

DRAFT

**TRAINING PROGRAMME in
INTENSIVE CARE MEDICINE**

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DRAFT TRAINING PROGRAMME FOR THE SPECIALTY

1. Official name of the specialty and requirements for the degree

Intensive Care Medicine (**Royal Decree 1271/84**)
Duration: 5 years
Previous degree: Medicine

2. Introduction

The purpose of Intensive Care Medicine is to offer patients in a critical condition, –whether current or potential–, a treatment whose frequency of use and staff and technology requirements are well above those offered in conventional hospital areas and whose application extends to patients with different pathological conditions that are potentially recoverable.

The availability of distinct and specific knowledge, a corpus of well-defined scientific doctrine, specialized technology and exclusive dedication justifies the existence of a specialty. The historical evolution, development and maturity we have achieved today, support continued recognition of this specialty, which also provides the ideal framework for the training of future specialists.

The competencies required of future professionals are increasing. Technical advances are seen by society as a means to solve health care problems. The specialty of Intensive Care Medicine, which is directly linked to the development of scientific and biotechnology innovations, incorporates these advances in order to optimise the care of critically ill patients. Intensive Care Medicine involves the application of a set of knowledge, skills and attitudes specific to the specialised and complex level of care required by seriously ill patients in a system of progressive care. Moreover, it continues to play a decisive role as an integrating specialty to avoid the fragmentation of care favoured by the emergence of highly specialised knowledge. The role of Intensive Care Medicine is to provide a type of health care that focuses on the needs of the critically ill patient.

Thus, Intensive Care Medicine appears as a horizontal or cross-cutting specialty with respect to the remaining specialties, whose contents include the diagnosis and treatment of acute and severe impairment of the function of all organs and systems, and maintenance of the function of affected organs. For more than 30 years, the practice of Intensive Care Medicine has incorporated the novel idea that early care and close collaboration through a fluid relationship with professionals from other specialties results in a marked improvement of outcomes of care provided to patients.

3. Rationale for the new programme

The current *Programa Oficial de la Especialidad* (POE, Official Speciality Programme) for Intensive Care Medicine was published in 1984. Subsequently, the *Comisión Nacional de la Especialidad* (CNE, National Specialty Commission) has considered it necessary to update the programme several times in order to meet training needs and adapt the programme to developments in the national and European policies that provide the framework for the reform of specialist medical training. In 2003, the CNE developed, adopted and presented a draft, as yet unpublished.

As in other disciplines, over recent years, a considerable volume of new biomedical knowledge has been incorporated relating to aspects of basic science, mechanisms of disease and technological advances in diagnosis and treatment. Today's society of knowledge, information and globalisation is caught up in a spiral of change, both in terms of the magnitude and importance of these changes and the speed with which they occur. The complexity of the scenarios in which health care takes place, brought about by the demand for better and safer care, demographic changes, new forms of management, limitations on resources, freedom of movement among professionals, technical innovation and the incorporation of pluralistic values, among others, demands greater adaptation skills and use of new tools for the future specialists.

The challenge posed by the change in the generation and transmission of knowledge extends to the spectrum of complexity in which specialised medical training takes place. Besides the purely scientific and technical dimension, training of Intensive Care Medicine should also include interpersonal communication, professionalism, evidence-based medicine and knowledge of both the culture and norms of the health care system in which it is carried out. In this context, the training of specialists requires learning the skills for obtaining and critically assessing all relevant information.

The revision of the current programme is a direct response to the need for training in new aspects and the current context in which the future specialist will develop his/her professional activity. It also takes into account the current legislative framework set down in the *Ley de Ordenación de las Profesiones Sanitarias* (LOPS, Law on Regulation of Health Care Professions) of November 2003 and Royal Decree 187 of February 2008, in which the bases for specialisation in health sciences are established and relevant aspects of training for the specialised medical training system are developed. This revision also considers the core subject system for specialties with common competencies for the time when it will be fully regulated by law. This model is currently undergoing a process of review, progress and development, so updating the Official Speciality Programme at this point in time seems particularly appropriate.

This programme is the document used by intensivists as a teaching reference for training residents and intended to guide future specialists, tutors and responsible professionals of the qualified services to train specialists in Intensive Care Medicine.

