, residents have to participate in

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courses (e.g. CEEA refresher courses), conferences (national and international), everyday clinical rounds and educate themselves with the help of scientific literature.

Residents are encouraged to actively participate in scientific work, which is reflected in co-authored review articles and updated guidelines as well as clinical studies in national medicine journals.

EVALUATION AND GRADUATION

Residents are obliged to record and analyse personal anaesthesiology practice in a logbook (e.g. number of performed anaesthetic cases and procedures; problems, near misses and complications; treated ICU patients etc).

The logbook will be assessed and verified by the tutor at the end of every residency module. Log-book and tutor reports are reviewed on a regular basis by the director of the residency at the University of Tartu and are the basis to grant residents´ progress to the next year. To be more specific, the acquired knowledge will be assessed after 2nd year of residency as a written exam with MCQs and evaluation at skill stations.

Residents can compare their knowledge with European standards through ESAIC On-Line Assessment. The performance of clinical skills together with non-technical skills will be evaluated in a simulation setting. The final examination completing residency training consists of oral clinical vivas and is given in front of a committee, whose members are leading professionals of the specialty from different hospitals across Estonia. If passed, the resident will be granted the title of a medical specialist in Anaesthesiology.

European Diploma of Anaesthesiology and Intensive Care (EDAIC) is appreciated but voluntary for residents. EDAIC diploma does not replace the national examination. Starting in 2024, Estonia will serve as the EDAIC part I examination center.

RECERTIFICATION PROCESS FOR SPECIALISTS

Continuous medical and professional development is highly valued among anaesthesiologists and endorsed by the Estonian Society of Anaesthesiologist. After graduation specialists will be acknowledged as certified anaesthesiologists for 5 years after which recertification is recommended. Although the specialist certification is not mandatory and anaesthesiologists are allowed to continue practicing, it is promoted among employers. Regarding the requirements for recertification, the specialist is assessed based on characteristics reflecting practice and acquired educational events (CME credits). Full-time working specialists are expected to perform 400 anaesthetic cases or 600 anaesthesia hours annually or work in an intensive care unit. Also, the specialists are required to present a self-assessment reflecting on complications. If existent, medical errors are taken into account in the evaluation process.

With respect to continuous medical education, it is recommended to attend 60-80 hours of educational events yearly and gain 300 CME credits in a 5 year perspective.

FUTURE CHALLENGES

The curriculum faces some important challenges soon.

As noted before, the main focus will be on the implementation of competency-based medical training. The implementation process will have to address questions of how competences will be assessed and how the individual training programme could be dynamically changed in respect.

This implementation process might elicit new challenges regarding protected time for trainers, which in turn is coupled with increasing needs for financial resources. Secondly, currently, the EDAIC diploma is voluntary for residents and specialists.

Also, contrary to other European countries, EDAIC diploma does not replace the final national exam. This might have had an impact on the low number of EDAIC candidates in Estonia and therefore this process needs to be re-evaluated.

Finally, supporting continuous medical and professional development among anaesthesiologist will remain a priority and continuous challenge for the Estonian Society of Anaesthesiologist. The society together with employers will continue to endorse recertification.

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RK, JK: Conception, design, writing, supervision and critical revision of the manuscript

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ARTIGO DE PERSPETIVA

Residency in Anaesthesiology and Reanimatology in Latvia

Programa de Formação em Anestesiologia e Reanimação na Letónia

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ADMISSION PROCESS

Every year, until April 1, the Ministry of Latvian Health provides some state-funded study places for residency training in Anaesthesiology and Reanimatology. Admission to the residency program is competitive. The competition is organized taking into account Law on Higher Education Institutions, Medical Treatment Law and legal acts of the Republic of Latvia. The competition is based on the developed uniform admission rules and organized by a single selection committee, and it takes place in two stages. First the applicant submits an application electronically, where the future specialist selects a specialty and submits all the necessary documents. At the second stage, the applicant undergoes an interview.

- The applicant must provide his/her Diploma and Diploma supplement where the weighted average grade will be taken into account, including the grade obtained in the state exam, and scientific work;
- A motivation letter, which explains why he/she has chosen the particular specialty, tells about himself/herself and his/her previous work experience, as well as volunteering. It is necessary to provide a letter of recommendation from a specialist;
- Evidence of scientific activity is also required. This could be participation in a university scientific workshop, oral presentation at a scientific event, publications in peer-reviewed scientific journals, thesis in a scientific publication, article in a popular science publication, participation in an international conference.

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style, presentation and argumentation skills are evaluated.
After passing these two stages, the applicant individually receives the admission result in electronic form.
Then the resident chooses the university and hospital where he/she will undergo theoretical and practical training, respectively.

ORGANIZATION OF TRAINING

In Latvia, two universities provide theoretical training in Anaesthesiology, Reanimatology. There are Riga Stradiņš University and the University of Latvia. Every university has a program director. There is a slight difference in the programs of the two universities, but the purpose of the programs is the same – to provide theoretical knowledge and practical skills in accordance with the specialty – anesthesiologist, reanimatologist – requirements, and prepare a specialist for certification following the regulatory documents of the Republic of Latvia.
The university develops the curriculum, and the medical institution implements the program.
The training lasts five (5) years (Table 1). The workload includes 40 hours a week on a rotational basis in various Clinical Base Units with additional seminars and problem lectures. Residents can study with certified professionals who have completed at least one certification (five years after receiving the certificate).
In the first year of training, the resident studies and repeats theoretical disciplines. The studies also include an introduction to general anaesthesiology, adult and pediatric intensive care, and advanced Cardiopulmonary Resuscitation.
The second year of training is devoted to anaesthesiology in abdominal surgery, gynecology, urology, neurosurgery, orthopedics, ophthalmology, pediatrics, and angiology. Adult intensive care also continues.
In the third year, students undergo rotations such as

Table 1. The training lasts five (5) years

Distribution of required courses by year				
1st year	2nd year	3rd year	4th year	5th year
Anatomy, Physiology, Pharmacology, Physics and statistics, General surgery, Thoracic surgery, Obstetrics, Neurology and neurosurgery, Cardiology, ECG, Introduction to general anaesthesiology, Introduction to adult and pediatric Intensive Care, Advanced CPR	Anaesthesia in abdominal surgery, Anaesthesia in gynecology, Anaesthesia in urology, Anaesthesia neurosurgery, Anaesthesia in orthopedics, Anaesthesia in ophthalmology, Anaesthesia in pediatrics, Anaesthesia in angiology. Adult Intensive Care.	Emergency care medicine, Anaesthesia in thoracic surgery, Anaesthesia in obstetrics, Anaesthesia and Intensive Care in pediatrics, Bronchoscopy, Peripheral nerve blocks, Clinical microbiology and hospital epidemiology.	Patient consultation in outpatient hospital, Anaesthesia in plastic surgery and microsurgery, Anaesthesia in otolaryngology, Aneasthesia in Dentistry, oral and maxillofacial surgery, Anaesthesia in endocrine surgery, Anaesthesia for emergency surgery, Anaesthesia in ambulatory surgery, Anaesthesia for diagnostic procedures. Intensive Care in cardiology, Intensive Care in neurosurgery, Intensive Care in toxicology, Introduction in renal replacement therapy, Transfusiology.	Anaesthesia and intensive care in cardiology, Anaesthesia in neonatology and pediatrics, Intensive Care in neonatology and pediatrics, Anaesthesia and intensive care for patients with burns. Anaesthesia for organ transplant and donor management, Pain medicine, Prolonged neuraxial blocs technics, Advanced CPR.

emergency care, anaesthesia in thoracic surgery, obstetrics and pediatrics, and intensive care in pediatrics. Training includes manipulations such as bronchoscopy and peripheral nerve blocks, and theoretical course in clinical microbiology and hospital epidemiology.

In the fourth year, the introduction to anaesthesiology continues, and during residency the course of anaesthesiology in plastic and microsurgery, otolaryngology, endocrine anaesthesiology and anaesthesiology for diagnostic procedures is completed. In the year the resident also works in intensive care – cardiology, neurosurgery, toxicology. Introduction in renal replacement therapy. The resident completes the year with a theoretical course in transfusiology.

In the fifth year, the resident studies in-depth anaesthesia and intensive care in cardiac surgery, pediatrics, and patients with burns. The resident continues to develop the Qualification paper.

The study process includes:

- Theoretical education – problem lectures, seminars, case report, pedagogical work, etc;
- Practical training – study courses in hospitals and out-patient institutions, simulations;
- Independent work – practical work, literature research, scientific research, and developing a qualification paper.

ASSESSMENT AND EVALUATION

Theoretical and practical knowledge is assessed at the end of each study course. Each resident must provide a report on the practical and scientific work done in the year. Upon approval, the university will transfer the resident to the next year.

After the second year, each university conducts an exam. The exam consists of MCQ tests and discussion.

Questions related to general anaesthesiology, intensive care in adults, anaesthesiology and intensive care in pediatrics.

The final examination consists of an MCQ test, discussion and presentation of a qualification paper.

Representatives of the Society of Anaesthesiologists and Reanimatologists of Latvia takes part in the final exams.

RECERTIFICATION FOR ANAESTHESIOLOGISTS AND REANIMATOLOGISTS

The Latvian Medical Association oversees the professional standards and certification processes for aneasthesiologists and reanimatologists in the country, following the law Procedures for Certification of Medical Practitioners. Each specialty has its certification commission.

Aneasthesiologists and reanimatologists must undergo regular recertification every 5 years to maintain their credentials, which typically involve:

- 250 continuing medical education (CME), out of which at least 60% are in anesthesiology, reanimatology specialty;
- Description of your clinical practice, number of manipulations performed;
- Recommendations from the head of the department and from the hospital;
- CME are obtained from local and international congresses, seminars, workshops, publications, teaching work.

The Society of Anaesthesiologists and Reanimatologists of Latvia and both Faculties of Medicine (Rīga Stradiņš University and University of Latvia) are actively involved in the organization of educational processes and motivated to participate in international activities (ESAIC, ESICM, ESRA, ESPNIC, ESPA, etc.). There is active cooperation between the Baltic States in holding congresses too.

The theoretical exam must be taken if CME is not collected.

In summary, the recertification process in Latvia for anaesthesiologists is comprehensive, involving continuous education and obligate clinical practice to provide safe, effective care to patients. In my opinion, our curriculum has three big advantages. The first and most important thing is Simulation-based medical teaching and learning.

This is especially important for first and second-year residents. Simulation is safe for patients and provides the opportunity to make mistakes and work on them.

Secondly, EDAIC Part I center has been located in Latvia for many years. I would like to note that every year the number

of residents passing the first part of the exam in our center is increasing. This is because our leaders actively propose to do so. As the residents themselves note, this is a good opportunity to prepare for exams after the second and fifth years. But if we talk about the second part of EDAIC, then not everything is so good. The percentage of those who passed or tried is much lower. This may be due to several factors, firstly, a very good knowledge of English is required. Secondly, the price of this exam is quite high for our country and, finally, the centers are far away.

And finally, the training program provides an opportunity to work and gain experience not only in large medical centers in the capital, but also in regional hospitals.

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Israeli Residency Program in Anesthesia: A Narrative Review

Programa de Formação em Anestesiologia em Israel: Uma Revisão Narrativa

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INTRODUCTION

The residency program is a complex system that includes many rules and regulations and is governed by several stake holders. These include the departments and hospital managements, who actually run the programs and use the residents and a major workforce running the hospital. The Israel Medical Association as both a professional entity (via its scientific council) governing the rules and requirements on the one hand, and as the employee representative, often objecting to these requirements in the name of employee's rights. On top of these players is the Ministry of Health, which eventually grants the licenses (according to the scientific council recommendation), supervises the departments and is also the employer of many of the residents. In the following pages, we will try to explain the system and how it works. However, it should be noted that things are constantly changing. We will try to illustrate the expected changes as well, but the timeframe of these changes is not always clear.

Before we introduce the residency program, we should explain the internship – an intermediate state between medicine school and the residency. Graduates of Israeli as well as foreign medical school, are required to undergo a mandatory one-year internship program before they obtain an unrestricted license to practice medicine in Israel. The program includes obligatory periods of internal medicine, surgery, pediatrics and one month of anesthesia and critical care as well as one month of vacation and two electives (each of one month) during which they choose a department of their liking. The internship program is controlled by a committee of medical school's deans, so many consider it another year of advanced med school education. Some residency programs (specifically internal medicine and pediatrics) may consider the time spent in the department during internship as part of the respective residency, providing that both electives and mandatory periods were performed in the department. This may shorten the residency by up to six months. However, this option is not opened for anesthesia residency yet. With the success of this program for internal medicine and pediatrics, we are expecting this option will be opened to other professions, including anesthesia.

Upon receiving the unrestricted license to practice medicine, at the end of the internship. Graduates may choose to begin a residency program in Anesthesia. Unlike the United States and some European countries, the residency program is controlled and performed by a specific anesthesia department, under the supervision of the Scientific Council of the Israeli Medical Association. The departments may be affiliated to a university or a faculty of medicine for the purpose of medical student education and academic affiliation of the faculty. However, such an affiliation is not mandatory, and the university has no involvement in the residency program. Residency is considered a professional period rather than an academic one. This distinction is important as it has significant implications on the duties and expectations of the health system from the resident and vice versa. For many years, resident physicians in Israel have been considered first and foremost the backbone of the hospital's workforce. Learning was considered a side benefit, and residents acquired the practice by "osmosis" from observing their senior colleagues; formal education for residents was considered secondary at best. This tendency has radically changed during the last two decades following better understanding of the importance of the structured educational process and the allocation of more time and resources towards this end. The competition

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between departments for recruiting the top graduates has also incentivized departments to invest in better education of their residents. Most of the in-house night calls in Israeli hospitals are performed by residents (Anesthesiology is one of the few professions where attending physicians also routinely cover in-house night calls). The Israeli Ministry of Health and the Israeli Medical Association are trying to cut down the long on-call hours (routinely 24-26 hours today). However, analysis of the effect of this move revealed a drastic increase demand of the already deficient anesthesiologists work force in Israel. Thus, at this point it seems unrealistic that such a move could work without significantly increasing the workforce.[1] The residency system (for all medical professions) in Israel is currently under scrutiny. Many programs (including anesthesia) are in the process of switching to a competency based medical education (CBME). This process is occurring at the national level. However, the process is slow with multiple issues needing solutions and significant financial implications. As these changes have yet to be implemented at the macro level, they are not about to significantly modify the global structure of the residency program in the foreseeable future. Thus, we will describe here the current program, and the changes that are expected to be implemented in the near future, but the discussion of the long-term plans remains outside the scope of this manuscript.

THE RESIDENCY PROGRAM

The program consists of five years working as a resident. Most of this time is spent working in the hospital where the residency occurs. Of these five years, thirty-nine months (3 ¼ years) are taking place in the anesthesia department (including operating rooms, preoperative clinics, labor and delivery, sedation service, etc.). Outside anesthesia, six months are performed in the critical care unit, three months in the chronic pain service, six research-oriented months (called a "basic science" period), and six months of elective periods chosen by the resident in departments such as internal medicine, cardiology, nephrology, pediatric intensive care unit and other professions according to a list published by the scientific council.[2] Thus, overall, the residency includes 4 years in anesthesia and immediately related professions (critical care and pain clinic) and one more year dedicated to personal-professional development (research and electives). Throughout this time the resident is employed by the hospital where his program originates. Internal rotations: While the months spent in the department of anesthesia (39 months) are organized by the department according to its needs, residents are expected to conduct a pre-determined number of procedures and administer a minimal number of cases in certain sub-specialties such as cardiac and pediatric (see Appendix A). smaller hospitals, lacking departments such as neurosurgery, cardiothoracic and pediatric surgery are required to send their residents for periods of three, six, and sometimes nine months to a larger department, where they are exposed to these specialties, gain experience, and fulfill the minimal number of cases in the specific sub-specialty. Larger departments may choose to expose the residents via dedicated periods (internal rotations) or spread the exposure throughout the residency period, as long as the resident is completing the required list of cases. Basic science period: All residents are allocated six months of their residency for research purposes. During this time, they are expected to conduct a research project. They start by finding a mentor and submitting a proposal, which has to be approved by the Israeli Scientific Council before the beginning of this period, and they must submit a scientific report (which may be a manuscript in which they are the lead author) at the end. The proposal and final report undergo a peer-review process and need to be approved in order for the resident to graduate. Residents who have a previous research experience such as a PhD or a master's degree are exempt from this requirement. Recently, a number of programs were opened by the scientific council in collaboration with industry and with research institutes to improve the exposure of resident to relevant education. However, most residents still undertake regular research project paths. Beyond the exposure periods described, the resident is required to undergo a trauma care course. Up until 2023, the only recognized course was the American College of Surgeons ATLS© (Advanced Trauma Life Support) course, which was only offered in Israel by the Military Medical Corpse. Since 2023, the Israeli Medical Council, the Surgical Association, and the Israeli Society for Acute Care and Trauma Surgery are offering a combined online and hands-on course that is recognized as an equivalent to the ATLS with regards to fulfilling the residency requirements. The European trauma course is not, at this point, recognized as an acceptable equivalent course in Israel.

