

# Hybrid Professional Master's Degree Emergency Toxicology



## Hybrid Professional Master's Degree Emergency Toxicology

Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Global University

60 + 5 créditos ECTS

Website: [www.techtute.com/in/medicina/hybrid-professional-master-degree/hybrid-professional-master-degree-emergency-toxicology](http://www.techtute.com/in/medicina/hybrid-professional-master-degree/hybrid-professional-master-degree-emergency-toxicology)

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# 01

# Introduction

Poisonings cause thousands of deaths every year and therefore, in the hospital environment, the intervention with these patients must be accelerated and precise. In recent years, therapeutic protocols for these conditions have been greatly updated. However, physicians are unable to keep up to date with the latest innovations. For this reason, TECH has devised an exhaustive program where, through two differentiated stages, the specialist will be able to delve into the novelties of this health discipline. First, they will learn in a theoretical and 100% online way the modern management strategies for Emergency Toxicology. Then, they will have to complete a face-to-face and intensive stay in a prestigious hospital center, where they will deal with real patients in the emergency department.



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*Get up to date on the latest trends in the management of severely poisoned patients through this very complete Hybrid Professional Master's Degree"*

Scientific research has recently focused on the search for faster and more accurate therapeutic strategies against poisonings caused by chemical substances, cleaning products or animal bites and scratches. As a result of these innovations, the methodologies used in emergency units to treat patients with these conditions have been considerably enriched. In particular, specific strategies have emerged for the abusive use of non-prescribed drugs and medications. Also, for indiscriminate contact with solvents, heavy metals and pesticides. At the same time, specialists are not properly up-to-date on all these developments. The latter hinders their work and prevents them from offering patients the best possible therapeutic care.

To counteract this reality, TECH has opted for an academic approach, pioneering in its type, with two distinct stages. In the first phase, the physician will be introduced to the advances in Emergency Toxicology in a theoretical way. For this phase, this Hybrid Professional Master's Degree has a 100% online and interactive platform where the contents will be accessible from the first day of classes and with the help of any device connected to the Internet. At the same time, to reinforce the assimilation of knowledge, the program is supported by modern teaching methods such as Relearning and multimedia resources such as infographics, videos and interactive summaries.

After this learning period, the specialist will be able to participate in an exhaustive and intensive clinical practice. Through it, you will have access to a prestigious hospital center that fits your geographical location and you will be able to apply the knowledge acquired during the previous educational moment directly on real patients. The stay, face-to-face and immersive, will last for 3 weeks, in 8-hour consecutive days, from Monday to Friday. During this time, you will work alongside experts with extensive experience, discussing the most recent management of the specialty with them. In addition, an assistant tutor will closely monitor your progress and incorporate new dynamic tasks into the professional preparation process.

This **Hybrid Professional Master's Degree in Emergency Toxicology** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ♦ Development of more than 100 clinical cases presented by medical professionals experts in Emergency Toxicology
- ♦ Its graphic, schematic and eminently practical contents, which are conceived to provide scientific and assistance information on those medical disciplines that are essential for professional practice
- ♦ Comprehensive systematized action plans for the main toxicological pathologies in the emergency department
- ♦ Presentation of practical workshops on procedures diagnosis, and treatment techniques
- ♦ An algorithm-based interactive learning system for decision-making in the clinical situations presented throughout the course
- ♦ Practical clinical guides on approaching different pathologies
- ♦ All of this will be complemented by theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ♦ Content that is accessible from any fixed or portable device with an Internet connection
- ♦ Furthermore, you will be able to carry out a clinical internship in one of the best hospital centers



*This program is of vital importance for you to be up to date on how to correctly assess the state of poisoning of a pregnant woman"*

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*The face-to-face and intensive practice of this degree will open the doors of a prestigious center, with the optimal tools to approach Emergency Toxicology with the utmost excellence”*

In this proposal for a Master's Degree, of a professionalizing nature and blended learning modality, the program is aimed at updating professional experts in Cancer who develop their functions in specialized Units, and who require a high level of qualification. The contents are based on the latest scientific evidence, and oriented in a didactic way to integrate theoretical knowledge into medical practice, and the theoretical-practical elements will facilitate the updating of knowledge and allow decision making in patient management.

Thanks to its multimedia content put together with the latest educational technology, they will allow the medical professional to obtain situated and contextual learning, that is to say, a simulated environment that will provide immersive learning programmed to train in real situations. This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise throughout the program. For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

*Under the guidance and supervision of an assistant tutor, you will add to your professional practice the latest therapeutic trends for the management of patients with severe heavy metal poisoning.*