The ultimate aim of specialized training is to achieve a series of teaching objectives, defined as a means through which the necessary competencies can be acquired, in a process of personal tutorised learning. The competencies acquired during the training period are the starting point for lifelong professional development and will be maintained and improved upon throughout the specialist's career.

The programme focuses on the learner in order to respond to the need to train the specialists required by society: competent and self-sufficient, able to assume any current professional function of the specialty and in any context in which work will take place.

4. Definition of the specialty

Intensive Care Medicine is the medical specialty dealing with patients with current or potential failure or dysfunction in one or more organs or systems that poses a threat to the patients' life, and who are capable of recovering. It includes potential organ donor support. The specialty requires ongoing patient management, including monitoring, diagnosis and support of the affected vital functions and treatment of the causative diseases, as well an immediate patient care in any setting where the patient can be.

5. Profile of the intensivist

The practice of Intensive Care Medicine requires specific knowledge, mastery of a set of skills and to have a series of psychological and human attitudes. Although these features are common to most clinical disciplines, their simultaneous integration of these characteristics provides an insight into the professional profile of the Intensive Care Medicine specialist.

The intensivist must have:

- An overview of the patient and ability to provide comprehensive care that focuses on the patient's needs and avoids the fragmentation of care and the duplication of costs.
- In-depth and detailed knowledge of the physiology of organs and systems, the mechanisms by which they are altered and the means with which to preserve them and improve the function of the affected organs in order to sustain the patient's life.
- Ability to work in any setting where the critically ill patient is located.
- Polyvalent character making their work effective and efficient. Ability to work in a team and to lead it.

- Readiness to work in changing environments or in situations of uncertainty in a structured and systematic way.
- Sensitivity and commitment to ethical values, which is particularly relevant in a specialty that takes place in an environment with powerful technical resources.
- Ability to take decisions on the treatment of patients with life-threatening conditions.
- Possibility of cooperation in the prevention of the more frequent severe diseases.
- Ability to collaborate in the training of other health care professionals.
- Ability to manage professionally and responsibly with disaster situations that put the lives of large segments of the population at risk.

6. Scope of action of the specialists in Intensive Care Medicine

The scope of action of any intensivist is the sum of their skills and values:

- Health care:
 - Care for the diseases most often associated with critical situations.
 - Intensive Care Medicine involves all settings in which critically ill patients can be found: the intensive care unit (ICU) (polyvalent or monographic, medical and surgical), other areas of the health care system with critically ill patients requiring integral care (conventional hospital wards, urgency and emergency areas, intermediate or semi-critical care units). Moreover, in the outpatient setting in the transportation of severely ill patients or providing care at disaster sites.
 - Care of patients with a high risk of requiring intensive care outside the ICUs or services of Intensive Care Medicine (ICU teams outside ICUs): active participation in the detection and orientation of patients at risk located in wards or emergency departments to prevent organ failure, to start early treatment and to admit them to the ICU on time.
 - Ability to prioritize and coordinate the activities of other specialists.
- Teaching: responsibility for training other health professionals, which involves acquiring specific knowledge and skills.
- Research: intensivists understand the importance of research in the progress of scientific knowledge and often participate in relevant basic and clinical research projects.

7. General objectives of the training programme

In the current Official Specialty Programme, training is approached from the point of view of knowledge, skills and attitudes, grouped according to systems and organs. The present version proposes a model oriented towards acquiring the knowledge, skills and attitudes needed for building competencies, in which the three aspects are separated for teaching purposes but are in practice linked and acquired in association. By assimilating competencies to learning, there is a behavioural change as a result of the acquisition of these competencies, which are manifested as the ability to make the right decisions and to act with critical and flexible thinking in real scenarios. The teaching objectives are the basic guiding elements for all persons involved in the learning process, and very especially for the resident physician and the tutor.

The basic aim of the programme is to train specialists with:

- 7.1 Professional competencies, taken to mean a set of knowledge, skills and attitudes that provide a response to the needs of the critically ill patient.
- 7.2 Ability to identify and assess emergency situations in a structured manner, establishing diagnostic and therapeutic priorities as an essential part of working method.