RESIDENCY EXAMS

To complete the residency, residents must succeed in passing a national written exam and an oral/simulated exam. The written exam (step A) is planned as a mid-residency exam, determining the resident's theoretical knowledge. Residents are allowed to take the exam two years after starting the residency. The exam is held once a year. The oral / simulation exam (step B) may be taken towards the end of the residency period, four years after starting the residency, and only after successfully passing the written exam. This exam concentrates on clinical decision making and on managing critical events (as is tested in a standardized, simulated environment). Unlike the United States, there is no "board eligibility" in Israel. A resident cannot complete his residency until he successfully passes both exams. He will remain a resident until he can pass even if all other requirements are met. The Israeli Step B exams were of the first to incorporate simulated parts, and to these days consists of a simulated emergency situation in the Operating Theatre, Emergency

Department or Post Anesthesia care unit, a simulated pre-operative interview with an actor and a simulated US / Model peripheral nerve blocks station.[3]

RESIDENCY COMPLETION

At the conclusion of the five years of residency (four and a half for those exempts from the basic science period), including the mandatory rotations as described above, after passing both exams, submitting a research project which was approved, and successfully completing an approved trauma course, the resident has to submit the paperwork proving he has done all that, together with a list of all the procedures he performed (from the hospital's computer). The list must include the minimal number of procedures and cases in each sub-specialty as described above. Once this is done, he is entitled to apply for a license as a specialist. At that point, a letter of support from the chair of his department is also required, but this is a technical issue that has no effect beyond the formalism. All the paperwork is approved by a committee within the Scientific Council, which issues a recommendation to the Ministry of Health who issue the actual license. Israel has no CME (Continuing Medical Education) requirements, or follow up qualifying exams. Thus, a professional license is valid indefinitely unless revoked by the ministry of health (an extremely rare event that requires a semi-judicial procedure, following major criminal acts or gross medical negligence).

SUMMARY AND PLANS FOR THE FUTURE

The Israeli system is using residents as a major work force in academic hospitals. To do that, they are delegated them with responsibility that might not be given in other programs (such as in the United States) at an early stage. The advantage of this approach is that by the time most residents finish five years of residency, especially in the larger medical centers, they have a wide clinical experience, usually more than is required. Therefore, at the end of their education, they are ready to work as independent and safe practitioners. The major drawback of the Israeli system is the lack of formal intra-residency summative assessment. Such assessments could enable allowing residents that requires more time the extra education, and preventing them from taking the final exams and becoming licensed before they can safely practice independently. This puts an unrealistic expectation on the oral and simulative exams that must decide whether a candidate is deemed to be a "safe" independent anesthesiologist, a task which is beyond the scope of any exam, no matter how structured and well designed. Hand In hand with the Israeli and European movement towards CBME as a base for residency training, the Israeli Society of Anesthesiologists has been working on updating the residency requirements (that were last updated in 2016). The goal is that the residency requirements will be in tune with modern scope of practice, including a heavier emphasis on mandatory simulation-based education, required competencies, and including non-operating room anesthesia (NORA) procedures such as brain angiography, TAVI and cardiac ablations in the syllabus. Changing the base from time and case-based syllabus to a competency based one requires a prominent feedback component that will allow obtaining competencies and verifying this. This requires education of the teachers, and assuring appropriate staffing which carries a significant financial burden. Furthermore, it is expected that this change will cause an increased variability in the length of the residency, a variability that may conflict some of the Israeli work legislation. Due to these difficulties, much more time, planning, work and funding are required until we can switch to a competency-based residency. However, the process is ongoing, and the change is gradually taking place.

CONTRIBUTORSHIP STATEMENT / DECLARAÇÃO DE CONTRIBUIÇÃO

NS, AR: Conception, design, writing, supervision and critical revision of the manuscript

All the authors contributed equally to the design and writing of the manuscript. All approved the final version to be published

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ARTIGO DE PERSPETIVA

Anaesthesia, Pain, and Intensive Care Medicine Training in Malta

Programa de Formação em Anestesiologia, Dor e Medicina Intensiva em Malta

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INTRODUCTION

Malta is a European Union country with a population of just over half a million people.[1] The density of Physician Anaesthesia Providers as defined by the World Federation of Societies of Anaesthesiologists (WFSA) is over 20 per 100 000 population.[2] As per the World Bank, Malta is considered a high-income country.[3]

TRAINING DOCUMENT

Anaesthetics, Pain, and Intensive Care Medicine are considered as one specialty by the Malta Medical Council.[4] The details of the national training programme are outlined in what is informally known as the "training document",[5] which is publicly available. This is written and developed by the Association of Anaesthesiologists of Malta (AAM) and was most recently updated in 2020. Any updates to this document must be legally approved by the Specialist Accreditation Committee (SAC) before coming into effect.

The Medical Specialist Accreditation Committee was established by Article 30 of the Health Care Professions Act 2003 (Cap.464),[6] prior to Malta's accession to the European Union. Members include appointees from the various relevant medical Professional Associations, among others. Two of its main functions include issuance of Certificates of Completion of Specialist Training, and accreditation of post-graduate training programmes. The President of the AAM sits on this committee. A main reference text for this document was the European Training Requirement in Anaesthesiology (ETR Anaesthesiology 2018) from the Standing Committee on Education and Professional Development (EPD) of the Section and Board of Anaesthesiology.[7]

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ACCEPTANCE TO THE ANAESTHESIOLOGY, PAIN, AND INTENSIVE CARE MEDICINE TRAINING PROGRAMME

Entry requirements into Malta's training programme are defined in the training document.

Currently, these include:

- An undergraduate medical degree recognized by the Malta Medical Council;
- Registration on the Principal List of the Malta Medical Council;
- A license to practice medicine in Malta;
- Completion of Foundation Programme or equivalent experience;
- Sufficient linguistic capabilities to communicate with patients and colleagues;
- A valid Advanced Life Support Course Provider certificate.

Applicants are required to apply for the advertised employment post of Basic Specialist Trainee (BST) in the Department of Anaesthesia, Intensive Care and Pain, at Mater Dei Hospital, as and when these jobs are issued by the Government of Malta. In recent years, these posts have been issued on a yearly basis. Following application, eligible candidates are requested to sit for a competitive interview as a limited number of Basic Specialist Trainees are accepted each year.

ACCREDITATION AND DURATION

Mater Dei Hospital, Malta's main acute tertiary hospital, is the only recognized hospital for anaesthesiology and intensive care training in Malta. Together with its predecessor, St. Luke's Hospital, it has been accredited by European bodies as meeting the European Standards of excellence and declared to be a European Centre for training of Anaesthesiologists. Plans are underway to again renew this accreditation.

The minimum duration of specialist training is five years in

full-time practice, with a minimum averaged working time of forty-eight (48) hours per week. A minimum of one year out of the five needs to be spent on intensive care training. Approximately one third of these hours need to be completed as non-elective work, such as on-call night and weekend hours. Allowances are made for equivalent part-time, or reduced hours, training, as well as for parental and maternity leave. Training sabbaticals may also be approved at the discretion of the Training Committee (see below) and the Chairperson of the Department of Anaesthesia, Intensive Care and Pain as the employer. The maximum duration of training is governed by the duration of the training employment contract. Training needs to be completed within ten years of commencement, excluding maternity, parental, and/or sick leave, as governed by employment terms. After a maximum of four years, trainees are expected to progress from BST to Higher Specialist Trainee (HST) level once all competences are achieved.

IMPLEMENTATION AND GOVERNANCE

The responsibility for the implementation of the training programme lies with the Anaesthesia Postgraduate Training Committee. Currently, this is made up of several specialist anaesthesiologists including:

- Training Coordinator/s. These are appointed by the Malta Post Graduate Training Centre (PGTC) by competitive interview every few years, and report to the Head of the PGTC as well as to the Chairperson of the Department of Anaesthesia, Intensive Care and Pain. They chair Training Committee meetings and are responsible for the day-to-day running of the training programme, including the organization of teaching and assessments, and monitoring of trainee progress. They are assisted in this role by a number of Education Supervisors in various subspecialty areas including intensive care, obstetrics, and paediatrics, among others;
- Three members of the Board of Administrators of the AAM. This includes the AAM President and two other Board members. Their role is to ensure that the implemented programme is in line with the approved training document and aligns with European standards; liaison with the SAC; and maintenance of patient safety. The AAM Board of Administrators is elected every three years;
- Four members representing the Department of Anaesthesia, Intensive Care and Pain at Mater Dei Hospital. These include the Chairperson, Deputy Chairperson, the immediate past Training Coordinator, and the individual responsible for the Trainee Mentorship Programme. Their role is to safeguard the smooth running of the clinical anaesthetic service, liaison with hospital administration, ensuring facilities for training, and safeguarding trainee wellbeing.

In addition, the AAM's Trainee Representative, elected on a yearly basis by trainees undergoing this training programme, is regularly invited to present any training issues experienced by trainees directly to the Training Committee.

Main Outline

The training programme is formally divided into fifteen four-month modules as follows:

- Two initial modules covering general, gynaecology, urology, vascular, orthopaedics and trauma surgery;
- Three intensive care modules (one at BST, and two at HST, level);
- Orthopaedics, trauma, and regional anaesthesia (at HST level);
- Two obstetric anaesthesia modules (one at BST, and one at HST, level);
- Two paediatric and ENT modules (one at BST, and one at HST, level);
- Plastics, dental and neurosurgery;
- Advanced general surgery incl. transplants & remote site anaesthesia (at HST level);
- Chronic pain (at HST level);
- Cardiac and thoracic surgery (at HST level);
- Trainee choice module.

As trainees progress, the level of supervision moves from direct, to indirect, to distant.

For each module, trainees are required to keep a logbook of procedures, as well as complete an e-portfolio which includes mandatory competencies to be achieved. Feedback on daily performance from specialist trainers also needs to be logged into the e-portfolio, in at least ten instances for every training block. A simulation training session is offered at least once per calendar year, and one year of the five may be completed in a training centre outside of Malta. Past trainees have completed this training year in England, Scotland, and Belgium. Prospective approval needs to be obtained from the Anaesthesia Training Committee and the SAC.

Formal teaching is provided in the form of a tutorial programme, departmental continued medical education lectures, and morbidity and mortality meetings. Trainees are expected to perform at least four audit or clinical governance projects, such as publication of hospital guidelines, during their training period. Ideally, these projects should be published or presented at local or international conferences.

ASSESSMENT, PROGRESSION AND COMPLETION OF TRAINING

To progress from one year of training to the next, anaesthetic and intensive care trainees in Malta need to satisfactorily pass a yearly ARCP – Annual Review of Competence Progression. This involves an interview with one training coordinator, one AAM representative, and one member of the clinical

department. An assessment is made of the trainee's completion of the required modules, including a review of the logbook and e-portfolio. Success in annual in-training assessments, which include a viva voce examination, a written assessment, and/or a written literature review, are also required for passing the relevant yearly ARCP. The trainee is required to present evidence of completion of audit or governance projects, as well as information on optional features of the training programme. These may include conference attendance, course or workshop completion, evidence of additional self-directed learning, completion of academic degrees, etcetera. An essential requirement for the completion of anaesthesiology and intensive care training in Malta is the achievement of the EDAIC – European Diploma in Anaesthesiology and Intensive Care Part 1 and Part 2 examinations, offered by the European Society of Anaesthesiology and Intensive Care. Without the EDAIC, a Certificate of Completion of Specialist Training is not issued. This Certificate is required for inclusion in the Malta Specialist Register for Anaesthetics and Intensive Care.

RECERTIFICATION

Once specialist status is obtained, formal recertification is not required for the maintenance of this specialist status in Malta.

STRENGHTS

The training programme in anaesthesiology, pain, and intensive care medicine in Malta is a clearly defined, transparent, and well-established post-graduate route to attaining specialist status. The obtained specialist certificate meets the standards detailed in Articles 25,26, and 27 as appropriate of the EU Directive 2005/36/EU[8] and is therefore recognized throughout the European Union. It is a rigorous programme, the success of which is validated through the requirement of attainment of the EDAIC examination by all trainees prior to completion of training. Additionally, all training blocks including cardiothoracic anaesthesia, neuroanaesthesia, paediatric anaesthesia, chronic pain, and obstetric anaesthesia can be completed in the same hospital.

WAY FORWARD AND FUTURE CHALLENGES

The training document which governs the training programme in anaesthesiology, pain, and intensive care medicine in Malta is currently being updated. This is being done to ensure that Maltese training is in line with the "Training Requirements for the Specialty of Anaesthesiology" issued by the UEMS (European Union of Medical Specialists) in the 2022 update.[9] Main areas of focus include the introduction of Entrustable Professional Activities; increased emphasis on simulation training and point of care ultrasound; and training of specialists as teachers and assessors. Train the Trainer courses for anaesthesiology specialists were organized in Malta in 2019, and further courses are planned for 2024. The constant challenges to implementing a training programme include time availability for both trainees and trainers; ensuring that high-quality training can be delivered while ensuring the safe and effective provision of clinical services; and maintaining high professional standards throughout the process.

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Anesthesia Education in Belgium: Pathways, Processes, and Perspectives

Formação em Anestesia na Bélgica: Percursos, Processos e Perspectivas

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INTRODUCTION

Belgium is a federal constitutional monarchy located in Western Europe. The country is divided into three regions: Flanders in the north, Wallonia in the south, and the Brussels-Capital Region, a bilingual enclave within Flanders. The three official languages are Dutch (in Flanders), French (in Brussels and Wallonia), and German, spoken by a small community in eastern Wallonia. The federal government shares power with regional governments, each having legislative and executive branches.

Medical education varies significantly from country to country but generally follows a similar curriculum structure worldwide. This typically begins with a lecture-intensive pre-clinical phase, followed by clinical rotations across various medical specialities.[1] Upon earning a medical degree, further postgraduate training is often required to achieve specialisation in specific fields.

In Belgium, medical training starts with a three-year Bachelor of Medicine program (180 European Credit Transfer and Accumulation System (ECTS) credits), focusing on basic medical sciences and theoretical knowledge. This is followed by a three-year Master of Medicine program (180 ECTS credits), which includes clinical rotations and further theoretical deepening. After obtaining a Master of Medicine, graduates earn the title of medical doctor (MD) and can apply for an advanced master's degree. This advanced degree program consists of 180 ECTS credits. In addition to earning the advanced Master's degree, students simultaneously undergo professional medical residency training, lasting three to six years, depending on the chosen medical speciality.[2]

Seven hospitals are associated with a university. They are crucial to the clinical training in Belgium. There are four predominantly Dutch-speaking hospitals: Antwerp University Hospital, Ghent University Hospital, University Hospital Brussels, and University Hospital Leuven. Additionally, there are three French-speaking university hospitals: CHU de Liège, Cliniques Universitaires Saint-Luc, and Hôpital Erasme.