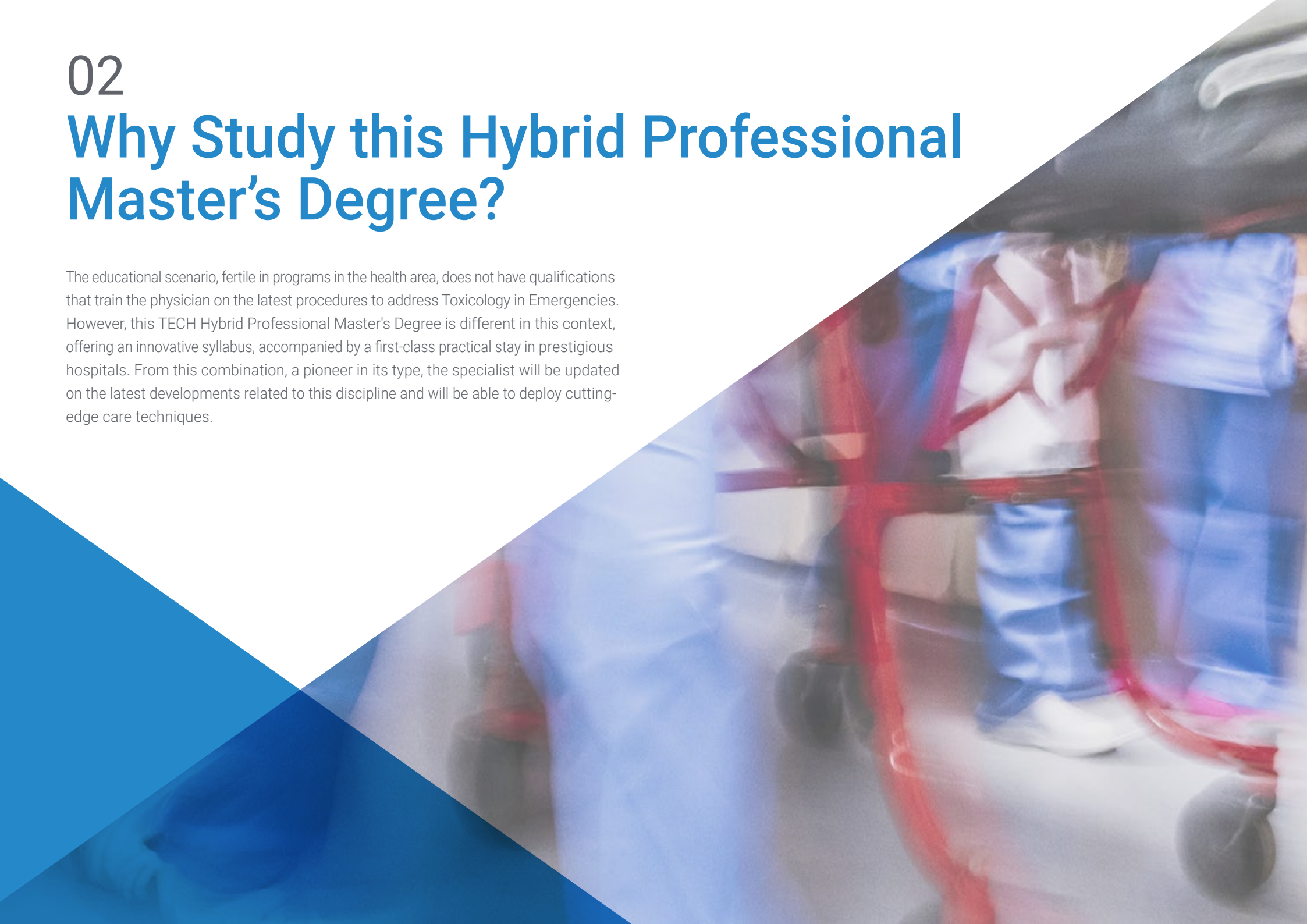
*Enroll in this Hybrid Professional Master's Degree and you will learn in situ how to define the toxicological mechanisms in the male and female genitourinary system.*



02

# Why Study this Hybrid Professional Master's Degree?

The educational scenario, fertile in programs in the health area, does not have qualifications that train the physician on the latest procedures to address Toxicology in Emergencies. However, this TECH Hybrid Professional Master's Degree is different in this context, offering an innovative syllabus, accompanied by a first-class practical stay in prestigious hospitals. From this combination, a pioneer in its type, the specialist will be updated on the latest developments related to this discipline and will be able to deploy cutting-edge care techniques.





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*TECH will provide you with the most accurate methodologies to approach patients suffering from the toxicokinetics of industrial solvents such as Acetones"*

### **1. Update from the latest technology available**

TECH's Hybrid Professional Master's Degree offers a unique opportunity to learn about the latest technologies and protocols for the evaluation of patients with severe poisoning. In turn, the degree provides a holistic understanding of how these innovations are applied in everyday professional practice, through a dynamic and demanding classroom stay.

### **2. Gain in-depth knowledge from the experience of top specialists**

During this program, physicians will be accompanied by a team of experts with extensive professional experience. With their help, graduates will develop complex theoretical knowledge and discuss real cases. In addition, during the on-site internship, they will have a designated tutor to complement their skills and provide them with personalized guidance.

### **3. Enter first-class clinical environments**

TECH carefully selects all the centers available for the professional internship that is integrated to this Hybrid Professional Master's Degree. In this way, physicians will be able to access the most competitive and demanding work environments in the healthcare market. In these spaces, they will find the best experts and the most up-to-date technologies.





#### **4. Combine the best theory with state-of-the-art practice**

In an educational market with programs with an excessive academic load, TECH stands out for its innovative offer. Thus, doctors will be able to access a theoretical pedagogical preparation of excellence that is complemented by an intensive and exhaustive 3-week face-to-face practice.

#### **5. Expand the boundaries of knowledge**

The professional internships of this Hybrid Professional Master's Degree will allow specialists to access renowned hospitals located in different latitudes. In this way, each of them will be able to expand their horizons based on international standards. This opportunity is unique in its kind and is possible thanks to TECH's network of contacts and collaborators.