- 7.3 Detailed and in-depth knowledge of pathophysiological concepts and the ability to apply them to different clinical situations.
- 7.4 Skills needed to perform diagnostic and therapeutic procedures on critically ill patients, carried out in the services of Intensive Care Medicine.
- 7.5 Ability to apply the most suitable procedure to a critical patient and assessment of the intensivist's responsibility in the allocation and use of resources.
- 7.6 Ability to meet ethical standards, with a particular emphasis on end-of-life care and the limitation of therapeutic effort.
- 7.7 Training in assessing the patient's view of his or her illness and respecting the values of patients and their families.
- 7.8 Knowledge of communication skills for interaction with patients and families. This responsibility related to provision of information and shared decision-making is of crucial importance in the field in which intensivists routinely work. The potential impact of this aspect of the activity can be very relevant, so residents should be specifically trained in the way of giving information. In the framework of reference in which the clinical practice is a scientific activity, clinical reasoning should focus on the problem and the patient.
- 7.9 Ability to assume the full responsibility of health care for critically ill patients.
- 7.10 Ability to form part of a team.
- 7.11 Readiness to work in uncertain environments or situations in an organised and systematic manner. This method of working is vital in the learning process of future specialists.
- 7.12 Ability to assess the outcomes of the treatments given to patients.
- 7.13 Ability to evaluate their own work.
- 7.14 Awareness of the importance of scientific evidence in decision-making and better use of health care resources.
- 7.15 Ability to use resources in a proportionate manner.
- 7.16 Knowledge of the organisation, the economic aspects of Intensive Care Medicine and the health care structure of the environment in which the specialists work.
- 7.17 Knowledge of research methodology, statistics and clinical epidemiology, to a sufficient level that will allow them to take on research projects autonomously and form part of a research team.
- 7.18 Knowledge for assessing health care activity and improving quality, particularly in the management of health care risk.
- 7.19 Knowledge of the cost-effectiveness of the different procedures.

8. Core training objectives

The Law on Regulation of Health Care Professions provides for the possibility of grouping health specialties according to core criteria. The purpose of this system is to offer basic, extensive, solid and multidisciplinary training for ensuring the quality of health care. Accordingly, during the first two years of common core training, a set of minimum skills must be acquired that are common to all of the specialties included in the same core. The distribution of the new Intensive Care Medicine programme is fully consistent with this approach and adapts the content and form to the planned restructuring of specialized medical training. In the current project, the specialty of Intensive Care Medicine is part of the medical core: the core training will consist of two years common training with the remaining medical specialties, followed by three years of specific training.

In this context, the core training objectives are as follows:

- 8.1. Consolidate, extend and improve the knowledge and skills for obtaining a medical history and a physical examination of quality to define the patient's clinical condition. Know how to interpret the data obtained. Draft clinical progress notes and reports.