This article focuses on the advanced Master's degree and residency training, providing an in-depth overview of the pathway to becoming an anesthesiologist in Belgium. We examine the selection procedure and training process, highlighting the distinctive features of the Belgian system and its effectiveness in preparing practitioners for the field.

ACCEPTANCE INTO AN ANAESTHESIA RESIDENCY

After earning the title of medical doctor, individuals can pursue further training in general medicine, community medicine (public health), or a specialised medical field. To become an anaesthesiologist in Belgium, one must obtain an advanced Master of Medicine in Specialist Medicine - Anaesthesia and Resuscitation while simultaneously completing five years of residency training.

The "Planning Commission Medical Supply" determines the number of medical doctors who can begin specialist training each year. Operating under the Federal Public Service of Health, Food Chain Safety, and Environment, this commission assesses specialist demand by analysing demographic data, healthcare needs, and future trends. Based on their findings, they recommend the number of doctors to be trained in various specialties. Each university hospital is then allocated a portion of these training spots, proportional to the number of medical graduates from each university in the previous year.

To gain access to the subsequent Master in Specialist Medicine and residency training in Belgium, a university

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hospital must accept individuals into a residency program. Each hospital has the autonomy to choose its criteria for evaluating and selecting candidates, such as knowledge and skills demonstrated during medical student internships, grades obtained during the Master of Medicine, and the quality of their thesis.[3] Each university hospital assigns different weights to the criteria and can independently select candidates for their available spots. Candidates can apply for positions at any university hospital, not necessarily the one affiliated with the university where they obtained their Master's degree.

ANAESTHESIA RESIDENCY

Upon acceptance into a residency program, students also enrol in the corresponding Master's program in specialised medicine, such as the Master in Specialist Medicine - Anaesthesia and Resuscitation or the Master in Specialist Medicine - Surgery. This dual enrolment allows residents to integrate theoretical knowledge with practical skills, interpersonal skills, and management abilities as outlined in the CANMEDS framework.[4]

Anaesthesia residency in Belgium typically spans five years. To become an anaesthesiologist, candidates must meet the recognition criteria outlined by the "Supreme Council of Physician Specialists and General Practitioners." This federal body, composed of Dutch- and French-speaking representatives, establishes the standards for training and certification across the country. There are general criteria[5] for recognition as a specialist doctor, such as the requirement for a scientific publication. Additionally, there are specific criteria tailored to each specialisation. For anaesthesiology specifically, the law requires that candidates possess the following competencies by the end of their training[6]:

- A comprehensive theoretical and clinical knowledge base, including pharmacology, physiology, biochemistry, anatomy, and infection control. This must also encompass specialised knowledge in cardiology, pulmonology, and blood product management, among other areas;
- In-depth knowledge of general, locoregional and regional anaesthesia techniques;
- Experience in advanced life support and intensive care.

Furthermore, the law mandates that candidates maintain a detailed log of their activities throughout their residency. Most candidates use Medbook,[7] a digital portfolio, as their logging system of choice. Additionally, it specifies that the required scientific article must be in a domain related to anaesthesiology. To evaluate whether a candidate meets the federal requirements for recognition as an anaesthesiologist, each region (Flanders and Wallonia) has established an accreditation committee. This committee, composed of anaesthesiologists from university and non-university anaesthesia departments, ensures that recognition as a specialist is granted only when all criteria are fully satisfied. The accreditation committees refine the federal requirements to assess the federal criteria effectively. For instance, the Flemish accreditation committee[8] mandates that candidates need to pass the first part of the European Diploma in Anaesthesiology and Intensive Care (EDAIC) examination. At the end of their residency, candidates must also pass an Objective Structured Clinical Examination (OSCE) to demonstrate their theoretical and clinical knowledge. To ensure sufficient experience in advanced life support and intensive care, anaesthesiologists in training must complete a 12-month rotation in the emergency and intensive care departments, with a minimum of three months in the emergency department and six months in an intensive care unit. It is important to note that the local residency program determines the specific methods used to train anaesthesiologists to meet these requirements. Consequently, some departments emphasise theoretical knowledge through weekly lectures, while others focus more on developing clinical skills through simulation-based education.

MASTER IN SPECIALIST MEDICINE

The Master in Specialist Medicine is structured around the four major roles of a medical specialist: medical expert, scientist, manager, and communicator. Considering the wide variety of specialisations, the study program offers general competencies shared by all specialist medical practitioners and supplements these with discipline-specific competencies. Topics include the organisation and management of care processes, communication, and personal development. At the end of the Master's program, candidates must write a dissertation, which often aligns with the subject of the scientific article required for recognition as a specialist.

ANAESTHESIA EDUCATION IN BELGIUM – STRONG POINTS

Adequate supervision

Anaesthesia training is highly practical, requiring individuals to quickly learn and perform numerous procedures in a semi-autonomous manner. Despite this steep learning curve and rapid acquisition of autonomy, supervision remains essential for patient safety. In their article titled "Belgian Standards for Patient Safety", Bonhomme *et al* stipulate that every anaesthesiology trainee must be supervised by a certified anaesthesiologist,[9] preferably in a one-on-one capacity. Generally, all residency programs strive to adhere to these safety standards.

Substantial input via trainee organisation

The Belgian Anesthesia Trainees (BAT) is a non-profit organisation representing the interests of all Belgian anaesthesia residents.[10] It serves as a liaison between trainees

and residency programs and advocates for trainees at the governmental level. In recent years, BAT has facilitated significant progress in improving working conditions, including properly implementing labour laws and better remuneration for work performed.

Online logging system

As previously mentioned, trainees must log all their activities during residency, including clinical activities, scientific pursuits, and evaluations. This process used to involve maintaining a paper logbook. However, in recent years, Medbook, an online logging system, has gained popularity. Medbook allows residents to document their activities using templates and provides a structured format for supervisor evaluations. This transition to a digital platform has significantly reduced the administrative burden and streamlined the documentation process.

ANAESTHESIA EDUCATION IN BELGIUM – CHALLENGES

In an era of increasing digitalisation and the rise of artificial intelligence, human knowledge and technology are advancing at an unprecedented rate. The impact of this information revolution is becoming increasingly evident in the medical field. While the doubling time of medical knowledge was 50 years in 1950, it accelerated to 19 years by 1991, 3.5 years by 2010, and just 73 days by 2020.[11] This evolution in the medical world is fascinating, but it also presents significant challenges and compels us to rethink our traditional approach to medical education.

From time-based to competency-based education

Anaesthesiology training in Belgium traditionally follows a time-based model, where residents advance through their training by accumulating experience over a set period. They are expected to manage increasingly complex procedures and interventions as they progress. Recently, there has been a shift towards Competency-Based Medical Education (CBME), which aligns with a global movement emphasising learner-centred and lifelong learning.[12]

CBME improves procedural skills and increases attention to non-technical skills, such as communication, teamwork, and decision-making.[13] However, this shift is not without challenges. There remains a lack of evidence regarding best practices in CBME.[13] Additionally, logistical issues arise as CBME demands more from faculty who must balance educational responsibilities with clinical duties. The lack of a unified Belgian framework for implementing CBME means that the responsibility falls on individual residency programs, resulting in potential variations in quality. Adopting the Anaesthesiology European Training Requirements as a foundation for a CBME residency program could provide valuable guidance for development and ensure comparability between programs.[14] The Entrustable Professional Activity (EPA) framework can be used to assess CBME.[15]

Simulation Education in Residency Training

The benefits of simulation training during residency are well documented.[16] It allows trainees to practice technical and non-technical skills in a safe environment. However, similar to Competency-Based Medical Education (CBME), there are still questions regarding the best methods to incorporate simulation education into the learning environment.[17] Guidelines and legislation are needed to ensure implementation. Other barriers to implementing simulation education include time constraints, lack of resources, and shortage of funds.[18]

CONCLUSION

In conclusion, the Belgian anaesthesiology training program is a well-structured and evolving system that emphasises practical training and patient safety. Supervision by certified anaesthesiologists, as mandated by safety standards, ensures that trainees develop skills safely. The transition to digital documentation through Medbook has streamlined administrative processes. However, the rapid advancement of medical knowledge and technology challenges traditional training approaches. The shift from time-based to competency-based medical education promises improved procedural and non-technical skills, but it faces logistical challenges and requires a unified framework for consistent implementation. Addressing these challenges will enhance and modernise anaesthesiology training in Belgium.

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ARTIGO DE PERSPETIVA

New Perspectives of Anaesthesiology Education in Lithuania

Novas Perspetivas na Educação em Anestesiologia na Lituânia

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INTRODUCTION

History of anaesthesiology in Lithuania starts in 1872 when surgeons L. Lechavicius and A. Adomavicius gave a lecture on ether anaesthesia soon after it has first been performed by W. Morton in 1846. As in all countries the pioneers of anaesthesia have been surgeons who were interested in expanding their practice and ability to perform more complex procedures. Since 1952 anaesthesiology has been announced as a separate and independent specialty and the very first anaesthesiologists in Lithuania were called *narcotisators*.

In those days only 7 anaesthesiologists were working in Kaunas clinics – at that time the largest and the most modern university hospital in the Baltics. Anaesthesiology is a critical medical specialty, requiring a comprehensive educational framework to ensure that practitioners are well-equipped, enough experienced and able to handle the complexities of patient care during surgical procedures.

It is well known that technical skills are not enough for an anaesthesiologist. Non-technical skills, decision-making, situational awareness, problem-solving, and decision-making are not least important skills compared to airway or pain management and all those competencies have to be obtained during training years in medical university and then in residency studies after graduation.

The educational pathway in Lithuania is designed to meet both national standards and the European Training Requirements as stipulated by the Union Européenne des Médecins Spécialistes (UEMS).[1]

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LITHUANIAN EDUCATION SYSTEM FOR ANAESTHESIOLOGY

For many years experts of medical education in Lithuania were discussing various possible strategies of how medical education should be organized. Based on the experience from the foreign very educational-wise prominent countries like the Netherlands that strongly advocated for entrustable professional activities in medical education.

The Lithuanian postgraduate medical education strategy has also been staired towards this direction. Together with the reform various specialty residency programmes were prolonged to meet European standards. Every single specialty had to prepare new descriptions and post-graduate medical education has been very recently redesigned to meet European standards and to encourage residents to be more self-confident and responsible for their knowledge, skills and activities they perform while working and learning in the hospital. EPAs by Lithuanian University of Health Sciences define specific competencies that residents must acquire and demonstrate independently.[2-5]

ENTRUSTABLE PROFESSIONAL ACTIVITIES (EPAS)

In general, entrustable professional activities (EPAs) are units of professional practice defined as tasks or responsibilities that can be entrusted to a trainee once sufficient competence has been demonstrated and confirmed.[6] EPAs serve as a bridge between theoretical knowledge and practical skills, providing a structured and measurable framework for assessing a trainee's readiness to perform critical clinical tasks independently. Their implementation ensures that the focus of medical education is on real-world clinical capabilities rather than solely on theoretical knowledge. EPAs have been widely adopted across various medical specialties globally due to their effectiveness in enhancing competency-

Table 1. EPAs in Lithuania

EPAs in Lithuania	Ability to consult the patient before anesthesia/surgery
Description	This competency includes pre-anesthetic consultation and perioperative care planning. The resident doctor can evaluate the patient's condition before anesthesia and surgery, determine perioperative risk, prescribe additional tests/consultations, prepare for anesthesia and surgery, and choose an appropriate anesthetic/perioperative care plan based on the patient's comorbidities and the planned surgical procedure
Sub-competencies	- Patient status evaluation - Perioperative care planning - Risk assessment and management
Training requirements	Includes rotations in general anaesthesia, regional anaesthesia, neuroanaesthesia, abdominal surgery anaesthesia, and more
EPA2	**Ability to manage airways during anesthesia and in critical situations**
Description	This competency involves assessing the airways before anesthesia and in critical situations, creating and dynamically adjusting an airway management
Sub-competencies	- Airway assessment - Execution of airway management techniques - Dynamic adjustment of airway plans
Training requirements	Practical training with non-instrumental and minimally invasive techniques, such as mask ventilation, laryngeal mask use, tracheal intubation, and emergency procedures like cricothyrotomy
EPA3	**Ability to perform general anesthesia and sedation**
Description	This competency includes performing general anesthesia and sedation safely for patients of all age groups with various comorbidities for different surgical and diagnostic procedures
Sub-competencies	- Execution of general anaesthesia - Sedation practices - Risk management
Training requirements	Intensive training in different anaesthesia disciplines including paediatric, obstetric, trauma, cardiac, and head and neck surgery
EPA4	**Ability to perform regional anesthesia**
Description	This competency includes performing regional anesthesia safely for patients of all age groups with various comorbidities for different surgical and diagnostic procedures
Sub-competencies	- Techniques for regional anaesthesia - Patient safety during regional procedures - Management of complications
Training requirements	- Anaesthesia competencies with a focus on regional techniques like spinal, epidural, and peripheral nerve blocks
EPA5	**Ability to Perform Postanesthesia Care and Manage Acute Pain**
Description	This competency involves planning and providing postanesthetic care, managing postanesthetic events and complications, and treating acute pain. The resident doctor will be able to safely provide postanesthetic care to patients of all age groups with various comorbidities for different surgical and diagnostic procedures
Sub-competencies	- Application and interpretation of monitoring - Clinical vigilance and crisis management - Perioperative pain management - Postanesthetic care
Training requirements	Must complete specified credit cycles in general anesthesia, regional anesthesia, and various specialized anesthesia fields (e.g., neuroanesthesia, pediatric anesthesia)
EPA6	**Ability to Manage Chronic Pain**
Description	This competency involves diagnosing and treating chronic pain. The resident doctor will be capable of providing comprehensive care for patients suffering from chronic pain, considering various comorbidities and applying multidisciplinary approaches
Sub-competencies	- Chronic pain assessment and management - Multimodal pain management strategies
Training requirements	Must complete cycles focused on chronic pain management, including specific training in multimodal strategies and interdisciplinary approaches

based education. They facilitate clearer expectations for both learners and educators, promote patient safety by ensuring that trainees are competent in key tasks before performing them unsupervised, and support a more personalized and adaptive learning experience. In anaesthesiology, for instance, EPAs help structure the complex array of skills and knowledge required into manageable and assessable components, thus enhancing the overall training process and ensuring that practitioners are well-prepared for independent practice.

EPAS IN LITHUANIAN EDUCATION OF ANAESTHESIOLOGY

EPAs in Lithuanian post-graduate education system have been discussed for many years in various formats ant finally it was implemented and came in 2023. A group of experienced specialists in both education and anaesthesiology developed in total six EPAs, which were divided into sub-competencies, and other skills that residents have to obtain to become fully qualified.

Table 1 summarizes the core competencies (EPA1-EPA6) required for anesthesiology residents, detailing each competency's focus and the specific requirements to achieve them (Table 1.)

EUROPEAN TRAINING REQUIREMENTS

The European Training Requirements (ETRs) by UEMS provide a framework for standardizing anaesthesiology education across Europe,[1] ensuring that Lithuanian training aligns with broader European standards. Key aspects of UEMS requirements include:

Clinical Training: Comprehensive clinical exposure across various subspecialties, ensuring that trainees are well-versed in all aspects of anaesthesia.Theoretical Knowledge: Emphasis on continuous education through courses, seminars, and self-directed learning.

Practical Skills: Hands-on training with modern anaesthesia techniques, simulation-based learning, and emergency management.Assessment and Certification: Regular assessments, including formative and summative evaluations, to ensure competence in all required areas.

UEMS REQUIREMENTS HIGHLIGHTS

Duration and Structure: Typically, a five-year program with structured rotations in different anaesthesia subspecialties.

Competency-Based Training: Focus on achieving specific competencies that are essential for independent practice.

Continuous Assessment: Ongoing evaluations through direct observation, feedback, and formal examinations.