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*You will have full practical immersion at the center of your choice”*

# 03 Objectives

This Hybrid Professional Master's Degree aims to provide health professionals with a holistic update on Toxicology in Emergencies. To this end, it offers the most modern practical and theoretical considerations of this sector in an innovative study modality. In this way, the physician will delve into an innovative learning program, from a 100% online and interactive learning platform, throughout 1,500 educational hours. Afterwards, they will be able to put all this knowledge into practice, in a direct way, by providing specialized care to real patients in a 3-week intensive face-to-face stay.





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*Update your skills in the diagnostic care and treatment of the poisoned patient, according to the latest scientific evidence collected by TECH in this degree”*



## General Objective

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- Thanks to this Hybrid Professional Master's Degree, the physician will achieve high caliber academic objectives such as defining the basic and general principles of care for the severely intoxicated patient and recognizing the most commonly available topical substances in the environment. Likewise, they will be able to identify the symptoms and signs related to the acute, severe or organic condition, according to the most recent medical criteria. Also, they will expand their competences on how to protect these patients through updated therapeutic procedures and which strategies are suitable to prevent further complications



*Enroll now and advance in your field of work with a comprehensive program that will allow you to put into practice everything you have learned"*





## Specific Objectives

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### Module 1. Introduction

- ◆ Perform assessment of the acutely intoxicated patient
- ◆ Explain the process of applying life support in the acutely poisoned patient
- ◆ Apply preventive techniques for gastrointestinal absorption
- ◆ Diagnose the alterations of water and electrolyte balance in the acutely intoxicated patient
- ◆ Describe toxicokinetics and its implication for emergency treatment

### Module 2. Assessment of the Poisoned Patient

- ◆ Implement decontamination procedures in acute dermatological intoxications
- ◆ Define the toxicological mechanisms in the male and female genitourinary tract
- ◆ Identify the effects of xenobiotics
- ◆ Describe the ECG alterations that can be seen in intoxications that produce cardiac involvement
- ◆ Recognize the possible arrhythmias to be detected in acute intoxications
- ◆ Manage the hematological involvement that occurs in acute intoxications

### Module 3. Therapeutic Management of the Poisoned Patient: Life Support

- ♦ Undertake examination procedures for patients with smoke inhalation intoxication
- ♦ Determine the therapeutic approach to be carried out in the patient intoxicated by inhalation of fumes or other respiratory agents
- ♦ Establish the differential diagnosis between the different toxic renal syndromes
- ♦ Identify the clinical pictures that can occur in intoxication with neurological involvement
- ♦ Describe the systemic repercussion of eye poisoning
- ♦ Know those toxics that cause hepatic affectation and its repercussion at the organic level
- ♦ Assess violent and autolytic behaviors in relation to psychiatric toxicology

### Module 4. Therapeutic Management of the Poisoned Patient: Specific Treatment

- ♦ Determine the organic repercussion of toxicology in athletes and the different products used
- ♦ Evaluate poisoning related to possible pharmacologic errors in the pediatric patient
- ♦ Apply specific protocols to be followed in case of overdose in pregnant women
- ♦ Identify the principles of teratogenesis and all those products that can produce it
- ♦ Master the products that can pose a risk of intoxication both in the mother and in the newborn during lactation
- ♦ Examine the epidemiology, etiology and repercussions of acute intoxications in the pediatric and neonatal age
- ♦ Diagnose the characteristics of intentional and unintentional poisoning in the elderly

### Module 5. Therapeutic Management of the Poisoned Patient: Additional Aspects

- ♦ Evaluate the toxicokinetics of paracetamol, antihistamines and decongestants and protocols for their management
- ♦ Recognize the toxicokinetics of antifungal and anti-inflammatory drugs and therapeutic strategies against them
- ♦ Examine the toxicokinetics of opiates, bisphosphonates and antineoplastics and their treatment in case of acute intoxication
- ♦ Determine the toxicokinetics of antiepileptics, antidiabetics and hypoglycemics and hypoglycemic agents and their appropriate clinical approach

### Module 6. Toxicology of Drugs of Abuse

- ♦ Identify the toxicokinetics of selective  $\beta_2$ -adrenergic agonists, cardioactive steroids, antiarrhythmics, antithrombotics, anticoagulants, thrombolytics and antifibrinolytics and their treatment in case of acute intoxication
- ♦ Explain the toxicokinetics of antibiotics, antifungals and antivirals, antimalarials, antiparasitics and their correct clinical management

### Module 7. Toxicology and Pharmacology

- ♦ Manage the toxicokinetics of SSRI and other atypical antidepressants, sedative hypnotics and barbiturates, benzodiazepines and muscle relaxants and therapeutic approach
- ♦ Know the toxicokinetics of local and general anesthetics, antipsychotics, lithium
- ♦ Master phytotherapeutic and vitamin poisoning



**Module 8. Industrial Poisoning from Fumes**

- ♦ Evaluate the toxicokinetics of phencyclidine, ketamine, amphetamines and designer drugs, inhalants, ethanol, cannabinoids, and marijuana, cocaine, hallucinogens and their treatment in case of acute intoxication
- ♦ Differentiate the toxicokinetics of substances for chemical submissiveness and the most recent protocols for their correct management

**Module 9. Industrial Poisoning by Solvents**

- ♦ Recognize the toxicokinetics of petroleum derivatives, fluorine, hydrofluoric acid, methanol, ethylene glycol and other toxic alcohols and their treatment in case of acute poisoning
- ♦ Interpret the toxicokinetics of asphyxiants and pulmonary irritants, antiseptics, disinfectants and sterilants, as well as the most effective protocols of action against them