- 8.2. Know the indications of the basic complementary studies (laboratory tests, radiological and electrocardiographic studies) appropriate to each case and those most frequent in routine clinical practice. Be able to interpret the results of these studies; know the risks and limitations of the data obtained from these studies.
- 8.3. Be able to form a presumptive clinical diagnostic judgement based on clinical opinion. Integrate data obtained from the medical history with data from complementary studies in order to consider the most appropriate diagnostic and therapeutic options.
- 8.4. Acquire skills and abilities to indicate, perform and interpret the most common techniques in routine clinical practice under supervision with progressively greater responsibility: insertion of gastrointestinal catheters and probes, performance of lumbar puncture, paracentesis, thoracentesis. Know the indications of main punctures (arterial, venous, serosas, some joints, intradermal, subcutaneous). Recognise and know how to treat potential complications.
- 8.5. Administer oxygen using all available devices.
- 8.6. Be able to give clear and concise information to patients and their families. Learn how to request informed consent.
- 8.7. Consider the side effects and interactions of drugs.
- 8.8. Know how to present clinical cases in Teaching Rounds of the service.
- 8.9. Undergo the necessary training to acquire the skills to assess and manage patients with more prevalent, severe or critical health problems, preferably in relation to the entities grouped into the following systems:
 - 8.9.1. Respiratory conditions: acute and chronic respiratory failure and their causes. Bronchial asthma, chronic obstructive pulmonary disease (COPD), interstitial lung diseases, pleural diseases, including pleural effusion, airway obstruction, sleep disorders, diffuse interstitial lung disease, pulmonary vascular disease, including pulmonary embolism.
 - 8.9.2. Cardiovascular conditions: cardiovascular diseases with a preferential interest in heart failure from any cause, coronary syndrome/chest pain, syncope, hypertension, valvular heart disease, endocarditis, cardiomyopathy, cor pulmonale and cardiovascular complications of systemic diseases. Severe arrhythmias. Management of patients with cardiac tamponade. Management of patients with acute aortic syndrome (aortic dissection, intramural hematoma, aortic ulcer).
 - 8.9.3. Nervous system conditions: initial assessment of coma patients, epilepsy, acute cerebrovascular disease, delirium and dementia, Parkinson's disease, gait disorders, neuropathies, myelopathies. Respiratory disturbances related to neuromuscular diseases.
 - 8.9.4. Gastrointestinal and hepatic conditions: gastrointestinal bleeding, inflammatory bowel disease, abdominal vascular disease, peritonitis, hepatobiliary and pancreatic diseases.
 - 8.9.5. Infectious conditions: febrile syndrome, sepsis, infectious endocarditis, infections of the skin and soft tissue, as well as bone, respiratory, abdominal, central nervous system (CNS) and urinary infections. Nosocomial infection. Rational use of antimicrobials.
 - 8.9.6. Haematological conditions and haematopoietic organs: identification and management of disorders of haemostasis and coagulation disorders, transfusion reactions and acute haematological conditions; anaemia, leukopenia, thrombocytopenia and pancytopenia. Anticoagulant treatment-related complications.
 - 8.9.7. Kidney and urinary tract conditions. Identification, assessment and treatment of acute renal failure. Pathogenic mechanisms leading to acute renal failure. Differential diagnosis of the different types of acute renal failure. Assessment

of oliguria. Hypertensive emergency. Complications of chronic renal failure. Identification and treatment of hydroelectrolytic and acid-base disturbances.

- 8.9.8. More prevalent trauma/injury problems, accidents and intoxications.
- 8.9.9. Endocrine and metabolic conditions.
- 8.9.10. Oncological conditions.
- 8.9.11. Musculoskeletal and autoimmune diseases.
- 8.9.12. Ophthalmological and ENT pathological conditions.

Over this period, trainees also acquire and consolidate a set of core skills, which are common to other specialties, including professional values and ethical aspects, clinical skills, basic computing, training in the handling of literature (including basic literature searching), drug management, communication, team work, palliative care and pain management, information management, research, clinical and quality management, radiation protection and use of the English language.

It is possible that these objectives will be modified once the core system has been fully developed.

9. Specific training objectives

The core training period is followed by a three-year period in which Intensive Care Medicine specific competencies will be acquired.

The CoBaTrICE project (International **Competency Based Training** programme in Intensive Care Medicine for Europe and other world regions) is an international collaborative project with the active participation of several European countries, including Spain, the purpose of which is to determine the minimum common standard for clinical competencies that identify a specialist in Intensive Care Medicine (It has been adopted by some European countries as a reference for the training of specialists in critically ill patient care). It includes 102 competencies grouped into 12 domains, in addition to a basic science section. Its development can be followed at:

<http://www.cobatrice.org/Data/ModuleGestionDeContenu/PagesGenerees/en/02-competencies/7.asp>

Appendix 1 provides an abbreviated list of these competencies applicable to the Spanish content.

CoBaTrICE is considered to contain the minimum competencies for performance of the professional activity of Intensive Care Medicine. However, they are not sufficient for the complete development of the specialist. Therefore, the professional competencies required by a doctor caring for critical patients in our country have also been defined (SEMICYUC competencies). Many of these competencies are included in CoBaTrICE but a substantial part is unique to the activity of the specialty in Spain, such as for example competencies in the area of ischaemic heart disease, the insertion and monitoring of permanent pacemakers and aspects related to the quality of care. Therefore, more time is needed to acquire these skills than that established in CoBaTrICE publications.