Having in mind the requirements highlighted by UEMS it can be confirmed that after redesigning post-graduate medical education in Lithuania meets all the criteria and trainees after residency in Lithuania are competent and ready to work safely on their own. Moreover, standards by UEMS play a major role in shaping anaesthesiology training in Lithuania. European Society of Anaesthesiology and Intensive Care (ESAIC) has also very strong education-related incentives residency programme in Kaunas Clinics was awarded and accredited as centre of excellence.[2] Our centre has been re-accredited twice already showing consistency and devotion to constant improvement.

SIMULATIONS IN ANAESTHESIOLOGY TRAINING IN LITHUANI

Simulation-based training has become an integral part of anaesthesiology education, providing a controlled and safe environment for learners to develop and hone their clinical skills. In Lithuania, the integration of simulation into anaesthesiology training aligns with the European standards, emphasizing competency-based education and patient safety.[2] Simulations offer a unique platform for anaesthesiology residents to practice a wide range of scenarios, from routine procedures to rare and complex cases, without the risk of

Certificate of Accreditation of a European Centre for Training of Anaesthesiologists

Based on a hospital visit performed by
Dr. Leila Niemi-Murola and Prof. Dr. Vladimir Cerny

authorised by the Accreditation of Training in Anaesthesiology and Intensive Care Joint Committee of the European Society of Anaesthesiology and Intensive Care and the European Board of Anaesthesiology of the UEMS, we declare that

Hospital of Lithuanian University of Health Sciences Kaunas Clinics
Department of Anaesthesiology
Kaunas, Lithuania

fulfills the criteria required to meet the European Standards of Excellence and is declared to be a
European Centre for Training of Anaesthesiologists for the period February 2024 until January 2028

Prof. Wolfgang Buhre
ESAIC President

Prof. Olegs Sabelnikovs
EBA President

Prof. Humberto Muchado
ATAIC Committee Chair

Figure 1. Reaccreditation certificate

harming actual patients. This hands-on approach enhances the learning experience by allowing trainees to apply theoretical knowledge in practical settings, improving their clinical decision-making and technical skills. Moreover, simulations can be tailored to individual learning needs, providing targeted feedback and opportunities for repeated practice.

Incorporating simulations into the training curriculum helps bridge the gap between classroom learning and real-world practice. This method not only boosts the confidence and competence of anaesthesiology trainees but also contributes to the overall improvement of patient care quality. As a result, Lithuanian anaesthesiology programs have increasingly adopted simulation-based training, reflecting a commitment to adopting innovative educational strategies that ensure the preparedness of future anaesthesiologists.

FUTURE CHALLENGES

It is obvious that even after implementation of EPAs challenges in medical education system are inevitable. The field of medical education, particularly in anaesthesiology, faces several significant challenges that could shape its future trajectory. One of the primary concerns is the increasing demands and expectations from residents. Today's medical trainees seek more comprehensive and flexible training programs that not only cover the technical and clinical aspects of anaesthesiology but also focus on work-life balance, mental health, and professional development.[3] Addressing these needs requires innovative educational strategies and enhanced support systems. Moreover, there is a worrying trend of fewer medical graduates choosing to enter anaesthesiology residencies.[5] This decline could be attributed to various factors, including the perceived intensity and stress associated with the specialty, and competition from other medical fields that offer more attractive career prospects.[4] To counter this trend, it is crucial to promote anaesthesiology as a rewarding and dynamic career, highlighting the critical role anaesthesiologists play in patient care and the diverse opportunities within the specialty. Additionally, higher requirements and expectations from

both regulatory authorities and society present another challenge. There is a growing emphasis on ensuring the highest standards of patient safety and care, which translates to more stringent accreditation processes and continuous professional development requirements for anaesthesiologists. This shift demands that training programs continuously adapt to meet these evolving standards while maintaining the quality of education. Addressing these challenges will require a collaborative effort from medical educators, professional bodies, and policymakers to create an adaptive and resilient education system that can meet the needs of future anaesthesiologists while ensuring they are well-prepared to meet the demands of the healthcare environment.

CONCLUSION

The education system for anaesthesiology in Lithuania is a comprehensive and well-structured program that integrates national and European standards to ensure high-quality training for future anaesthesiologists. With a focus on entrustable professional activities (EPAs), the system emphasizes practical competencies and real-world clinical skills, bridging the gap between theoretical knowledge and clinical practice. The incorporation of simulation-based training further enhances this approach, providing a safe and controlled environment for trainees to develop their skills and improve patient care outcomes. Despite the strengths of the current system, future challenges loom large. Increasing demands from residents for more flexible and supportive training environments, a declining interest in anaesthesiology among medical graduates, and higher expectations from regulatory authorities and society are pressing issues that need to be addressed. To maintain the quality and attractiveness of anaesthesiology training, it is crucial to adapt to these evolving needs and ensure that the educational framework remains dynamic and resilient. In conclusion, the future of anaesthesiology education in Lithuania hinges on its ability to balance rigorous competency-based training with the evolving demands of trainees and the healthcare environment. By embracing innovative educational strategies and fostering a supportive learning environment, Lithuania can continue to produce skilled and competent anaesthesiologists who are well-prepared to meet the challenges of modern medical practice.

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AM: Supervision and critical revision of the manuscript

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Training Process in Anaesthesiology and Intensive Care in Slovakia

Programa de Formação em Anestesiologia e Medicina Intensiva na Eslováquia

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INTRODUCTION

Anaesthesiology and intensive care (AIC) is one of the basic components of every hospital. The current concept of this speciality is from 2007. From a medico-legal point of view, it is defined as an interdisciplinary section of health care that researches and provides anaesthetic and intensive care and cooperates with operative and non-operative segments of health care. Professional-methodical management of care in this specialty is provided by the Ministry of Health of the Slovak Republic (MHSR) in cooperation with the main expert of the MHSR for AIC. Professional management is carried out in cooperation with the Slovak Society of Anaesthesiology and Intensive Medicine (SSAIM), as a professional and scientific authority and professional organisations of workers in this specialised area.[1] This association is a national society member of European Society of Anaesthesiology and Intensive Care (ESAIC) and a member society of World Federation of Societies of Anaesthesia (WFSA). SSAIM has 768 members (valid to 31.1.2022).[2] Statistical data show that in year 2022, were performed 322 800 anaesthetic procedures in the Slovak Republic, of which 76.5% were in total anaesthesia.[3] This article discusses the educational process in AIC in Slovakia. The standardisation of training systems has been recommended by the European Union of Medical Specialists (UEMS) to facilitate the mutual recognition of professionals. There is still diversity in the training in AIC in Europe. In 2012, UEMS published their guidelines on European training requirements for the specialty of anaesthesiology, pain and intensive care medicine in an attempt to promote standardisation in training across Europe.[4]

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ACCEPTANCE PROCESS

Education is carried out in accordance with Act about health care providers, health workers and professional organisations in the health sector (no. 578/2004). After completing a 6-year study of general medicine, a physician can enrol in a specialised study in AIC.[5] The candidate must meet the conditions set by legislation for the performance of the medical profession. A standard condition for enrolment in a specialised study is an employment relationship with a healthcare provider in Slovakia. For registration in the study program, formal requirements must be met (such as a complete application with attachments).[6]

FURTHER EDUCATION AFTER MEDICAL SCHOOL

There are three forms of medical education in Slovakia: certified, specialised study and continuous education. Educational evaluation is carried out in regular five-year cycles. The government regulation establishes professional competence for the performance of professional, specialised and certified work activities in individual health professions, methods of further education of health workers and system of their realisation. Professional preparation for obtaining qualification in AIC in the Slovak Republic takes the form of a specialised study. Certification preparation is performed in an accredited certification study program (e.g. clinical drug testing, echocardiography). This education is in a shorter period, usually 2 years. It is also about a lower professional load and thus expertise.[5]

Continuous education of a healthcare worker is evaluated in the currently performed healthcare profession. This type of education is fulfilled, if the health worker obtained at least 90 credits in the health profession of physician during the given period. Examples of the possibilities to obtaining credits are as follows: training activity in the Slovak Republic or abroad

(seminar, workshop, conference, congress, various courses), practice or internship in a medical facility, lecturing, publishing, teaching and scientific research activity.[7]

PROFESSIONAL GUARANTEE OF THE STUDY PROGRAM, TEACHING STAFF, TRAINER

The professional guarantee of the program is approved by the Accreditation Commission of the MHSR and is responsible for the quality of teaching and supervises its progress. Guarantee evaluates and approves study plans, proposes or assigns trainers and lecturers to the practical part, determines the topics of specialisation papers, assesses professional medical practice and performed medical procedures, assesses the crediting of the completed part of specialisation study and usually chairs the committee for the final specialisation exam. The teaching staff consists of lecturers for the practical part and lecturers for the theoretical part and is approved by the Accreditation Commission of the MHSR. The practical part of the study is carried out by the trainee under the supervision of a trainer - who is a specialised doctor with the professional qualification for teaching and supervision in the relevant field of specialisation appointed by an educational institution that guarantees a specialisation program. Trainer confirms the performed medical procedures to logbook.[5,6]

Organisation of Specialisation Studies

Currently, it is possible to complete specialisation studies at all four medical universities - Košice, Martin and two in Bratislava. Certificate of accreditation in postgraduate specialisation program for the specialisation in AIC for the given educational institution is issued by the MHSR. It is not possible in our country to study specifically only anaesthesiology or only intensive care medicine. Individual specialised workplaces, or health care providers have contracts with medical schools and thus the necessary internship of students is ensured. Specialisation studies last at least five years. It consists of a practical part and a theoretical part, while practical education is predominant.

Theoretical part

The theoretical part of education includes control days of the program, ongoing and thematic training courses and pre-exam training courses. These courses are mostly scheduled evenly throughout the whole duration of the program, or one longer course is implemented at the end of the course.[8]

Practical part

The practical part of the program is recommended to be divided into anaesthesiology training lasting 42 months and for specialised training in intensive care lasting 18 months. It is recommended to complete the anaesthesiologic training in a minimum of 24 months at your workplace.[5]

Scope and focus of professional medical practice

1. Paediatric anaesthesiology 2 months;
2. Neurosurgical anaesthesiology 2 months;
3. Thoracic anaesthesiology 1 month;
4. Intensive care unit at your workplace 12 months;
5. Clinical workplace of a teaching health care facility 2 months.[5]

RANGE OF PRACTICAL SKILLS AND EXPERIENCE

Number of separately performed general and local anaesthesias: 1000 of which:

- 600 in surgical departments, of which at least 200 are inhalation anaesthesias;
- 100 in gynaecology and obstetrics, of which 15 are caesarean sections, of which at least 5 in regional anaesthesia;
- 25 in infants and young children up to the 5th year of life independently performed or participation in them;
- 30 in neurosurgery (20 during head surgeries) done separately, or co-participating in them;
- 20 in cardio-thoracic surgery conducted independently or co-participating in them;
- 15 peripheral nerve blockades;
- 50 subarachnoid (spinal) anaesthesia;
- 20 epidural aanesthesias, of which 5 with introduction of epidural catheter.

Independent assessment and pre-anaesthetic evaluation of 150 patients, including the evaluation of 150 ECG records and assessment and interpretation of clinical and laboratory findings in 150 patients.[8]

Expertise Index and Logbook

Documents on the education of a health worker are the index of expertise and the logbook. Their uniform structure is approved by the MHSR. Enrolment, progress and changes in the specialisation study are recorded to the expertise index. Entries to the index are performed by an educational institution, trainer, or authorised health worker. The type and the number of medical procedures and other professional activities are recorded to the logbook. Every record is confirmed by the supervisor. A trainee in a specialised program can request to include medical procedures and professional experience completed abroad or in Slovakia before enrolling in a specialised program from the educational institution. A part of the completed study in another specialisation in the length of maximum one-half can be added to an actual specialisation study.[5]

SPECIALISATION THESIS

The specialisation thesis has the character of a final scientific work. Topic of specialisation thesis is approved by the professional guarantee of the study program no later than six months before the date of the defence. The recommended

scope of the specialisation thesis is at least 40 pages of the standardised text. The structure of the work, its formal arrangement, citations and bibliographic references are governed by the directive of the rector of the educational institution. Specialisation thesis is submitted by the trainee together with the application for the final specialisation exam at the latest four weeks before the date of its defence. One printed copy together with its electronic version is intended for the relevant university or academic library of the faculty of medicine, one to the professional guarantee and one copy remains to the opponent of the work. Together with the specialisation thesis, the participant of the education submits 2 signed copies of the licence agreement, which specifies the method of use of the school work. The specialisation thesis has one opponent - an expert in the field of anaesthesiology and intensive care, who is appointed by the professional guarantee of the study program. Opponent prepares an opponent's report. The defence of the specialisation thesis is part of the specialisation exam.[6,9]

SPECIALISATION EXAM

The specialisation study is finished with a final exam. Based on the index and logbook the department for further education will make an evaluation protocol, which is the basis for the guarantee and after him the dean to recommend the trainee for the specialisation exam. Specialisation exam consists of the practical part, the defence of the specialisation thesis and the theoretical part. During the practical part, the examinee must perform one general anaesthesia under supervision of the trainer or appointed lecturer. The protocol from this anaesthesia is attached to the exam.

The theoretical part of the exam consists of the oral part - answering 3 questions in front of the examination committee. Examination committee is set up according to valid principles of accreditation of study programs for further education and in the presence of an independent witness. The questions are divided into three areas, namely Anaesthesiology, Intensive Care Medicine and Resuscitology. The result of the specialisation exams - the "passed" or "failed" rating - is recorded in the expertise index and protocol from the specialisation exam. These documents are the basis for issuing a diploma on specialisation, valid in the European Union.[6]

AFTER SPECIALISATION

A doctor who has obtained a professional qualification in a set specialisation can independently provide health care in the relevant specialty.[5]

There is currently no recertification program for specialists, nowadays. The physician can participate in various courses (ultrasonography, difficult airway, advanced CPR), as well as in various educational events implemented through the professional organisation SSAIM. However, none of the above is obligatory. According to the law, each physician must obtain before and after specialisation a certain already mentioned number of credits for every 5-year cycle. However, the mandatory number of credits is not tied to a specific specialisation. If he does not obtain the required number of credits, he is asked to supplement them by the Slovak Medical Chamber within at the latest a period of six months. When it is not fulfilled, he is threatened with a financial penalty.[10]

STRONG POINTS OF TRAINING PROCESS IN ANAESTHESIOLOGY AND INTENSIVE CARE IN SLOVAKIA

- Most of the study consists of practical training;
- It is provided by all 4 medical faculties;
- During the study, the trainee takes part in an internship at all specific types of workplaces specialising in AIC.

FUTURE DEVELOPMENT

New minimum standards for the AIC specialisation study program are being prepared with the changes listed below. This document is currently in the comment procedure at the MHSR. Perhaps, in time, the European Diploma in Anaesthesiology and Intensive Care (EDAIC) will also be accepted as a uniform form of obtaining expertise without the subsequent need to complete a specialisation.

In the following text, we present some content elements from the new minimum standards: There are two categories to be created within education – basic stem and full specialisation. First category should be focused mainly on the anaesthesiology and essential principles of intensive care medicine (something like EDAIC part one). For the advanced part, the trainee must have broader professional knowledge and a larger minimum number of selected practical interventions. For example a certain amount of self-assessment of USG according to the FAST protocol, knowledge and personal skills with ECMO and so on. The new minimum standards will contain specific mandatory and optional (recommended) educational activities (guaranteed by an accredited workplace for specialised studies in the anaesthesiology and intensive care medicine or by the professional society SSAIM).

The overall extent of mandatory professional medical practice in weeks at individual types of workplaces should be also adjusted.