**Module 10. Industrial Poisoning by Heavy Metal**

- ♦ Manage the toxicokinetics of arsenic, lead, iron, taking into account their individualized care
- ♦ Recognize the toxicokinetics of mercury and cyanides, as well as the strategies to prevent the patient's death and an adequate follow-up of their evolution

**Module 11. Pesticide or Phytosanitary Product Poisoning in Rural Areas**

- ♦ Identify the toxicokinetics of herbicides, organochlorines, organophosphates, organophosphates and carbamates, pyrethroids and insect repellents
- ♦ Introduce specific treatments against these products in case of acute poisoning

**Module 12. Household Poisoning from Cleaning Products, Personal Hygiene Products and Caustic Poisons**

- ♦ Evaluate specific intoxications produced by substances such as soaps, shampoos, hair dyes, hairsprays and other hair products
- ♦ Manage the general therapeutic measures against poisoning by household products
- ♦ Master the physiopathology of caustic poisoning and the protocols to intervene in patients suffering from it

**Module 13. Poisoning from Natural Agents: Plants, Mushrooms and Animals**

- ♦ Describe the possible serious poisoning produced by marine animals, arthropods, arachnids, tarantulas, scorpions, ants, hymenoptera, butterflies, termites, beetles, reptiles and their clinical approach
- ♦ Classify toxic mushrooms and their possible antidotes
- ♦ Recognize plants with toxic potential and their possible antidotes

# 04 Competencies

After completing this Hybrid Master's Degree, the physician will be equipped with the most up-to-date theoretical and practical skills for dealing with poisoning in emergency units. From them, they will be able to provide personalized treatment to all their patients, providing individualized solutions according to the physical condition of each person and the substance that affects them.



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*Throughout this program, you will delve into the main guidelines for therapeutic action in patients with poisoning due to the improper use of cleaning products”*

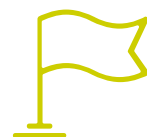


## General Skills

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- Understand knowledge that provides a basis or opportunity to be original in the development and/or application of ideas, often in a research context
- Apply acquired knowledge and problem-solving skills in new or unfamiliar environments within broader (or multidisciplinary) contexts related to the field of study
- Integrate knowledge and face the complexity of making judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities based on information that, while incomplete or limited, includes reflections on the social and ethical responsibilities linked to the application of their knowledge and judgments
- Communicate their conclusions to specialized and non-specialized audiences in a clear and unambiguous manner
- Acquire the learning skills that will enable further studying in a largely self-directed or autonomous manner





## Specific Skills

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- ♦ Identify the clinical pictures that can occur in acute intoxication in order to anticipate serious organ involvement and prevent its complications
- ♦ Describe the toxicokinetics of the most commonly used drugs and other frequently used chemicals in order to establish an appropriate early treatment in each case
- ♦ Master the most commonly used antidotes and their mechanism of action in order to apply them safely in acute poisonings



*At the end of this Hybrid Master's Degree, you will be aware of all the innovations related to the management of newborns and infants intoxicated by contraindicated drugs in the earliest stages of life"*

# 05

# Course Management

The teachers of this Hybrid Master's Degree have been carefully selected by TECH, taking into account their extensive medical background and experience in relation to the management of poisoning in emergency units. These teachers have composed a syllabus of excellence where the most updated contents on the diagnostic and therapeutic steps to follow in these kinds of conditions are collected. Moreover, these experts have developed multimedia resources, such as infographics, videos and interactive summaries that will enable the physician to assimilate the teaching materials more quickly and efficiently.





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*The professors of this degree have vast experience in the management of renal disorders resulting from severe chemical intoxication”*

## Management



### Dr. Álvarez Rodríguez, Cesáreo

- ♦ Emergency Physician Head of the Emergency Unit of Verín Hospital
- ♦ President of the Research and Teaching, Ethics and Medical Records Committee. Verín Hospital
- ♦ Coordinator of the Toxicology Working Group of SEMES Galicia
- ♦ Scientific Secretary of the Galician Society of Emergency Medicine (SEMES Galicia)
- ♦ Vice-Secretary for Training of the Spanish Society of Emergency Medicine (SEMES)
- ♦ Director of Doctoral Thesis in the area of Clinical Toxicology (Extraordinary Award)
- ♦ Resident Intern. Virgen de la Concha General Hospital of Zamora
- ♦ Specialist Physician in Emergencies Virgen de la Concha General Hospital of Zamora
- ♦ Resident Intern. Professional School of Sports Medicine of the University of Oviedo
- ♦ Primary Care Doctor. SERGAS
- ♦ PhD in Medicine and Surgery from the Autonomous University of Madrid
- ♦ Degree in Medicine and Surgery from the University of Santiago de Compostela
- ♦ Physical Education and Sports Medicine. Professional School of Sports Medicine of the University of Oviedo
- ♦ Research Sufficiency by the University of Salamanca
- ♦ Specialist in Family and Community Medicine
- ♦ University Expert in Health Promotion
- ♦ Advanced Life Support Instructor (American Heart Association Accredited)
- ♦ Member of the Editorial Board of the journal "Emergencias"