For more information, visit:

http://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S0210-56912007000900001&lng=es&nrm=iso

The two competency projects (CoBaTrICE and SEMICYUC) were used to develop the following specific objectives, which are here summarised:

1. To acquire the **knowledge** that would allow to:

- Recognise the mechanisms by which diseases can become life threatening.
- Perform a structured and orderly assessment of patients with physiological disturbances. Prioritize care and ensure the physiological safety of patients. Determine admission to the ICU at the right time. Know the criteria for referral and discharge.

- Diagnose and treat the medical, post-operative and traumatic conditions most often associated with critical situations, with particular reference to cardiovascular, respiratory, neurological, gastrointestinal, renal, haematological, oncological, endocrine and obstetrical conditions.
- Recognise, control and treat acute and chronic decompensated organ failure and multiorgan failure:
 - Recognise and manage patients with haemodynamic failure. Knowledge of all types of shock, including cardiogenic and non-cardiogenic.
 - Recognise and manage patients with acute respiratory failure/acute lung injury.
 - Know the effects of sepsis on organ systems and its treatment. Recognise and manage patients with sepsis.
 - Recognise the causes, types and severity of multiple organ dysfunction syndrome. Provide on time support to all organs with or at risk of dysfunction.
 - Recognise and manage patients with or at risk of acute renal failure.
 - Recognise and manage patients with or at risk of acute liver/gastrointestinal failure.
 - Recognise and manage patients with acute neurological disorder.
 - Recognise and manage patients with severely impaired coagulation.
 - Recognise life-threatening maternal complications during pregnancy and at the time of delivery.
- Know, assess and treat the causes of decompensation of chronic organ failure: heart failure, respiratory failure, renal failure, decompensated chronic liver disease, coagulation and haemostasis disorders.
- Understand, assess and treat acute changes of the 'milieu intérieur' (acid-base balance and electrolytes) and thermoregulation.
- Be aware of the epidemiology and prevention of infections in the ICU. Surveillance and control of infection in the ICU: nosocomial infections, infections in immunocompromised patients, use of antimicrobials, bacterial resistance and ICU antibiotic policy.
- Know, assess and treat acute coronary syndrome.
- Know the indications for cardiac pacing, permanent cardiac pacing and implantation techniques. Acquire the knowledge to monitor these devices.
- Be able to control and treat high-risk postoperative patients, including postoperative control of organ transplant recipients. Knowledge and control of possible complications.
- Know the specific care guidelines for serious trauma patients: cranioencephalic trauma, chest, abdominal, spinal cord or limb injury, crush syndrome, compartment syndrome. Injuries from physical and chemical agents.
- Guide the cardiopulmonary resuscitation of acute adult and paediatric critical patients: advanced cardiac and trauma life support. Treat patients in the post-resuscitation phase, with particular emphasis on post-anoxic brain damage.
- Treat nutritional disturbances in critically ill patients. Be able to recognise nutritional deficiencies and be aware of the types and routes of administration of artificial nutrition.
- Recognise brain death. Know the action to take with potential organ donors. Be familiar with the structure and operation of the *Organización Nacional de Trasplantes* (National Transplant Organisation).
- Know the protocols of action in transplant patients.
- Recognise and treat intoxication and deprivation syndromes. Provide care to burn patients.

- Know the pharmacology and pharmacokinetics of drugs most commonly used in the ICUs, paying special attention to the management and monitoring of sedation, analgesia and neuromuscular blockade. Indications and management of possible complications of fibrinolytic therapy. Treatment based on the pathological processes.
- Know the basic guidelines for action in disaster situations and the intra-and inter-hospital transfer of critically ill patients.
- Understand the pathophysiology and management of life-threatening situations in paediatric patients: respiratory and cardiac failure, severe infection, multiple trauma, seizures, metabolic disturbances and disturbances of the 'milieu intérieur'. Differences between resuscitation of children and adults.