After at least 24 months of basic training from the time of admission to the department, it will be possible to check the acquired knowledge and practical skills. The guarantee will be responsible for the aforementioned verification and will issue a written confirmation. A physician enrolled in specialised training in the basic stem will only be able to work under monitorship. Professional monitorship will be carried out by a doctor specialising in AIC and he will have to be physically present in a hospital with availability within 15 minutes. A physician who will have a certificate

Table 1. Specific mandatory and optional (recommended) educational activities

Item	Mandatory	Optional
Advanced Resuscitation Course (ALS)	Yes	-
Airway course with different levels of difficulty	Yes	-
Basic course of regional anaesthesia including USG	Yes	-
Course of basics of ultrasonography in anaesthesiology and intensive care medicine	Yes	-
Course of legal regulations in healthcare	Yes	-
Course of selected scenarios on simulators	-	Yes
Advanced regional anaesthesia course including USG	-	Yes
Echocardiography basics course for anaesthesiologists and intensivists	-	Yes
Life-threatening bleeding management course	-	Yes

of completion of the basic stem can work under professional supervision. Professional supervision will be carried out by a doctor specialising in AIC with permanent telephone availability and physical availability in a medical facility within 30 minutes.

CONCLUSION

Education in anaesthesiology and intensive care in Slovakia currently takes place at all medical faculties. Specialisation study lasts at least 5 years. The trainee must meet certain criteria of practical and theoretical training. The education ends with an exam in front of the commission, a specialisation thesis is part of the requirements. After obtaining a certificate of expertise, further formal specific education is no longer necessary. However, it is mandatory to acquire credits, specifically at least 90 in five years, this condition applies generally to all physicians. In the future, it would be appropriate to synchronise education within the EU from the point of view of the free movement of persons, goods and services. But also to increase the expertise of health care provided. One of the options that could help with this is the EDAIC. It was established to help the standardisation of knowledge and training. It is now available throughout the continent.

Equilibration of standards is the main goal of this approach. They represent a mark of quality and allow to evaluate formally the core knowledge of trainees in whole Europe.[11]

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ARTIGO DE PERSPETIVA

Anesthesia Training in Croatia from the Young Physician's Perspective: Generation Gap and Transition from Learning by Doing to Modern Techniques

A Formação em Anestesia na Croácia na Perspetiva do Jovem Médico: Diferença entre Gerações e Transição do Aprender Fazendo para Técnicas Modernas

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Palavras-chave
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Anesthesiology is a demanding specialization that is constantly developing, and accordingly there are numerous challenges in the training of future anesthesiologists. The medical expert in anesthesiology should acquire all necessary competencies enabling him/her to fulfill the expert role in the multidisciplinary settings of perioperative medicine, intensive care medicine, critical emergency medicine, and pain medicine in all patient categories (including newborns, frail elderly, and pregnant women).[1] Broad theoretical knowledge and manual skills were significant factors for a higher level of interest in this residency which was in the top five among medical students in Zagreb's School of Medicine in the year 2017, as compared to previous studies.

However, work-related stress was the main argument against this medical specialty.[2] In Croatia, the Minister of Health determines the network of public healthcare, which includes the number of approved specializations for a certain institution each year. Candidates are selected in accordance with the Ordinance on criteria for the admission of residents. Success in medical studies, scientific activity and previous work in the health sector are scored, and a significant number of points are awarded by an interview with a committee made up of members of the professional college of the Clinic.[3]

The anesthesiology training program in Croatia is aligned with the EU law Directive 2005/36. The Croatian Society for Anesthesiology and Intensive Care Medicine of the Croatian Medical Association gives professional guidelines on the specialization program, which is then approved by the National Committee for Specialist Training of Doctor of Medicine at the Ministry of Health.[4] The program should be in concordance with the European Union of Medical Specialists (UEMS) European Training Requirements (ETR) to guarantee clinical standards and to harmonize medical training as a prerequisite for mobility of doctors throughout Europe.

The full title of the training course in Croatia is "Anesthesiology, reanimatology and intensive care medicine", and the duration of training is five years. It consists of General anesthesia, regional anesthesia and immediate postoperative treatment (15 months), Special anesthesia (14 months), Treatment of pain, acute and chronic (2 months), Basics of resuscitation and selected chapters from emergency medicine (2 months), Intensive care medicine (22 months), and annual leave (5 months in total). The specificity of the specialist training program in anesthesiology is that it must be followed in the exact order of clinical rotations.

Within the program, the resident must complete postgraduate specialist study "Anesthesiology, resuscitation and intensive care medicine" in three months. During the specialization, the resident is obliged to attend the courses of continuing medical education associated with the field of interest. What courses are obligatory is not defined, but depend largely on individual engagement and professional preferences.[4,5] According to the Collective Labour Agreement, the employee is entitled to paid leave for the education he was directed to by the employer.[6]

The training takes place in accredited training centers, approved by the Ministry of Health. The duration of training and the part of the program for which the institution is

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accredited depends on the previously obtained opinion of the National Committee for Specialist Training of Doctor of Medicine. The Ministry then authorizes a healthcare institution that meets the conditions by means of a decision within a period of five years. Most of the education takes place in one of the five university hospital centers in Croatia (Osijek, Rijeka, Split and two in Zagreb), and/or clinical hospitals that meet most of the prescribed criteria.

It is not uncommon for residents from general hospitals to spend most of their time on education in university hospital centers, and only to be on 24-hour duty at the parent institution. Although this type of education has its advantages, because the trainee can work in several locations and thus gain different experiences, it is also challenging because they must plan their lives in different cities and are often separated from their families. In such cases, the trainee gets a separate living allowance.

Although UEMS ETR in Anesthesiology describes competence-based education, the training program in Croatia is still time-based and count-based. The probable reason for this is that due to the general shortage of anesthesiologists and the large scope of work, it is difficult to organize education in which the development of competencies would be accurately monitored, since the work of a resident is usually followed by several different specialists. The progress in the resident's work is monitored through completed rotations in individual departments and a personal work diary kept by the resident, under the supervision of a mentor.

Monitoring of daily activities of the resident during specialist training, verification of acquired knowledge and skills, monitoring of patient case presentations, and monitoring of published professional works in the field of specialization should be entered daily in the work diary. Given that these are booklets that are filled in by hand, the mentor is responsible for the reliability of the data in the booklet on the specialist training of the Doctor of Medicine, and for the accuracy of the data in the work diary of the Doctor of Medicine's Specialist Training for the part of the program that he signs4.

A period of five years is planned for the development of the electronic logbook, and we hope that with its development, the organization of education and the monitoring of competence will be facilitated in the future.

As in most European countries, teaching is not part of undergraduate or post-graduate training in anesthesiology and current practice in Croatia is "learning teaching by doing". According to the Ordinance of the specialist training, we distinguish the head of the specialist training program, chief mentor, mentor and co-mentor. Training staff must have sufficient time allocated for the training assignment, but in everyday practice, it is almost impossible to organize a direct teaching process between the mentor and the resident and a large part of the teaching rests on experienced specialists who directly supervise the resident's work in the theater or other locations. The methods of monitoring the progress and evaluating the trainees are formative (during the specialization with the purpose of constructive and concrete advice for mastering clinical competencies) and summative (at the end, a specialist exam). During the practical part of the specialization, a discussion of patient cases is regularly conducted. The leader of the discussion with the residents is the main mentor, mentor or specialist, and the clinical picture of the patient, the diagnostic methods and the therapeutic approach are discussed, and residents are encouraged to make clinical judgments.[4]

The specialist exam is taken by the resident after completing the specialization program and after the chief mentor has given a final opinion. The specialist exam consists of a theoretical and practical part and is conducted as a written (multiple choice questions, MCQ) and oral exam.

The oral exam is taken in front of the exam board and consists of a practical part, during which the competencies acquired through the specialist training program are evaluated. The oral exam is held in a health facility where the president of the exam commission is employed. Interested persons may attend the oral exam with prior notice. The candidate's overall success in the specialist exam is graded as "passed" or "failed". The costs of the exam are borne by the institution that referred the candidate for specialization. Exceptionally, the Ministry of Health, by decision, recognizes the specialist exam passed before the European Association of Medical Specialists (UEMS).

To gain a decision on the passed exam in that case, the candidate is obliged to properly and fully complete the entire specialization program and acquire all the prescribed competencies and additionally, pass the practical part of the specialist exam before the examination board in Croatia. We hope that in the future the European specialist exam will be fully recognized as proof of the highest European standard in the training of doctors without additional administrative steps.[4,7]

Although it is not officially prescribed, clinical hospitals in Croatia are starting to establish clinical skills cabinets and develop simulation-based education programs. We hope that in the future simulation centers will contribute to better mastering of competencies, gaining self-confidence in learning invasive manual procedures and improving patient safety. As it is stated in the Training Requirements for the Specialty of Anesthesiology, attaining full competencies in all domains of the broad discipline of anaesthesiology in the minimum training time frame would be an ideal but utterly impossible demand in any European country, but with the standardization of education and the sharing of positive practices from different centers, we will be closer to achieving that goal.

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IBV: Conception, design, writing and critical revision of the manuscript

RCR: Conception, design, writing, supervision and critical revision of the manuscript

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NORMAS DE PUBLICAÇÃO - INSTRUÇÕES AOS AUTORES - ATUALIZAÇÃO SETEMBRO 2023

Objetivos e Âmbito

A revista da Sociedade Portuguesa de Anestesiologia foi criada em. É uma revista com arbitragem científica (peer review) que publica com periocidade trimestral em open access trabalhos de investigação básica, translacional e clínica, revisões, casos clínicos, editoriais, cartas ao editor, assim como artigos de educação e perspetiva, relacionados com Anestesiologia nas suas diferentes especialidades, bem como temas de áreas de conhecimento fronteira com interesse para a prática médico-cirúrgica e processo clínico na perspetiva da governação clínica em Anestesiologia.

A Revista da Sociedade Portuguesa de Anestesiologia (RSPA) é editada desde 1985 e é o órgão oficial da Sociedade Portuguesa de Anestesiologia.

A RSPA pretende informar e melhorar a qualidade científica e profissional dos anestesiologistas.

A RSPA publica artigos considerados de interesse nas seguintes áreas: Anestesia para procedimentos cirúrgicos e exames complementares de diagnóstico e tratamentos invasivos, medicina perioperatória, medicina intensiva, medicina de emergência e medicina da dor, bem como das ciências básicas. publica, ainda, artigos de interesse em outras áreas, tais como a educação médica, a bioética, a ética médica ou a história da anestesiologia. A revista é editada trimestralmente e é publicada eletronicamente desde 2005. Está disponível em acesso livre em http://www.spanestesiologia.pt/ e em http://revistas.rcaap.pt/rspa/.

Audiência

A principal audiência da Revista da Sociedade Portuguesa de Anestesiologia é composta pelos médicos dedicados às áreas da Anestesiologia: Anestesia para procedimentos cirúrgicos e exames complementares de diagnóstico e tratamentos invasivos, Medicina Perioperatória, Medicina Intensiva, Medicina de Emergência e Medicina da Dor, bem como das Ciências Básicas, Bioética, Ética Médica ou História da Anestesiologia. Outros profissionais da saúde como médicos de outras áreas de intervenção, enfermeiros ou paramédicos poderão encontrar na publicação artigos de interesse para a sua atividade.

Indexação

Os artigos publicados na revista são indexados por:

- IndexRMP: Index das Revistas Médicas Portuguesas;
- RCAAP: Repositório Científico de Acesso Aberto em Portugal.

Razão para Publicar na RSPA

- Órgão oficial da sociedade científica nacional da especialidade - a Sociedade Portuguesa de Anestesiologia;
- Política de publicação com arbitragem científica por pares
- Indexação no Repositório Científico de Acesso Aberto em Portugal - RCAAP;
- Multidisciplinaridade do público-alvo;
- Tempo médio para a primeira decisão no prazo de 10 dias;
- Máxima visibilidade com a publicação em livre acesso;
- Ausência de custos de submissão ou publicação.

Liberdade Editorial

A Revista da Sociedade Portuguesa de Anestesiologia adota a definição de liberdade editorial do ICMJE descrita pela World Association of Medical Editors, que afirma que o editor-chefe assume completa autoridade sobre o conteúdo editorial da revista. A Sociedade Portuguesa de Anestesiologia, enquanto proprietária da Revista da Sociedade Portuguesa de Anestesiologia, não interfere no processo de avaliação, seleção, programação ou edição de qualquer manuscrito, tendo Editor-Chefe total independência editorial.

Patrocínios

Os patrocinadores da Revista da Sociedade Portuguesa de Anestesiologia são empresas da indústria farmacêutica ou outras que geram receitas através da publicidade.

A publicidade não poderá pôr em causa a independência científica da revista nem influenciar as decisões editoriais e terá de estar de acordo com a legislação geral e específica da área da saúde e do medicamento. Outras despesas são suportadas pela Sociedade Portuguesa de Revista da Sociedade Portuguesa de Anestesiologia.

Copyright e Direitos de Autor

Todos os artigos publicados na Revista da Sociedade Portuguesa de Anestesiologia são de acesso aberto e cumprem os requisitos das agências de financiamento ou instituições académicas. Relativamente à utilização por terceiros a Revista da Sociedade Portuguesa de Anestesiologia rege-se pelos termos da licença Creative Commons 'Atribuição – Uso Não-Comercial – (cc-by-nc)'.

É da responsabilidade do autor obter permissão para reproduzir figuras, tabelas, etc. de outras publicações.

Após a aceitação de um artigo, os autores serão convidados a preencher uma "Declaração de Responsabilidade Autoral e Autorização de Publicação" e a "Declaração de Potenciais Conflitos de Interesse". Será enviado um *e-mail* ao autor correspondente, confirmando a receção do manuscrito.

Os autores ficam autorizados a disponibilizar os seus artigos em repositórios das suas instituições de origem, desde que mencionem sempre onde foram publicados e de acordo com a licença *Creative Commons*.

Custos de Publicação

Não há taxa de processamento de artigo (não tem taxas de submissão nem de publicação).

ORCID

A Revista da Sociedade Portuguesa de Anestesiologia exige os IDs ORCID para o autor correspondente; também é sugerido que os co-autores indiquem os seus IDs ORCID. Acreditamos fortemente que o aumento do uso e integração de IDs de ORCID será benéfico para toda a comunidade científica.
Para obter mais informações e para se registar, visite ORCID.org (https://orcid.org/content/collect-connect/).

Critérios de Autoria e Formulário de Autoria

A Revista da Sociedade Portuguesa de Anestesiologia segue as diretrizes sobre autoria estabelecidas pelo International Committee of Medical Journal Editors na Declaração sobre Autoria e Contribuição.
(http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html/)

Declaração das contribuições individuais assinada por cada autor:
Todos aqueles designados como autores devem cumprir os quatro critérios para autoria, em baixo Indicados e todos aqueles que cumprem os quatro critérios devem ser identificados como autores. Os colaboradores que não cumpram os quatro critérios para autoria mas que tenham contribuído para o estudo ou manuscrito, deverão ser reconhecidos na seção de Agradecimentos, especificando o seu contributo. Aquisição de financiamento, coleta de dados ou supervisão geral por si só não constituem Autoria. Cada manuscrito deve ter um "Autor Correspondente". O autor correspondente deverá obter permissão por escrito de todos aqueles que forem mencionados nos agradecimentos.

Autores são aqueles que:
1. Têm uma contribuição intelectual substancial, direta, no desenho e elaboração do artigo;
2. Participam na análise e interpretação dos dados;
3. Participam na redação do manuscrito, revisão de versões e revisão crítica do conteúdo; aprovação da versão final;
4. Concordam que são responsáveis pela exatidão e integridade de todo o trabalho.

Quando um grande grupo multicêntrico conduz o trabalho, o grupo deve identificar os indivíduos que aceitam a responsabilidade direta pelo manuscrito. Esses indivíduos devem atender plenamente aos critérios de autoria. A obtenção de financiamento, a recolha de dados ou a supervisão geral do grupo de trabalho, por si só, não justificam a autoria.