## Professors

### Dr. Bajo Bajo, Angel Ascensiano

- ♦ Hospital Emergency Physician at the University Health Care Complex of Salamanca
- ♦ Associate Professor of Emergency Medicine at the University of Salamanca
- ♦ PhD in Medicine from the University of Salamanca
- ♦ Degree in Medicine and Surgery from the University of Salamanca
- ♦ Certified in Emergency Medicine by the Spanish Society of Emergency Medicine (SEMES)
- ♦ Member of: Clinical Toxicology Section of the Spanish Association of Toxicology (AETOX)
- ♦ Member of: Clinical Toxicology Working Group of the Spanish Society of Emergency Medicine (SEMETOX)
- ♦ Member of European Association of Poison Control Centres and Clinical Toxicology (EAPCCT) Toxicology
- ♦ Founding Member of the Spanish Foundation of Toxicology (FETOC)

### Dr. Giralde Martínez, Patricia

- ♦ Prehospital Emergency Physician in the Galician 061 Health Emergency Service
- ♦ Hospital Emergency Physician at the Hospital in Vigo
- ♦ Postgraduate University Professor in the course "University Expert in Urgencies and Emergencies" of the School of Health Sciences of the Complutense University of Madrid
- ♦ General Vice-Secretary of the Galician Society of Emergency Medicine and Emergencies (SEMES Galicia)
- ♦ Member of Scientific Committee of the XXI Conference on Glycinic Toxicology and XI Conference on Toxicovigilance
- ♦ Degree in Medicine and Surgery from the University of Santiago de Compostela
- ♦ Specialist in Family and Community Medicine
- ♦ Master's Degree in Urgencies, Emergencies and Catastrophes by CEU San Pablo University

### Dr. BurilloPutze, Guillermo

- ♦ Specialist in Family and Community Medicine
- ♦ Researcher of the Department of Physical and Pharmacological Medicine of the University of La Laguna
- ♦ Former Coordinator of the Emergency Department of the University Hospital Complex of the Canary Islands
- ♦ Doctor in Medicine and Surgery from the University of La Laguna
- ♦ University Expert in Toxicology by the University of Sevilla
- ♦ Advanced Life Support Instructor Course of the School of Clinical Toxicology of Washington, USA
- ♦ Member of: European Register of Toxicologists, Spanish Association of Toxicology

### Dr. Miguéns Blanco, Iria

- ♦ Doctor at the Emergency Department of the Gregorio Marañón General University Hospital
- ♦ Specialist prehospital Emergency Medicine in the Emergency Service of the Community of Madrid-SUMMA
- ♦ Specialist in Family and Community Medicine
- ♦ Degree in Medicine and Surgery from University of Santiago de Compostela
- ♦ Master's Degree in Emergency Medicine from the Complutense University of Madrid
- ♦ Master's Degree in Teaching and Digital Competencies in Health Sciences by University CEU Cardenal Herrera
- ♦ Master's Degree in Healthcare Law and Bioethics from University of Castilla-La Mancha.
- ♦ SEMES national board member and director of MUEjeres SEMES.

**Dr. Mayan Conesa, Plácido**

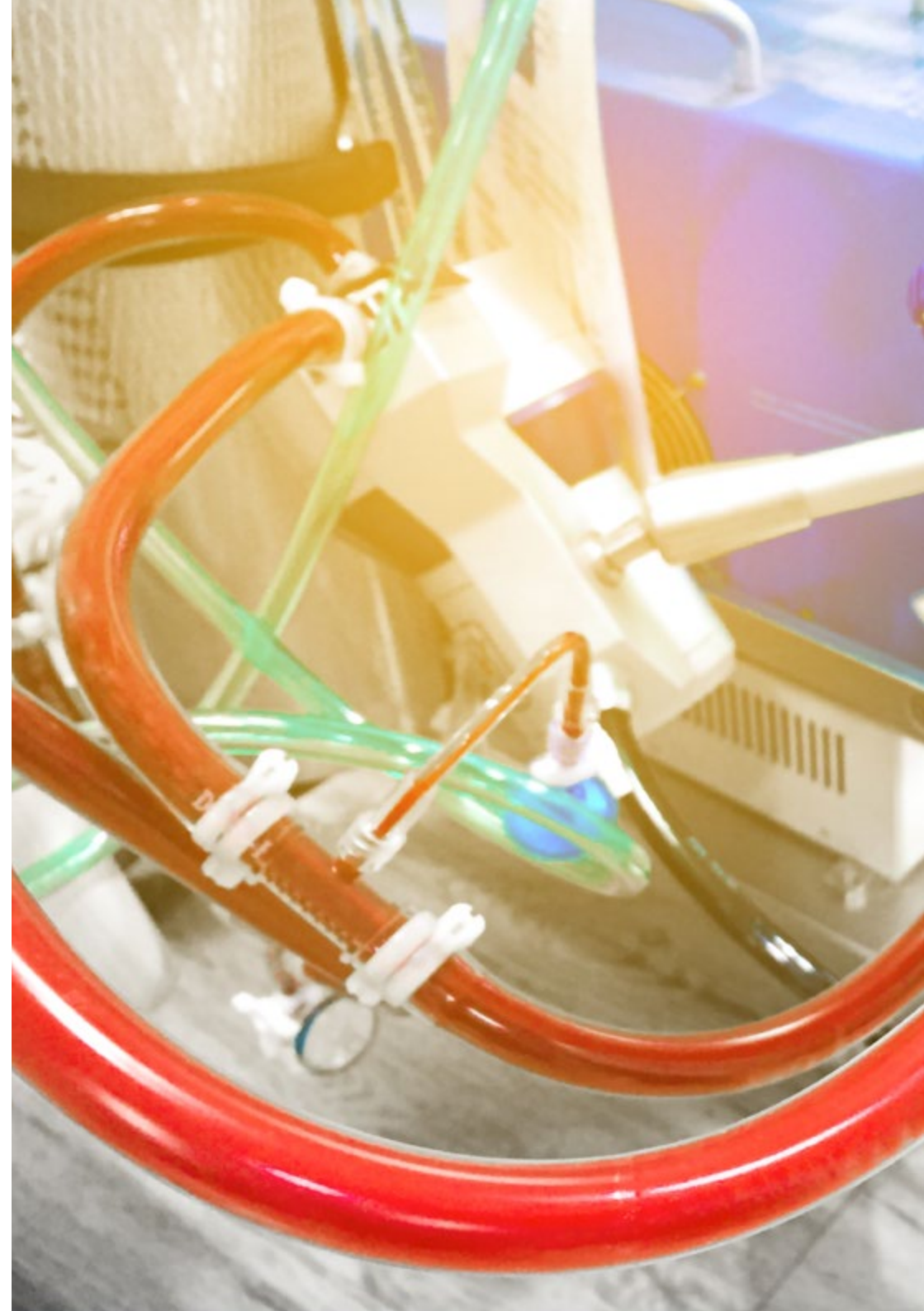
- ♦ Emergency Coordinator at the University Clinical Hospital of Santiago de Chile
- ♦ Emergency Physician at the University Hospital Complex of La Coruña
- ♦ Reviewer of the journal Emergencias
- ♦ Advanced Life Support Teacher
- ♦ Graduate in Medicine and Surgery from the Universidad de Navarra
- ♦ Specialist in Family and Community Medicine
- ♦ Diploma of Advanced Studies from the University in La Coruña
- ♦ Member of SEMES (board of directors)