2. Gain experience, know the risks, benefits, alternatives and know how to treat the possible complications of at least the following **abilities or practical skills:**

- Monitoring of physiological variables and acting according to changes in trends: electrocardiographic monitoring, invasive and non-invasive haemodynamic monitoring, respiratory monitoring (pulse oximetry and capnography) and neuromonitoring (intracranial pressure, continuous EEG monitoring, jugular venous oxygen saturation). Safe use of equipment and monitoring procedures. Techniques for taking and processing samples.
- Interpretation of basic and advanced radioimaging studies: computed tomography (CT), magnetic resonance imaging (MRI), ultrasound and angiography.
- Respiratory system:
 - Isolation and maintenance of airway permeability in intubated and non-intubated patients with devices such as nasal and orotracheal intubation, laryngeal mask and emergency cricothyrotomy. Ventilation with mask and resuscitation bag.
 - Aspiration of tracheobronchial secretions.
 - Management of difficult airways according to clinical practice guidelines.
 - Invasive and non-invasive advanced mechanical ventilation: initiation of mechanical ventilation, techniques and modalities, components and operation of ventilators and techniques for the withdrawal of mechanical ventilation.
 - Diagnostic thoracentesis and urgent and programmed placement of chest drainage tubes.
 - Percutaneous tracheostomy.
 - Patient care and control (under mechanical and spontaneous ventilation) while performing fiberoptic bronchoscopy and bronchoalveolar lavage procedures. Performance of fiberoptic bronchoscopy under supervision.
- Cardiovascular system:
 - Central and peripheral venous catheterisation.
 - Arterial catheterisation.
 - Perform and interpret ECG.
 - Treatment of arrhythmias.
 - Perform electrical defibrillation/cardioversion.
 - Pulmonary artery catheterisation, monitoring of pulmonary pressures and haemodynamic management through pulmonary artery catheter (Swan-Ganz).
 - Perform and interpret the measurement of cardiac output and derived haemodynamic parameters using non-invasive systems.
 - Use mechanical assist devices for haemodynamic support.

- Insertion of temporary and permanent transcutaneous and transvenous pacemakers.
- Urgent pericardiocentesis.
- Specific techniques for advanced cardiac and trauma life support.
- Echocardiography applied to the critically ill patient.
- Central nervous system:
 - Perform lumbar puncture.
 - Intracranial pressure monitoring.
 - Perform and interpret transcranial Doppler.
 - Carry out analgesia via an epidural catheter.
- Gastrointestinal system:
 - Insertion of nasogastric, jejunal and Sengstaken tube or equivalent catheters.
 - Perform paracentesis, both diagnostic and therapeutic.
 - Peritoneal puncture lavage.
 - Indication, care and control of patients during gastrointestinal endoscopic procedures.
 - Extracorporeal liver support.
- Kidney and urinary system:
 - Bladder catheter insertion.
 - Extrarenal depuration procedures.
- Techniques to prevent and treat pain, anxiety and delirium. Short-acting sedation.
- Nutritional assessment and coordination of nutritional support.
- Performance of immobilisation techniques and mobilisation of patients.
- Learning of relational skills.

3. Attitudes allowing physicians in training to:

- Assume and steer their own training process and the ability to seek it out in complex situations and errors.
- Recognise their own limitations: ability to seek and accept help or supervision.
- Accept commitments and encourage the commitment of others.
- Value the work of others.
- Show willingness to consult with other specialists and take their views into account; encourage their participation in decision-making where appropriate and encourage teamwork.
- Promote a positive climate for knowledge sharing.
- Carry out work with a view to achieving results.
- Focus their development on versatility.
- Build trusting relationships and provide compassionate care to patients and their families.
- Maintain a critical and reflective though responsive, respectful and unbiased attitude.
- Adopt a commitment to their personal and professional development enabling them to mature continuously as a true professional as well as a future medical specialist.

- Maintain effective communication with nursing staff; supervise and delegate to other professionals as appropriate and in accordance with the experience and level of responsibility.

10. Teaching methodology. Rotations and duties

The training is based on clinical practice, which follows a programme with levels of progressive acquisition of competencies in relation to "knows, is able to do, demonstrates and performs". This methodology involves dedication during full working hours, including continuous care (duties) with supervised health care activity, of the highest intensity during the first phase of training and gradually reduced over time in proportion to the competencies acquired. At the same time, responsibility is gradually acquired in more complex situations so, by the end of the residency, full health care responsibility has been acquired allowing professional practice. In this context, the learning is more useful if it is self-motivated and self-guided. The tutor is responsible for continuously and effectively planning, facilitating, supervising and evaluating the process. He or she must draw up a training pathway and personal training plan tailored to the characteristics of each centre and unit, in collaboration with the *Comisión de Docencia* (Education Commission).