Alterações na Autoria

É responsabilidade do autor correspondente garantir que a lista de autores esteja correta, tanto no formulário de submissão online e no texto submetido. Qualquer alteração na lista de autores, incluindo a remoção ou adição de qualquer autores, entre a submissão inicial e a aceitação exigirão a concordância por escrito de todos autores, caso o manuscrito esteja a ser avaliado para publicação. Os novos autores também devem confirmar que cumprem integralmente com os critérios de autoria da Revista da Sociedade Portuguesa de Anestesiologia. Mudanças na autoria (adição ou remoção) não serão permitidas após aceitação do manuscrito para publicação.

Agradecimentos

Todos os colaboradores que não atendem aos critérios de autoria devem ser listados numa seção de Agradecimentos. Exemplos de pessoas que podem ser reconhecidas incluem: quem forneceu ajuda puramente técnica ou um chefe de departamento que forneceu apenas apoio geral.

Apoio na Escrita

Indivíduos que forneceram assistência para redação, por exemplo de empresa de comunicação especializada, não se qualificam como autores e, portanto, devem ser incluídos na seção Agradecimentos. Os autores devem divulgar qualquer ajuda por escrito - incluindo o nome do indivíduo, empresa e nível de entrada - e identificar a entidade que financiou essa ajuda. Não é necessário divulgar o uso de serviços de polimento de linguagem.

Autor Correspondente

O autor correspondente funcionará em nome de todos os coautores como o correspondente preferencial com a equipa editorial durante o processo de submissão e revisão. Qualquer autor pode ser o autor correspondente mas apenas um autor pode ser o autor correspondente.
Papel do autor correspondente:
- Garante o cumprimento dos requisitos de submissão e submete o manuscrito à revista;
- Garante que todos os autores reviram e aprovaram a versão final do manuscrito antes da submissão;
- Garante o preenchimento dos formulários de autoria - isso inclui formulários de conflitos de interesse para todos os autores;
- Distribui cartas de decisão, comentários de revisores e outras mensagens da Revista da Sociedade Portuguesa de Anestesiologia, e distribui provas entre os coautores para revisão;
- Envia correções e garante que todos os autores aprovam cada versão do artigo.

Cover Letter

Escreva uma carta explicando por que o Editor gostaria de publicar seu manuscrito. Todas as cartas de apresentação devem conter estas frases:
- Confirmamos que este manuscrito não foi publicado em nenhum outro lugar e não está sendo considerado por outra revista;
- Todos os autores aprovaram o manuscrito e concordam com sua submissão à Revista da Sociedade Portuguesa de Anestesiologia.

Conflito de Interesses e Fontes de Financiamento

Todos os participantes do processo de revisão por pares e publicação - não apenas autores, mas também revisores, editores e membros do conselho editorial da Revista da Sociedade Portuguesa de Anestesiologia - devem considerar seus conflitos de interesse ao cumprir suas funções no processo de revisão e publicação do artigo e devem divulgar todos relacionamentos que possam ser vistos como potenciais conflitos de interesse. O rigor e a exatidão dos conteúdos, assim como as opiniões expressas são da exclusiva responsabilidade dos autores.

Os autores são obrigados a divulgar todas as relações financeiras e pessoais que possam enviesar o trabalho. Para prevenir ambiguidade, os autores têm que explicitamente mencionar se existe ou não conflitos de interesse. Todos os autores devem completar e submeter o modelo de Declaração de Conflitos de Interesse (ICMJE *Form for Disclosure of Potential Conflicts of Interest*), disponível em http://www.icmje.org/conflicts-of-interest/. Seguindo as diretrizes do ICMJE, as definições e termos de tais divulgações incluem:

Quaisquer potenciais conflitos de interesse "envolvendo o trabalho em consideração para publicação" (durante o tempo que envolve o trabalho, desde a conceção inicial e planeamento até a apresentação),

Quaisquer "atividades financeiras relevantes fora do trabalho submetido" (durante os 3 anos anteriores à apresentação), e

Quaisquer "outros relacionamentos ou atividades que os leitores possam perceber como tendo influenciado, ou que dêem a aparência de influenciar potencialmente" o que está escrito no trabalho enviado (com base em todos os relacionamentos que estiveram presentes durante os 3 anos anteriores ao envio). Essa informação será mantida confidencial durante a revisão do manuscrito pelos revisores e não influenciará a decisão editorial, mas será publicada se o artigo for aceite. Se não existirem conflitos, os autores devem mencionar esse facto. Exemplos de declarações:

- Os autores declaram não haver conflitos de interesse;
- O trabalho de XXX foi financiado pelo XXX. Recebeu remuneração como membro do conselho consultivo científico da XXX. Também prestou consultoria para a XXX. YYY e YYYY declaram não ter conflito de interesses.

Política de Confidencialidade

Os manuscritos enviados são considerados CONFIDENCIAIS e EMBARGADOS desde o momento da submissão. Em cumprimento à Política de Embargo, nenhuma informação além da contida no Resumo pode ser tornada pública antes da publicação do manuscrito. Manuscritos que contenham uma quantidade substancial de informações sobrepostas que tenham sido publicadas anteriormente ou disponibilizadas aos leitores por meio de outros locais não são elegíveis, exceto se for na forma de um resumo ou como parte de uma palestra publicada ou de uma tese académica. As Políticas de Confidencialidade e Embargo exigem que, antes de o embargo ser levantado, todos os autores da investigação não estão autorizados a: Publicar as informações ou fornecê-las a terceiros que possam publicá-las ou divulgá-las por outros meios.

Originalidade

Os manuscritos devem conter material original que ainda não esteja disponível em outro lugar. No entanto, os autores estão autorizados a enviar e apresentar resumos (ou seja, apresentações orais ou em póster) reuniões científicas abertas.

A página de título e a carta de apresentação devem incluir uma declaração verificando a originalidade do trabalho e divulgar quaisquer resumos, apresentações, relatórios ou publicações anteriores que contenham material que possa parecer sobreposto ao envio atual.

A Revista da Sociedade Portuguesa de Anestesiologia não aceitará para revisão qualquer manuscrito que esteja atualmente em revisão em outra revista.

Os autores podem postar seus resultados em registos de ensaios clínicos ou submetê-los a agências regulatórias governamentais (por exemplo, FDA ou EMA) sem que o manuscrito seja considerado publicado anteriormente ou uma publicação sobreposta. A Revista da Sociedade Portuguesa de Anestesiologia segue as *guidelines* da International Committee of Medical Journal Editors sobre duplicação de publicações - Overlapping Publications (http://www.icmje.org/recommendations/browse/publishing-and-editorial-issues/overlapping-publications.html/)

Em raras ocasiões, a Revista da Sociedade Portuguesa de Anestesiologia considerará a co-publicação de manuscritos de *guidelines*/consensos com um número limitado de outras revistas, assumindo que as seguintes condições sejam atendidas:

A solicitação por escrito deve ser aprovada pelo Editor-Chefe antes da submissão do manuscrito de *guidelines*/consensos, justificando a necessidade de co-publicação, bem como indicando as revistas específicas que estão sendo consideradas.

O Editor-Chefe da Revista da Sociedade Portuguesa de Anestesiologia tem a responsabilidade de avaliar o manuscrito de *guidelines*/consensos e decidir sua adequação para a revista.

A co-publicação online do manuscrito de guidelines/consensos deve ocorrer simultaneamente em todos as revistas envolvidas. O autor correspondente do manuscrito das de *guidelines*/consensos assume a responsabilidade de garantir que isso ocorra.

Ética de Publicação e Consentimento dos Doentes

A Revista da Sociedade Portuguesa de Anestesiologia encoraja os autores a consultar o Committee on Publication Ethics *International Standards for Authors* (https://publicationethics.org/resources/resources-and-further-reading/international-standards-editors-and-authors/)

A investigação médica envolvendo seres humanos deve

ser conduzida de acordo com a Declaration of Helsinki atualizada em 2013. Os manuscritos enviados devem estar em conformidade com as ICMJE *Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals* e todos os artigos relatando estudos em animais e / ou humanos devem declarar na seção de Métodos que a Comissão de Ética forneceu (ou dispensou) a aprovação. Certifique-se que fornece o nome completo e a instituição da comissão de ética, além do número de aprovação.

Em linha com as recomendações do ICMJE sobre a proteção dos participantes em investigação, os autores devem evitar fornecer informações de identificação, a menos que seja estritamente necessário para a submissão e os atributos identificáveis dos participantes devem ser tornados anónimos no manuscrito. Se as informações de identificação forem necessárias, os autores devem confirmar se o indivíduo forneceu consentimento por escrito para o uso dessas informações na publicação.

As informações sobre o consentimento informado para relatar casos individuais ou séries de casos devem ser incluídas no texto do manuscrito. É necessária uma declaração do(s) doente(s) ou por um representante legalmente autorizado para as informações e imagens do doente a serem publicadas. Os autores são responsáveis por obter o consentimento informado relativamente a cada indivíduo presente em fotografias, vídeos, descrições detalhadas ou em radiografias ou ecografias, mesmo após tentativa de ocultar a respetiva identidade. Nomes, iniciais ou outras formas de identificação devem ser removidos das fotografias ou outras imagens. Devem ser omitidos dados pessoais, como profissão ou residência, exceto quando sejam epidemiologicamente relevantes para o trabalho. Os autores devem assegurar que não apresentam dados que permitam identificação inequívoca ou, caso isso não seja possível, devem obter o consentimento informado dos intervenientes. As barras "Blackout" ou dispositivos similares não anonimizam doentes em imagens clínicas: é necessário o apropriado consentimento.

Todas as pesquisas envolvendo animais submetidos para publicação devem ser aprovadas por um comitê de ética com supervisão da unidade em que os estudos foram realizados. A investigação experimental realizada em animais deve estar de acordo com *NIH Guide for the Care and Use of Laboratory Animals* ou equivalente. Uma declaração de que a pesquisa foi realizada de acordo com as Diretrizes do NIH deve ser incluída na seção Métodos.

Resultados e Registo de Ensaios Clínicos

A Revista da Sociedade Portuguesa de Anestesiologia apoia iniciativas que contribuam para uma melhor divulgação de resultados ensaios clínicos.

O ICMJE adota a definição da Organização Mundial de Saúde de ensaio clínico, que é "qualquer estudo de investigação que prospectivamente atribua a participantes humanos, individualmente ou em grupo, uma ou mais intervenções relacionadas com a saúde, com o objetivo de avaliar os seus resultados relacionados com a saúde". Esta definição inclui ensaios das fases I a IV. O ICMJE define intervenções relacionadas com a saúde como "qualquer intervenção usada para modificar um resultado biomédico ou relacionado com a saúde" e resultados relacionados com a saúde como "qualquer medida biomédica ou relacionada com a saúde obtida em doentes ou participantes". O registo numa base de dados pública de ensaios clínicos, aprovada pela Organização Mundial de Saúde, antes da inscrição do primeiro doente, é condição necessária para a publicação de dados de ensaios clínicos na Revista da Sociedade Portuguesa de Anestesiologia, de acordo com as recomendações do International Committee of Medical Journal Editors (ICMJE, http://www.icmje.org/). Os ensaios devem ser registados anteriormente ou no início do período de recrutamento de doentes. Os estudos puramente observacionais (aqueles em que a atribuição de uma intervenção médica não é do critério do investigador) não exigem registo. O número de registo do ensaio clínico (TRN) bem como a data desse registo devem ser referidos no final do resumo do artigo.

Partilha de Dados

A Revista da Sociedade Portuguesa de Anestesiologia sugere que os dados gerados pela investigação e que suportam o artigo sejam disponibilizados o mais rápido possível, sempre que legal e eticamente possível. Sugere-se assim aos autores que assegurem que os seus dados ficam disponíveis em repositórios públicos (sempre que estes estejam disponíveis e sejam adequados), que sejam apresentados no manuscrito principal ou em arquivos adicionais, sempre que possível em formato tratável (por exemplo, em folha de cálculo e não em pdf). A Revista da Sociedade Portuguesa de Anestesiologia exige uma declaração de disponibilização dos dados, presente no final de cada manuscrito. Para ensaios de fármacos ou dispositivos médicos, a declaração deve referir, pelo menos, que os dados relevantes de cada doente, devidamente anonimizados, estão disponíveis mediante pedido justificado aos autores. Sugerem-se formulações para a referida declaração:

"Disponibilização dos dados: os dados individuais dos doentes [e/ou] o conjunto completo de dados [e/ou] o anexo técnico [e/ou] as especificações da análise estatística, estão disponíveis em [/doi] [com acesso livre/com as restrições] [do autor correspondente em]. Os participantes deram o seu consentimento informado para disponibilização de dados [ou... não foi obtido consentimento dos participantes, mas os dados apresentados estão anonimizados e o risco de identificação é reduzido... ou não foi obtido consentimento dos participantes, mas os benefícios potenciais da disponibilização destes dados justificam os prejuízos potenciais, uma vez que...]". Se os dados não estiverem disponíveis, deve ser referido o seguinte: "Disponibilização dos dados: não estão disponíveis dados adicionais." Esta opção não se aplica a ensaios clínicos de fármacos ou dispositivos médicos. Pode ser solicitado aos autores que disponibilizem os dados brutos em que basearam o seu artigo durante o processo de revisão e até 10 anos após a publicação.

Política de *Preprints*

A Revista da Sociedade Portuguesa de Anestesiologia poderá considerar a publicação de manuscritos que contenham informações previamente postadas em servidores de *preprints*. Os autores não podem enviar seus artigos para um servidor de pré-impressão após terem sido submetidos à Revista da Sociedade Portuguesa de Anestesiologia.

Se um relatório foi publicado num servidor de *preprints* antes da submissão do manuscrito, isso deve ser reconhecido durante o processo de submissão. Além disso, um *link* para esse documento deve ser fornecido para que os revisores e editores possam avaliar as informações do *preprint* e compará-las com o manuscrito submetido. Se o manuscrito for aceite, a Revista da Sociedade Portuguesa de Anestesiologia incluirá este *link* com o seu manuscrito publicado. O não reconhecimento da divulgação prévia da investigação postada num servidor de *preprints* ou bases de dados semelhantes prejudicará o *status* da submissão. Quando o manuscrito é submetido à Revista da Sociedade Portuguesa de Anestesiologia, nenhuma revisão deve ser enviada para o servidor de *preprints* durante o processo de revisão por pares do manuscrito. Se o manuscrito for eventualmente aceite para publicação, nenhuma revisão deve ser postada no servidor de *preprints* até que o manuscrito final seja publicado *online* pela Revista da Sociedade Portuguesa de Anestesiologia. Finalmente, quando o manuscrito é publicado na Revista da Sociedade Portuguesa de Anestesiologia, quaisquer alterações futuras, como errata, por exemplo, devem ser primeiro submetidas, aprovadas e publicadas pela Revista da Sociedade Portuguesa de Anestesiologia, antes de fazer qualquer alteração ao documento de *preprint*. A violação desta política de pré-impressão será considerada motivo para retirada do artigo.

Política de Plágio

Seja intencional ou não, o plágio é uma violação grave. Definimos plágio como reprodução de outro trabalho com pelo menos 25% de similaridade e sem citação. Se for encontrada evidência de plágio antes/depois da aceitação ou após a publicação do artigo, será dada ao autor uma oportunidade de refutação. Se os argumentos não forem considerados satisfatórios, o manuscrito será retratado e o autor sancionado pela publicação de trabalhos por um período a ser determinado pelo Editor.

Publicação *Fast-Track*

Um sistema *fast-track* está disponível para manuscritos urgentes e importantes que atendam aos requisitos da Revista da Sociedade Portuguesa de Anestesiologia para revisão rápida e publicação.

Os autores podem solicitar a publicação rápida através do processo de submissão de manuscritos, indicando claramente a razão por que o seu manuscrito deve ser considerado para revisão acelerada e publicação. O Conselho Editorial decidirá se o manuscrito é adequado para publicação rápida e comunicará a sua decisão dentro de 48 horas. Se o Editor-Chefe achar o manuscrito inadequado para publicação rápida, o manuscrito pode ser proposto para o processo normal de revisão, ou os autores podem retirar a sua submissão. A decisão editorial sobre manuscritos aceites para revisão rápida será feita dentro de cinco dias úteis.