**Dr. Carnero Fernandez, César Antonio**

- ♦ Deputy Inspector of National Police
- ♦ Specialist in narcotic intoxication in the TEDAX-NRBQ Unit

**Dr. Maza Vera, María Teresa**

- ♦ Undersecretary of Accreditation and Quality of SEMES
- ♦ Specialist in Hospital Emergency Medicine at the Álvaro Cunqueiro Hospital in Vigo
- ♦ Member of the Toxicology Working Group of SEMES Galicia
- ♦ Coordinator of the Scientific Committee XXIV Autonomous Congress SEMES Galicia
- ♦ Specialist in Family and Community Medicine
- ♦ Diploma of Advanced Studies in Health Sciences from the University of Vigo





**Mr. Rodríguez Domínguez, José María**

- ♦ National Police Officer In Spain
- ♦ TEDAX-NRBQ Specialist in the TEDAX-NRBQ Unit of the National Police
- ♦ TEDAX-NRBQ teacher for national and international organizations
- ♦ Degree in Biology from the University of Santiago de Compostela

**Dr. Suárez Gago, María del Mar**

- ♦ Assistant Physician of the Emergency Department of the Verín Hospital
- ♦ Member of the Toxicology Working Group of SEMES Galicia
- ♦ Specialist in Internal Medicine
- ♦ VMER (Medical Emergency and Resuscitation Vehicle) accreditation of the Training Center of the National Institute of Medical Emergencies of Oporto (INEM)
- ♦ Degree in Medicine and Surgery University of the Basque Country

# 06

## Educational Plan

The syllabus of this degree includes the most updated contents for the management of poisoning in emergency units. Through the study of its academic modules, the specialist will be updated on the neurological, renal and gastrointestinal disorders that may result from the inadequate absorption of chemical substances or pharmacological products. Also, it addresses the most accurate therapeutic action protocols, according to the health status of each person and paying special attention to specific groups such as pregnant women, children and the elderly. At the same time, in order to achieve an update of maximum rigor, the degree is supported by methods of great didactic value such as Relearning.



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*100% online and interactive: this is the TECH platform where you will find the contents of this blended Master"*

## Module 1. Introduction

- 1.1. Introduction
- 1.2. Basic Concepts of Toxicology
  - 1.2.1. Concepts of Toxicology, Intoxication, Toxicants and Toxicity
  - 1.2.2. Clinical Toxicology
    - 1.2.2.1. Types of Toxicity
    - 1.2.2.2. Types of Intoxication
    - 1.2.2.3. Dose-Response
    - 1.2.2.4. Causes of Intoxication
    - 1.2.2.5. Toxicity Mechanisms
      - 1.2.2.5.1. Toxicokinetics
      - 1.2.2.5.2. Toxicodynamics
- 1.3. Toxicology in its Historical Context
  - 1.3.1. The Use of Poisons in the Bronze Age
  - 1.3.2. Poisoning in Ancient Times
  - 1.3.3. The Middle Ages
  - 1.3.4. The Modern Age
  - 1.3.5. Contemporary Era
- 1.4. Chemistry as a Weapon: The History of Criminal Toxicology
- 1.5. Radiation as a Crime

## Module 2. Assessment of the Poisoned Patient

- 2.1. Introduction to the Module
  - 2.1.1. Medical History
    - 2.1.1.1. Medical History
    - 2.1.1.2. Physical Examination
    - 2.1.1.3. Complementary Evaluations
  - 2.1.2. Toxic Syndromes
    - 2.1.2.1. Sympathomimetics
    - 2.1.2.2. Cholinergic Drugs
    - 2.1.2.3. Anticholinergics
    - 2.1.2.4. Serotonergic Drugs
    - 2.1.2.5. Opioids
    - 2.1.2.6. Sedative-Hypnotic Drugs
    - 2.1.2.7. Hallucinatory Drugs