The educational accreditation of the units will be based on the prerequisite that each unit, either independently or in collaboration with others, is capable of offering the comprehensive training process here proposed, taking into account the number and type of patients treated, human and material resources, structure, and scientific and research capacity.

Duties

Duties have a training purpose. During the first year, they will take place in the Emergency Department. During rotations, it is recommended that they are carried out in the corresponding Services and, from the second year onwards, five or six specialty duties should be carried out each month in the Service of Intensive Care Medicine.

Rotations

- Rotations are designed to ensure that basic professional competencies are learned. Once the core curriculum system has been established, it may be possible to make changes in line with this, in order to achieve the objectives determined according to this system.
- During the initial years, residents will rotate in the different hospital departments or areas or in other training centres, which are considered to be appropriate to achieve the teaching objectives set for this training period.
- In addition to providing care to patients, residents will participate in all teaching and research activities carried out in services during rotations.
- The minimum rotation time recommended for the different specialties is two months.
- Rotations are mandatory but if any fail to add value to the resident's training, the tutor, the head of Service and, ultimately, the *Comisión de Docencia* may suspend or replace it. Certain unspecified rotations could be considered if authorised by the *Comisión de Docencia*. Emergency Department rotation may be replaced by duties at this Emergency Department over the first year.
- A one-month rotation in the Service of Intensive Care Medicine is recommended during the first year of residency in order to learn how the ICU operates before starting the duties of the specialty.
- In the absence of a coronary unit, multiple trauma unit or postoperative cardiac surgery unit at the hospital where the training is given, the resident will be required to rotate at another centre that provides these Services. The rotation in the Coronary Unit may also be carried out in the fourth year of residency. Rotation in a mobile ICU is recommended; an optional rotation in a Paediatric ICU may be considered.
- It is advisable to consider and facilitate an external national or international rotation in order to complete the resident's training.

- It is recommended to take holidays between two rotations; vacations should be adapted to ensure compatibility with the training programme and the organisation of the service in which the resident is rotating.

Therefore, training pathways should be adapted to each teaching unit, subject to approval from the *Comisión Local de Docencia* (Local Education Commission) and keeping within the set minimums.

The following distribution of rotations is recommended:

✓ First year of residency

Minimum rotation periods for the following Services are established:

Internal Medicine	6 months
Anaesthesia	2 months
Diagnostic Radiology	2 months
Intensive Care Medicine	1 month
Emergency Department (*)	
Holidays	1 month

(*)The performance of five or six duties a month in the Emergency Department during the first year is considered equivalent to rotating in this service.

✓ Second year of residency

The recommendations for rotation are:

Cardiology	4 months
Pneumology	2 months
Neurology	2 months
General Surgery	2 months
Nephrology	2 months
Holidays(**)	1 month

(**)The holiday period is subtracted from the rotation periods, preferably two different ones.

✓ Third, fourth and fifth years of residency

This is the period established for specific training; the time available will be for the Service of Intensive Care Medicine or ICU, with the prevailing criterion that if the characteristics of the unit or hospital are such that the training objectives cannot be met, the resident should rotate in other units and hospitals in order to complete the specific training requirements.

Over this period, the minimum rotation periods are as follows:

Coronary Unit	4 months
Politrauma/neurocritical care unit	4 months
Postoperative cardiac surgery unit	2 months

These periods will be distributed according to the individual training pathway, as appropriate in each case to achieve the set teaching objectives.

For the acquisition of competencies common to other specialties, it is recommended to take courses that include knowledge related to:

- Research methodology
- Bioethics
- Clinical management, quality and patient safety
- Communication skills. Breaking bad news
- Use of scientific literature and information resources

It is also recommended to complete the specific training with courses designed to improve knowledge of:

- Advanced mechanical ventilation
- Ultrasound studies in critically ill patients
- Infectious disease in critically ill patients
- Extracorporeal depuration procedures
- Identification and maintenance of potential organ donors
- Nutritional support of critically ill patients
- Cardiac electrostimulation and arrhythmias

It is preferable for residents to carry out a course of instructor of advanced cardiopulmonary resuscitation and fundamental critical care support.