Se o manuscrito for aceite para publicação, a Revista da Sociedade Portuguesa de Anestesiologia terá como objetivo publicá-lo *ahead of print* em 16 dias.

Processo Revisão por Pares

Todos os artigos de investigação, e a maioria das outras tipologias de artigos, publicadas na Revista da Sociedade Portuguesa de Anestesiologia passam pelo processo de revisão por pares. Os revisores são obrigados a respeitar a confidencialidade do processo de revisão pelos pares e não revelar detalhes de um manuscrito ou sua revisão, durante ou após o processo de revisão por pares. Se os revisores desejam envolver um colega no processo de revisão, devem primeiro obter permissão do Editor.Os manuscritos devem ser escritos em um estilo claro, conciso, direto. O manuscrito não pode ter sido publicado, no todo ou em parte, nem submetido para publicação em outro lugar. Todos os manuscritos enviados são inicialmente avaliados pelo Editor-Chefe e podem ser rejeitados nesta fase, sem serem enviados para revisores. A aceitação ou rejeição final recai sobre o Editor-Chefe, que se reserva o direito de recusar qualquer material para publicação.

A Revista da Sociedade Portuguesa de Anestesiologia segue uma rigorosa revisão por pares duplamente cega. A Revista da Sociedade Portuguesa de Anestesiologia enviará manuscritos para revisores externos selecionados de uma base de dados pré-existente, ou convidará novos revisores para o efeito.

A aceitação final é da responsabilidade do Editor-Chefe.

As cartas ao Editor ou Editorais serão avaliadas pelo Conselho Editorial, mas também poderão ser solicitadas revisões externas.

Na avaliação, os manuscritos podem ser:

A) Aceite sem alterações;

B) Aceite, mas dependendo de pequenas revisões;

C) Reavaliar após grandes alterações;

D) Rejeitado.

Após a receção do manuscrito, se estiver de acordo com as instruções aos autores e cumprir a política editorial, o Editor-Chefe envia o manuscrito para pelo menos dois revisores.

Dentro de 15 dias, o revisor deve responder ao Editor-Chefe indicando os seus comentários sobre o manuscrito sujeito a revisão e sugestão de aceitação, revisão ou rejeição do trabalho. Dentro de 10 dias, o Conselho Editorial tomará uma decisão que poderá ser: aceitar o manuscrito sem modificações; Enviar os comentários dos revisores aos autores de acordo com o estabelecido; rejeição. Quando alterações são propostas os autores têm 15 dias (período que pode ser estendido a pedido dos autores) para apresentar uma nova versão revista do manuscrito, incorporando os comentários dos revisores e do conselho editorial. Têm de responder a todas as perguntas e enviar também uma versão revista do manuscrito, com

as emendas inseridas destacadas com uma cor diferente. O Editor-Chefe tem 10 dias para tomar a decisão sobre a nova versão: rejeitar ou aceitar a nova versão, ou encaminhá-la para uma nova apreciação por um ou mais revisores. Em caso de aceitação, em qualquer das fases anteriores, a mesma será comunicada ao Autor Correspondente. Apesar de os editores e revisores desenvolverem esforços para assegurar a qualidade técnica e científica dos manuscritos, a responsabilidade final do conteúdo (nomeadamente o rigor e a precisão das observações, assim como as opiniões expressas) é da exclusiva responsabilidade dos autores.

Provas Tipográficas

As provas tipográficas serão enviadas aos autores, contendo a indicação do prazo de revisão em função das necessidades de publicação da Revista da Sociedade Portuguesa de Anestesiologia. A revisão deve ser aprovada pelo autor responsável pela correspondência. Os Autores dispõem de 48 horas para a revisão do texto e comunicação de quaisquer erros tipográficos. Nesta fase, os Autores não podem fazer qualquer modificação de fundo ao artigo, para além das correções de erros tipográficos e/ou ortográficos de pequenos erros. O não respeito pelo prazo proposto desobriga a Revista da Sociedade Portuguesa de Anestesiologia de aceitar a revisão pelos autores, podendo a revisão ser efetuada exclusivamente pelos serviços da Revista da Sociedade Portuguesa de Anestesiologia.

Erratas

A Revista da Sociedade Portuguesa de Anestesiologia publica alterações, emendas ou retrações a um artigo anteriormente publicado, se, após a publicação, forem identificados erros ou omissões que influenciem a interpretação de dados ou informação. Alterações posteriores à publicação assumirão a forma de errata.

Retratações

Os Revisores e Editores assumem que os autores relatam trabalho com base em observações honestas. No entanto, se houver dúvidas substanciais sobre a honestidade ou integridade do trabalho, submetido ou publicado, o editor informará os autores da sua preocupação, procurará esclarecimento junto da instituição patrocinadora do autor e/ou instituição empregadora. Consequentemente, se estes considerarem o artigo publicado como fraudulento, a Revista da Sociedade Portuguesa de Anestesiologia procederá à retratação. Se, este método de investigação não obtiver uma conclusão satisfatória, o editor pode optar por conduzir a sua própria investigação, e pode optar por publicar uma nota de preocupação sobre a conduta ou integridade do trabalho. O Editor-Chefe poderá decidir relatar a situação à instituição dos autores, de acordo com os procedimentos recomendados pelo COPE - Committee on Publication Ethics (https://publicationethics.org/).

Guidelines de Submissão

Língua

O título, resumo e palavras-chave, devem ser apresentados em inglês e português.
Os manuscritos submetidos à Revista da Sociedade Portuguesa de Anestesiologia devem ser claramente escritos em português (de Portugal) e/ou inglês de nível razoável.

Submissão dos Trabalhos

A submissão de um manuscrito implica que o trabalho descrito não tenha sido publicado previamente (exceto na forma de um resumo ou como parte de uma palestra publicada ou de uma tese académica), e que não está sendo considerado para publicação noutra revista, que o manuscrito foi aprovado por todos os autores e, tácita ou explicitamente, pelas autoridades competentes onde o trabalho foi realizado e que, se for aceite para publicação, não será publicada em outro lugar na mesma forma, em inglês ou em qualquer outra língua, incluindo eletronicamente.
Todos os manuscritos devem ser acompanhados por uma carta de apresentação. Deve ser dada garantia na carta de apresentação de que o manuscrito não está sob consideração simultânea por qualquer outra revista. Na carta de apresentação, os autores devem declarar seus potenciais conflitos de interesse e fornecer uma declaração sobre a autoria. Para verificar a originalidade, o artigo pode ser verificado pelo serviço de detecção de originalidade.
As submissões que não estejam em conformidade com estas instruções podem ser devolvidas para reformulação e reenvio.
Os manuscritos são submetidos através do site da Revista da Sociedade Portuguesa de Anestesiologia em: https://revistas.rcaap.pt/index.php/Revista da Sociedade Portuguesa de Anestesiologia/about/submissions/.

Contacto

Em caso de dúvidas durante a submissão, contacte: spa@spanestesiologia.pt.

Uso de Programa de Processamento de Texto

O texto deve estar no formato de coluna única.
Para evitar erros desnecessários, aconselhamos o uso das funções "verificação ortográfica" e "verificação gramatical" do seu processador de texto.
Os manuscritos devem ser submetidos em ficheiros de texto em formato Word (.DOC ou .DOCX), com texto seguido e sempre com o mesmo tipo de letra. Os textos devem ser formatados em letra “Times New Roman”, tamanho 11 com espaçamento de 1,5 linhas. Os títulos e sub-títulos deverão estar assinalados a negrito e em tamanho 12.

Orientação para Geral para Apresentação de Estudos

Os textos devem ser preparados de acordo com as orientações do International Committee of Medical Journal Editors: *Recommendations for the Conduct, Reporting, Editing and*

Publication of Scholarly Work in Medical Journals (ICMJE Recommendations) disponíveis em http://www.icmje.org/.
A Revista da Sociedade Portuguesa de Anestesiologia recomenda que devem ser seguidas as diretrizes para publicação da EQUATOR network (http://www.equator-network.org/), dependendo do tipo de estudo:
- Randomized controlled trials (CONSORT);
- Systematic reviews and meta-analyses* (PRISMA) and protocols (PRISMA-P);
- Observational studies (STROBE);
- Case reports (CARE);
- Qualitative research (COREQ);
- Diagnostic/prognostic studies (STARD);
- Economic evaluations (CHEERS);
- Pre-clinical animal studies (ARRIVE).

* Os autores de revisões sistemáticas também devem fornecer um *link* para um ficheiro adicional da seção 'métodos', que reproduz todos os detalhes da estratégia de pesquisa.
Exceto onde indicado de outra forma, os manuscritos são submetidos a *peer review* duplamente cego por dois revisores anónimos, pelo menos.
A aceitação ou rejeição final cabe ao Editor-Chefe, que se reserva o direito de recusar qualquer material para publicação.
Os manuscritos devem ser escritos em estilo claro, conciso, direto, de modo que sejam inteligíveis para o leitor.
Quando as contribuições são consideradas adequadas para publicação com base em conteúdo científico, o Editor-Chefe reserva-se o direito de modificar os textos para eliminar a ambiguidade e a repetição, e melhorar a comunicação entre o autor e o leitor. Se forem necessárias alterações extensivas, o manuscrito será devolvido ao autor para revisão. Os manuscritos que não cumpram as instruções para autores podem ser devolvidos para modificação antes de serem revistos.

Tipologia dos Artigos

A Revista da Sociedade Portuguesa de Anestesiologia aceita artigos das seguintes tipologias:
a. Artigo Original reportando investigação clínica ou básica (ensaios clínicos, estudos de coorte, estudos de caso-controlo, outros estudos observacionais);
b. Educação Médica Contínua;
c. Revisão Sistemática com ou sem Meta-Análise;
d. Revisão Narrativa;
e. Consenso;
f. Caso Clínico;
g. Imagem em Anestesiologia;
h. Editorial;
i. Carta ao Editor;
j. Perspectiva;

Os autores devem indicar na carta de apresentação qual o tipo de manuscrito que está a ser submetido para publicação.

Organização do Artigo

Na primeira página/ página de título (página separada):

I. Título

Título em português e inglês, conciso, especifico e informativo, sem abreviaturas e não excedendo os 120 caracteres. O título pode incluir um complemento de título com um máximo de 40 caracteres (incluindo espaços).

II. Autores e aAfiliações

Na linha da autoria, liste o Nome de todos os Autores (primeiro e último nome) e respetivas afiliações (serviço, instituição, cidade, país) e grau académico mais elevado.
Os nomes dos autores devem vir acompanhados dos respetivos números de registo do ORCID.

III. Autor Correspondente

Indicar claramente quem vai lidar com a correspondência em todas as fases de arbitragem e publicação, também pós-publicação. Indicar endereço postal e e-mail do Autor responsável pela correspondência relativa ao manuscrito.

IV. Financiamento

Todas as fontes de financiamento, no domínio público ou privado, incluindo bolsas, que contribuíram para a realização do trabalho. Indicar se existem ou não conflitos de interesse (nomeadamente comercial no produto, equipamento ou processo).

V. Considerações Éticas

Os autores também incluirão nesta página de título, sob a designação "Considerações éticas" a declaração de "Proteção de pessoas e animais", Confidencialidade dos dados e consentimento informado e Conflitos de interesse.

VI. Prémios e Apresentações Prévias

Devem ser referidos os prémios e apresentações do estudo, prévias à submissão do manuscrito.

VII. Resumo e *Keywords*

Um resumo conciso e factual é requerido, capaz de representar isoladamente o conteúdo do artigo, escrito em português e inglês. Nenhuma informação que não conste no manuscrito pode ser mencionada no resumo. O resumo não pode remeter para o texto, não podendo conter citações nem referências a figuras. No fim do resumo devem ser incluídas um máximo de 5 *keywords* em inglês utilizando a terminologia que consta no Medical Subject Headings (MeSH), https://meshb.nlm.nih.gov/search/.
Tome nota que os artigos originais devem conter os seguintes componentes. Por favor, veja abaixo para mais detalhes.
- Carta de apresentação/Cover letter;
- Página de título (excluindo agradecimentos);

- Resumo;
- Introdução;
- Material e Métodos;
- Resultados;
- Discussão e Conclusão;
- Referências;
- Agradecimentos;
- Declaração de contribuição dos autores;
- Conflito de interesses;
- Declaração de Financiamento;
- Legendas das figuras;
- Tabelas;
- Figuras.

Texto

Artigo Original

Artigo de investigação original que deve incluir as seguintes secções: Introdução (incluindo Objetivos), Material e Métodos, Resultados, Discussão e Conclusões, Agradecimentos (se aplicável), Referências, Tabelas e Figuras. O Artigo Original não deverá exceder as 4 000 palavras, excluindo referências e ilustrações. O texto deve ser acompanhado de ilustrações, com um máximo de 6 figuras/tabelas e 40 referências bibliográficas. Manuscritos reportando estudos randomizados e controlados devem seguir o CONSORT Statement http://www.consort-statement.org/. Manuscritos reportando ensaios clínicos devem seguir os critérios do ICMJE http://www.icmje.org/.

Adesão ao QUORUM Statement (Quality of Reporting of Meta-analysis) e o ao STARD (Standards for Reporting of Diagnostic Accuracy), que guiam os autores sobre a informação que deve ser incluída para permitir que os leitores e revisores avaliarem o rigor e transparência da investigação. A contagem da palavra: até 4 000. Resumo estruturado: Sim e até 250 palavras. Tabelas/Figuras: até 6. Referências: até 40.

Educação Médica Contínua

Artigo sobre temas de grande interesse científico, com o objetivo de atualização. O texto não deve exceder as 3 500 palavras, excluindo ilustrações e referências. Deve ter no mínimo 30 referências bibliográficas recentes, sendo permitidas no máximo 10 ilustrações. No final do texto deve ser incluído um teste com questões para avaliação do que aprendeu. A contagem da palavra: até 3 500. Resumo estruturado: Sim e até 400 palavras. Tabelas/Figuras: até 10. Referências: até 30.

Revisão Sistemática

A revisão sistemática deve seguir o formato: Introdução (inclui a justificação e objetivo do artigo), Métodos, Resultados, Discussão e Conclusões. O assunto deve ser claramente definido. O objetivo de uma revisão sistemática é produzir uma conclusão baseada em evidências. Os métodos devem dar uma indicação clara da estratégia de pesquisa bibliográfica, a extração de dados, classificação e análise de evidências.

Siga as PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) *guidelines* disponíveis em http://www.prisma-statement.org/. Não deve exceder 6 000 palavras, excluindo referências e ilustrações. Não deverá ter mais de 100 referências bibliográficas. O uso de tabelas e figuras para sumariar pontos críticos é encorajado.

A contagem da palavra: até 6 000. Resumo estruturado: Sim e até 400 palavras. Tabelas/Figuras: até 10. Referências: até 100.

Revisão Narrativa

Artigo abrangente que tem como objetivo: sumariar, analisar, avaliar ou sintetizar informação que já foi publicada. Oferece uma avaliação exaustiva e crítica da literatura publicada e fornece as conclusões que a literatura avaliada permite.

São artigos por convite da equipa editorial mas, excecionalmente autores não convidados poderão submeter o projeto de artigo de revisão, que julgado relevante e aprovado pelo editor, poderá ser desenvolvido e submetido às normas de publicação. O texto deverá ter as mesmas secções do Artigo Original. A secção Métodos deve ser utilizada para descrever como foi feita a revisão da literatura.

As orientações relativas à dimensão do texto são idênticas ao do artigo de Revisão Sistemática. A contagem da palavra: até 6 000. Resumo estruturado: Sim e até 400 palavras. Tabelas/Figuras: até 10. Referências: até 100.

Consenso

O objetivo dos Consensos é orientar a prática clínica (por exemplo, diretrizes, parâmetros de prática, recomendações).