- 2.1.3. Metabolic Acidosis in Toxicology
- 2.1.4. Diagnosis of Suspected Poisoning and Diagnostic Hypotheses
- 2.1.5. Conclusions and Key Points
- 2.2. Initial Assessment of Patients Suffering from Intoxication
  - 2.2.1. Preliminary
    - 2.2.1.1. Introduction
    - 2.2.1.2. Index
    - 2.2.1.3. Objectives
  - 2.2.2. Hepatic Toxicology
  - 2.2.3. Renal Toxicology
  - 2.2.4. Hematological Toxicity
  - 2.2.5. Neurological and Psychiatric Toxicology
  - 2.2.6. Conclusions and Key Points
  - 2.2.7. Cardiovascular and Respiratory Toxicology
- 2.3. Toxic Organ Involvement
  - 2.3.1. Preliminary
    - 2.3.1.1. Introduction
    - 2.3.1.2. Index
    - 2.3.1.3. Objectives
  - 2.3.2. Reproductive and Perinatal Toxicology
  - 2.3.3. Neonatal and Pediatric Toxicology
  - 2.3.4. Geriatric Toxicology
- 2.4. Group Toxicology

## Module 3. Therapeutic Management of Poisoned Patients: Life Support

- 3.1. A Complete Overview of Poisoning Treatment
- 3.2. Life Support for Poisoned Patients: Cardiopulmonary Arrest
  - 3.2.1. The Fundamental Pillars of Life Support in Cardiopulmonary Arrest
  - 3.2.2. Respiratory Arrest and Ventilatory Support
  - 3.2.3. Cardiorespiratory Arrest in Poisoned Patients
  - 3.2.4. Conclusions and Key Points
- 3.3. Acute Respiratory Failure in Poisoned Patients and Therapeutic Management
  - 3.3.1. Preliminary
  - 3.3.2. Acute Respiratory Failure due to Airway Obstruction
  - 3.3.3. Acute Respiratory Failure due to Hypoventilation
  - 3.3.4. Acute Respiratory Failure due to Decrease in Inspiratory Oxygen Fraction

- 3.3.5. Acute Respiratory Failure due to Alveolocapillary Diffusion Impairment
- 3.3.6. Acute Respiratory Failure due to Altered Oxygen Transport or Tissue Oxygen Utilization
- 3.3.7. Acute Mixed Respiratory Failure
- 3.3.8. Conclusions and Key Points
- 3.4. Hemodynamic Stability and Instability in Poisoned Patients
  - 3.4.1. Shock and its Different Types in Poisoned Patients
  - 3.4.2. Therapeutic Management of Shock in Poisoned Patients
  - 3.4.3. Hypotension and Hypertension in Poisoned Patients
  - 3.4.4. Cardiac Arrhythmias in Acute Poisoning
  - 3.4.5. Acute Coronary Syndrome in Poisoned Patients
  - 3.4.6. Conclusions and Key Points
- 3.5. Neuropsychiatric Disorders Associated with Poisoning
  - 3.5.1. Disorders of Consciousness Toxic Coma
  - 3.5.2. Seizures.
  - 3.5.3. Behavioral Disorder. Agitated Patient Management
    - 3.5.3.1. Etiology of Psychomotor Agitation. Toxicology-Related Causes
    - 3.5.3.2. Protective Measures for Healthcare Personnel
    - 3.5.3.3. Verbal, Mechanical and Pharmacological Restraint Measures
  - 3.5.4. Conclusions and Key Points

#### Module 4. Therapeutic Management of Poisoned Patients: Specific Treatment

- 4.1. The Three Phases of the Specific Treatment of Poisoning
- 4.2. Decrease Toxin Absorption
  - 4.2.1. Digestive Decontamination:
    - 4.2.1.1. Emetics
    - 4.2.1.2. Gastric lavage
    - 4.2.1.3. Activated Carbon
    - 4.2.1.4. Cathartics
    - 4.2.1.5. Whole Bowel Irrigation
  - 4.2.2. Skin Decontamination
  - 4.2.3. Ocular Decontamination
  - 4.2.4. Prevention of Parenteral Absorption
  - 4.2.5. Prevention of Pulmonary Absorption
  - 4.2.6. Endoscopy and Surgery
  - 4.2.7. Dilution
  - 4.2.8. Conclusions and Key Points

- 4.3. Increasing Toxicant Elimination
  - 4.3.1. Kidney Cleanse
    - 4.3.1.1. Forced Diuresis
    - 4.3.1.2. Alkaline Diuresis
  - 4.3.2. Extrarenal Purification
    - 4.3.2.1. Dialysis
    - 4.3.2.2. Hemoperfusion, Hemofiltration, Hemodiafiltration
    - 4.3.2.3. Plasmapheresis and Exchange Transfusion
    - 4.3.2.4. Conclusions and Key Points
- 4.4. Antidotes
  - 4.4.1. Main Antidotes
    - 4.4.1.1. Indications, Contraindications, Side Effects and Precautions
    - 4.4.1.2. Dose
  - 4.4.2. Minimum Stock of Antidotes Depending on the Type of Hospital or Health Center
  - 4.4.3. Conclusions and Key Points
- 4.5. Antidotes
  - 4.5.1. Nasogastric or Orogastic Tube Placement Technique , and Gastric Lavage
  - 4.5.2. Skin and Ocular Decontamination Techniques