11. Levels of responsibility

During the initial training period, performance of residents is usually characterised by strict adherence to the knowledge acquired and a partial view of the aspects that conform situations and difficulties to develop a prudent judgement. As the learning progresses and is gradually consolidated, the resident acquires the ability to deal with complex situations in a structured manner, taking into account all relevant aspects and different courses of action, and adapting practice guidelines to particular and real situations.

Achievement of the objectives must adapt to these behaviours under the responsibility of the tutor and with the collaboration of all members of the service. The activities and level of supervision must therefore be in consonance with the progressive process of individual maturity, with the highest level of autonomy being reached at the end of training:

- Level 1:** Activities carried out directly by the resident physician, without the need of direct tutoring supervision.
- Level 2:** Activities carried out directly by the resident physician under direct supervision of the tutor.
- Level 3:** Activities performed by staff of the Unit in which the resident physician assists as an observer or participates as an assistant.

12. Evaluation

The tutorship system makes possible a personal, structured and agreed method of tracking progress in the skills-building process. Summative assessment should be considered to evaluate aptitude in relation to a minimum established standard and training assessment, the objective of which is to follow and assist in the learning process. It includes annual assessments and a final assessment as established in the current legal regulations. Tutors must receive specific training for this activity.

It is preferable to use different evaluation methods since no one alone is able to assessing the whole range of competencies. It would also be desirable to incorporate new training assessment tools, such as standardised simulations and objective structured clinical examination (OSCE),

which offers a systematic and organised method for evaluating the acquisition of previously defined skills.

The resident's book sets down, in organised fashion, the evidence showing acquisition of competencies as well as other aspects of clinical practice which allow achievement of the pre-established objectives. It is a tool and an element for reflection and self-assistance that can be used as a guide and support in training; the incorporation of new technologies, such as the teaching portfolio format, is highly desirable to encourage the use of elements with a dual purpose: teaching and evaluation.

The *Comisión Nacional de Medicina Intensiva* (National Commission of Intensive Care Medicine) considers it appropriate to perform a final assessment test at the end of the training period, in accordance with the regulations set down in this regard by the Spanish Ministry of Health and following its procedures.

Additional competencies to CoBaTriCE specific for the Spanish context

COMPETENCY	DESCRIPTION
C - 1	Specific, process-based pathophysiology.
C - 2	Knowledge of urgent and emergency pathological conditions.
C - 3	Diagnosis, control and treatment of acute coronary syndrome.
C - 4	Fibrinolytic therapy in pulmonary thromboembolism (PTE), acute cerebrovascular event, acute myocardial infarction (AMI) and cardiopulmonary resuscitation (CPR)
C - 5	Evidence-based clinical management
C - 6	Quality management methodology.
C - 7	Objective-based management.
C - 8	Knowledge of the different measurements of the health care product.
C - 9	Health assessment.
C - 10	Health promotion (health education, health advice).
C - 11	Flow of communication between levels.
C - 12	Ability to carry out the reception, attendance and classification of patients in the Emergency dept.
C - 13	Insertion and control of permanent pacemakers.
C - 14	Appropriate use of available resources.
C - 15	Ability to evaluate professionals, objectives and tasks
C - 16	Audiovisual presentation techniques.
C - 17	Computer skills, user level.
C - 18	Ability to put forward options for improvement and innovation to the corporate centre.
C - 19	Telemedicine use.
C - 20	Ability to bring innovation and creativity.
C - 21	Coping with crisis situations and conflict prevention.
C - 22	Providing support.
C - 23	Coping with stress.
C - 24	Capacity for analysis and synthesis.
C - 25	Ability to resolve issues.
C - 26	Ability to undertake commitments and take on responsibilities.

C - 27	Orientation towards internal and external clients.
C - 28	Humanisation of scientific and technical capacities.
C - 29	Add value to their work.
C - 30	Results orientation.
C - 31	Integrated, biopsychosocial approach to the individual.
C - 32	Humanism and social sensitivity.
C - 33	Versatility.