Deve descrever o problema clínico a ser abordado; o mecanismo pelo qual o consenso foi gerado; uma revisão da evidência para o consenso (se disponível), e a sua utilização na prática. Para minimizar a confusão e aumentar a transparência, os consensos devem começar por responder às seguintes questões:

- Que outras orientações/*guidelines* estão disponíveis sobre o tema?
- Quais as razões que justificaram a procura deste consenso?
- Como e porquê este difere das orientações existentes?

A SPA, o colégio da especialidade, as entidades oficiais e/ou grupos de médicos que desejem publicar consensos, poderão submetê-los à RSPA. O Editor-Chefe poderá colocar como exigência a publicação exclusiva das recomendações na RSPA. Poderá ser acordada a publicação de uma versão resumida na edição impressa cumulativamente à publicação da versão completa no site da RSPA. A contagem da palavra: até 8 000. Resumo estruturado: não necessário e até 350 palavras. Tabelas/Figuras: até 5. Referências: até 100.

Caso Clínico

O relato de um caso clínico só justifica a sua publicação na presença de um evento ou patologia rara que implicou a adoção de condutas não descritas e originais para a resolução dos problemas levantados, aspetos inusitados, evoluções atípicas ou inovações terapêuticas, entre outras. Os casos difíceis ou complicados, mas que não trouxeram nada de novo, não são

considerados publicáveis. As secções serão: Introdução, Caso Clínico, Discussão e Referências. O texto não deve exceder as 2 000 palavras e 15 referências bibliográficas. Deve ser acompanhado de figuras ilustrativas. O número de tabelas/figuras não deve ser superior a 6. Não devem ter mais de 4 autores, mas se tiverem mais deve ser dada uma justificação.
A contagem da palavra: até 2 000. Resumo estruturado: não necessário e até 150 palavras. Tabelas/Figuras: até 6. Referências: até 15.

Imagem em Anestesiologia

Apresentação sucinta com imagens interessantes, novas e altamente educativas para destacar informação anestesiológica pertinente. Devem incluir um título em português e em inglês com um máximo de oito palavras e um texto com um máximo de 200 palavras. Não podem ter mais de três autores e cinco referências bibliográficas. Não precisam de resumo. Só são aceites imagens que não tenham sido previamente publicadas. Conteúdo suplementar em vídeo pode ser incluído. A contagem da palavra: até 200. Resumo estruturado: não necessário resumo. Tabelas/Figuras: até 5. Vídeos: até 2. Referências: até 5.

Carta ao Editor

Deve ser objetiva e construtiva. Deve constituir um comentário fundamentado a um artigo publicado anteriormente na revista, enviado não mais de três meses após a publicação do texto original, ou uma nota sobre um tema de interesse geral para os anestesiologistas. Deve ser breve (250 a 800 palavras) e pode conter até duas ilustrações e ter um máximo de 7 referências bibliográficas. A resposta(s) do(s) Autor(es) deve observar as mesmas características. Não precisam de resumo. A contagem da palavra: até 800. Resumo estruturado: não necessário resumo. Tabelas/Figuras: até 2. Referências: até 7.

Editorial

Os Editoriais serão solicitados por convite do Conselho Editorial. Serão comentários sobre tópicos actuais. Não devem exceder as 1 500 palavras, nem conter mais de uma tabela/figura e ter um máximo de 15 referências bibliográficas. Não precisam de resumo. A contagem da palavra: até 1 500.
Resumo estruturado: não necessário resumo. Tabelas/Figuras: até 1. Referências: até 15.

Perspetiva

Artigo elaborado por convite do Conselho Editorial. Podem cobrir uma grande diversidade de temas com interesse para a Anestesiologia: problemas atuais ou emergentes, gestão e política de saúde, história da anestesiologia, ligação à sociedade, epidemiologia, etc. Não precisam de resumo.
A contagem da palavra: até 2 000. Resumo estruturado: não necessário resumo. Tabelas/Figuras: até 2. Referências: até 10.

Preparação do Manuscrito

Referências

I. Citação no texto

Certifique-se de que todas as referências citadas no texto também estão presentes na lista de referências (e vice-versa). As referências devem ser listadas usando algarismos árabes pela ordem em que são citados no texto.
As referências a comunicações pessoais e dados não publicados devem ser feitas diretamente no texto e não devem ser numeradas. As comunicações pessoais devem estar devidamente autorizadas pelo emissor das comunicações, assumindo os autores a responsabilidade pela autorização. A citação de uma referência como "in press" implica que o item tenha sido aceite para publicação. Os nomes das revistas devem ser abreviados de acordo com o estilo da Medline. As referências a artigos publicados em revistas devem incluir o nome do primeiro autor seguido dos nomes dos restantes autores (num máximo de 6, a partir daí deve ser utilizado *et al.*), o título do artigo, o nome da revista e o ano de publicação, volume e páginas, e DOI. Certifique-se que os dados fornecidos nas referências estão corretos. Ao copiar referências, tenha cuidado porque já podem conter erros. A lista de referências deve ser adicionada como parte do texto, nunca como uma nota de rodapé. Códigos específicos do programa de gestão de referências não são permitidos.

II. Formato

Uma descrição detalhada dos formatos de diferentes tipos de referência pode ser consultada n "Uniform Requirements for Manuscripts Submitted to Biomedical Journals" (http://www.nlm.nih.gov/bsd/uniform_requirements.html/). Liste todos os autores se houver seis ou menos. *Et al* deve ser adicionado se houver mais de seis autores. Título do artigo, nome da revista, ano, volume e páginas.

III. Estilo de referência

Texto: Indicar as referências no texto por número (s) em expoente. Os autores podem ser referidos, mas o número de referência deve ser sempre dado. Lista: Ordene as referências na lista pela ordem em que aparecem no texto Seguem-se alguns exemplos de como devem constar os vários tipos de referências.

Artigo

Apelido seguido das Iniciais do(s) Autor(es). Título do artigo. Título da revista [abreviado]. Ano de publicação; Volume: páginas. doi

1. Com menos de 6 autores:

Brown EN, Purdon PL. The aging brain and anesthesia. Curr Opin Anaesthesiol. 2013;26:414-9. doi: 10.1097/ACO.0b013e328362d183.

2. Com mais de 6 autores:

Pacella E, Pacella F, Troisi F, Dell'edera D, Tuchetti P, Lenzi T, et al. Efficacy and safety of 0.5% levobupivacaine versus 0.5% bupivacaine for peribulbar anesthesia. Clin Ophthalmol.

2013;7:927-32. doi: 10.2147/OPTH.S43553.

3. Sem autores:

Pelvic floor exercise can reduce stress incontinence. Health News. 2005; 11:11.

Monografia

Autor/Editor AA. Título: completo. Edição (se não for a primeira). Vol. (se for trabalho em vários volumes). Local de publicação: Editor comercial; ano.

1. Com Autores:

McLoughlin T. Magnetic resonance imaging of the brain and spine. 3rd ed. Philadelphia: Mosby; 2012.

2. Com Editor:

Holzheimer RG, Mannick JA, editors. Surgical Treatment: Evidence-Based and Problem-Oriented. Munich: Zuckschwerdt; 2001.

Capítulo de Monografia

Blitt C. Monitoring the anesthetized patient. In: Barash PG, Cullen BF, Stoelting RK, editors. Clinical Anesthesia. 3rd ed. Philadelphia: Lippincott-Raven Publishers; 1997. p 563-85.

Relatório Científico/Técnico

Page E, Harney JM. Health hazard evaluation report. Cincinnati: National Institute for Occupational Safety and Health; 2001 Feb. Report No.: HETA2000-0139-2824.

Tese/Dissertação Académica

Jones DL. The role of physical activity on the need for revision total knee arthroplasty in individuals with osteoarthritis of the knee [dissertação]. Pittsburgh: University of Pittsburgh; 2001.

Documento de Conferência

Rice AS, Farquhar-Smith WP, Bridges D, Brooks JW. Canabinoids and pain. In: Dostorovsky JO, Carr DB, Koltzenburg M, editors. Proceedings of the 10th World Congress on Pain; 2002 Aug 17-22; San Diego. Seattle: IASP Press; 2003. p. 437-68.

Documento Eletrónico

1. CD-ROM

Anderson SC, Poulsen KB. Anderson's electronic atlas of hematology [CD-ROM]. Philadelphia: Lippincott Williams & Wilkins, 2002.http://www.umi.com/proquest/.

2. Monografia da Internet

Van Belle G, Fisher LD, Heagerty PJ, Lumley TS. Biostatistics: a methodology for the health sciences [e-book]. 2nd ed. Somerset: Wiley InterScience; 2003 [consultado 2005 Jun 30]. Disponível em: Wiley InterScience electronic collection.

3. Homepage/Website

Cancer-Pain.org [homepage na Internet]. New York: Association of Cancer Online Resources, Inc.; c2000-01; [consultado 2020 Jul 9]. Disponível em: http://www.cancer-pain.org/.

A exatidão e rigor das referências são da responsabilidade do Autor.

Notas de Rodapé

As notas de rodapé devem ser evitadas. Quando imprescindíveis, devem ser numerados consecutivamente e aparecer na página apropriada.

Agradecimentos (facultativo)

Devem vir após o texto, e antes das referências, tendo como objectivo agradecer a todos os que contribuíram para o estudo mas que não têm peso de autoria. Nesta secção é possível agradecer a todas as fontes de apoio, quer financeiro, quer tecnológico ou de consultadoria, assim como contribuições individuais.

Abreviaturas

Não use abreviaturas ou acrónimos no título e no resumo e limite o seu uso no texto. Abreviaturas não consagradas devem ser definidas na primeira utilização, por extenso, logo seguido pela abreviatura entre parênteses. A menos que a sigla seja uma unidade padrão de medição. Se um termo for usado de 1 a 4 vezes no texto, ele deve ser definido por extenso ao longo do texto e não abreviado.

Unidades de Medida

Devem ser utilizadas as unidades Sistema Internacional de Unidades. As medidas de comprimento, altura, peso e volume devem ser expressas em unidades do sistema métrico (metro, quilograma ou litro) ou seus múltiplos decimais. As temperaturas devem ser dadas em graus Celsius (ºC) e a pressão arterial em milímetros de mercúrio (mmHg), e a hemoglobina em g/dL. Todas as medições hematológicas ou bioquímicas serão referidas no sistema métrico de acordo com o Sistema Internacional de Unidades (SI).

Nomes de Medicamentos e Dispositivos Médicos

Identifique com precisão todos os medicamentos e produtos pela denominação comum internacional (DCI). Não é recomendável a utilização de nomes comerciais de fármacos (marca registrada), mas quando a utilização for imperativa, o nome do produto deverá vir após o nome DCI, entre parênteses, em minúscula, seguido do símbolo que caracteriza marca registada, em sobrescrito (®). O mesmo princípio é aplicável aos dispositivos médicos.

Nomes de Genes, Símbolos e Números de Acesso

Aos genes e estruturas relacionadas devem ser atribuídos os nomes e símbolos oficiais fornecidos pelo National Center for Biotechnology Information (NCBI) ou o HUGO Gene Nomenclature Committee. Antes da submissão de um manuscrito relatando grandes conjuntos de dados genómicos (por exemplo, sequências de proteínas ou DNA), os conjuntos

de dados devem ser depositados em um banco de dados disponível publicamente, como o GenBank do NCBI, e um número de acesso completo (e número da versão, se apropriado) deve ser fornecido na seção Métodos.

Tabelas e Figuras

As Tabelas/Figuras devem ser numerados na ordem em que são citadas no texto e assinaladas em numeração árabe e com identificação.

Cada Figura e Tabela incluídas no trabalho têm de ser referidas no texto: "Uma resposta imunitária anormal pode estar na origem dos sintomas da doença (Fig. 2)"; "Esta associa-se a outras duas lesões (Tabela 1)".

Figura: Quando referida no texto é abreviada para Fig., enquanto Tabela não é abreviada. Nas legendas ambas as palavras são escritas por extenso.

Cada Tabela e Figura deve ser acompanhada da respetiva legenda, sucinta e clara. As Legendas devem ser autoexplicativas (sem necessidade de recorrer ao texto).

Em relação aos Figuras deve ser explícito se a informação inclui valores individuais, médias ou medianas, se há representação do desvio padrão e intervalos de confiança e o tamanho da amostra (n). As fotografias deverão incluir identificadores de aspetos cientificamente relevantes (setas e asteriscos). Poderão ser publicadas fotografias a cores, desde que consideradas essenciais.

Cada Tabela deve ser utilizada para mostrar resultados, apresentando listas de dados individuais ou sumariando os mesmos, não devendo no entanto constituir duplicação dos resultados descritos no texto. Devem ser acompanhadas de um título curto mas claro e elucidativo. As unidades de medida usadas devem ser indicadas (em parêntesis abaixo do nome que encabeça cada categoria de valores) e os números expressos devem ser reduzidos às casas decimais com significado clínico.

Para as notas explicativas nas Tabelas devem ser utilizados letras (a, b, c, d, etc.), não símbolos.

Se fotografias de doentes forem usadas, estes não devem ser identificáveis ou as fotografias devem ser acompanhadas de autorização por escrito para usá-las.

As ilustrações coloridas são reproduzidas gratuitamente.

Princípios gerais:

- Numere as ilustrações de acordo com a sua sequência no texto;
- Forneça as legendas das ilustrações separadamente;
- Dimensione as ilustrações próximas das dimensões desejadas da versão publicada;
- Envie cada ilustração em ficheiro separado.

A inclusão de figuras e/ou tabelas já publicadas, implica a autorização do detentor de *copyright* (autor ou editor).

A submissão deve ser feita separadamente do texto, conforme as instruções da plataforma.

Os ficheiros das figuras devem ser fornecidos em alta resolução, 800 dpi mínimo para gráficos e 300 dpi mínimo para fotografias.

A publicação de ilustrações a cores é gratuita, reservando-se a Revista da Sociedade Portuguesa de Anestesiologia de publicar uma versão a preto e branco na versão impressa da revista.

Material gráfico deve ser entregue em um dos seguintes formatos: JPEG (. Jpg), Portable Document Format (. Pdf), Powepoint (.ppt), TIFF (. Tif), Excel (.xls).

Permissão para Publicação/Reprodução

No caso de publicação de tabelas de livros ou revistas os autores são responsáveis por obter permissão, junto dos autores dos trabalhos de onde forem reproduzidos, para a referida publicação, e terão de a apresentar na submissão.

Ficheiros Multimédia

Os ficheiros multimédia devem ser enviados em ficheiro separado com o manuscrito. O material multimédia deve seguir os padrões de qualidade de produção para publicação sem a necessidade de qualquer modificação ou edição. Os ficheiros aceitáveis são: formatos MPEG, AVI ou QuickTime.

Anexos/Apêndices

Quando necessário, os anexos devem ser utilizados para apresentar inquéritos longos ou detalhados, descrições de extensos cálculos matemáticos e / ou listas de itens. Devem ser colocados depois da lista de referências, se necessário, com legendas. Anexos longos, tais como algoritmos, pesquisas e protocolos, serão publicados apenas online; o URL será fornecido no artigo impresso onde o anexo é citado.

Se houver mais de um apêndice, eles devem ser identificados como A, B, etc. As fórmulas e equações em apêndices devem ser numeradas separadamente: Eq. (A.1), Eq. (A.2), etc .; Em apêndice posterior, a Eq. (B.1) e assim por diante. Da mesma forma para tabelas e figuras: Tabela A.1; FIG. A.1, etc.

Estilo

Revista da Sociedade Portuguesa de Anestesiologia segue AMA Manual Style, 10ª edição (http://www.amamanualofstyle.com/) e ICMJE Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals (http://icmje.org/recommendations/).

Nota Final

Para um mais completo esclarecimento sobre este assunto aconselha-se a leitura das *Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals* (do International Commitee of Medical Journal Editors), disponível em http://www.icmje.org/.

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