#### Module 5. Therapeutic Management of Poisoned Patients: Additional Aspects

- 5.1. General Outline of Additional Aspects to Consider
- 5.2. The Suicidal Patient and Toxicology. Psychiatric Assessment
  - 5.2.1. Introduction
  - 5.2.2. Risk Factors for Self-Harming Behavior
  - 5.2.3. Determining the Severity of Self-Harm Attempts
  - 5.2.4. Suicidal Patient Management
  - 5.2.5. Conclusions and Key Points
- 5.3. Medical and Legal Aspects of Toxicological Care
  - 5.3.1. Introduction
  - 5.3.2. Report to the Court
  - 5.3.3. Medical and Legal Autopsy
  - 5.3.4. Sampling of the Patient Corpse
  - 5.3.5. Informed Consent and Voluntary Discharge of the Poisoned Patient
  - 5.3.6. The Extraction of Blood Samples for Toxicological Studies in the Emergency Room
  - 5.3.7. Conclusions and Key Points

- 5.4. Protective Measures for Healthcare Personnel
  - 5.4.1. Introduction
  - 5.4.2. Personal Protective Equipment (PPE)
  - 5.4.3. Poison Prevention Measures for Healthcare Personnel
  - 5.4.4. Conclusions and Key Points
- 5.5. General Criteria for Admission to an Intensive Care Unit
  - 5.5.1. Introduction
  - 5.5.2. Criteria Table
  - 5.5.3. Conclusions and Key Points
- 5.6. Toxicant-Induced Rhabdomyolysis
  - 5.6.1. Introduction
  - 5.6.2. Definition and Pathophysiology
  - 5.6.3. General Etiology and Toxicological Causes of Rhabdomyolysis
  - 5.6.4. Clinical Manifestations, Laboratory Tests and Complications
  - 5.6.5. Treatment
  - 5.6.6. Conclusions and Key Points
- 5.7. Toxicant-Induced Methemoglobinemia
  - 5.7.1. Introduction
  - 5.7.2. Pathophysiology
  - 5.7.3. Etiology of Methemoglobinemia
  - 5.7.4. Clinical Manifestations
  - 5.7.5. Suspected, Differential and Confirmatory Diagnosis
  - 5.7.6. Treatment
- 5.8. Hypersensitivity and Anaphylaxis Secondary to Poisonings by Animal Stings or Bites
  - 5.8.1. Introduction
  - 5.8.2. Etiology
  - 5.8.3. Hypersensitivity Types
  - 5.8.4. Clinical Manifestations
  - 5.8.5. Diagnosis
  - 5.8.6. Treatment Management
  - 5.8.7. Conclusions and Key Points
- 5.9. Emergencies Associated with Psychotropic Drugs
  - 5.9.1. Introduction
  - 5.9.2. Neuroleptic Malignant Syndrome.
    - 5.9.2.1. Definition and Risk Factors
    - 5.9.2.2. Clinical Manifestations and Differential Diagnosis
    - 5.9.2.3. Treatment

- 5.9.3. Serotonin Syndrome
  - 5.9.3.1. Causes
  - 5.9.3.2. Clinical Manifestations and Differential Diagnosis
  - 5.9.3.3. Treatment
- 5.9.4. Acute Dystonia
- 5.9.5. Drug-Induced Parkinsonism
- 5.9.6. Conclusions and Key Points

## Module 6. Toxicology of Drugs of Abuse

- 6.1. Drug Addiction, Intoxication, Withdrawal Syndromes, Sexual Offenses, Drug Traffickers, Reinsertion
- 6.2. Epidemiology of Drugs of Abuse
- 6.3. CNS Depressant Poisoning
  - 6.3.1. Preliminary
    - 6.3.1.1. Introduction
    - 6.3.1.2. Index
    - 6.3.1.3. Objectives
      - 6.3.1.3.1. Opiates (Heroin; Methadone; Oxycodone)
      - 6.3.1.3.2. Alcohol Poisoning
      - 6.3.1.3.3. Volatile Inhalable Substances
      - 6.3.1.3.4. Conclusions and Key Points
- 6.4. Psychostimulant Poisoning
  - 6.4.1. Preliminary
    - 6.4.1.1. Introduction
    - 6.4.1.2. Index
    - 6.4.1.3. Objectives
      - 6.4.1.3.1. Cocaine.
      - 6.4.1.3.2. Amphetamines
      - 6.4.1.3.3. Others (Ephedrine and Pseudoephedrine, Khat, Energy Drinks, Guarana)
      - 6.4.1.3.4. Conclusions and Key Points
- 6.5. Hallucinogen Poisoning
  - 6.5.1. Hallucinogenic Mushrooms (LSD, Amanita Muscaria, Psilocybe)
  - 6.5.2. Hallucinogenic Plants
    - 6.5.2.1. Cannabis
    - 6.5.2.2. Mescaline
    - 6.5.2.3. Stramonium



- 6.5.2.4. Belladonna
- 6.5.2.5. Scopolamine (Burundanga)
- 6.5.2.6. Vegetable Ecstasy
- 6.5.3. DMT and AMT
- 6.5.4. Dextromethorphan
- 6.5.5. Conclusions and Key Points
- 6.6. Poisoning by Synthetic Drugs
  - 6.6.1. Synthetic Opiates (Fentanyl and Meperidine Derivatives)
  - 6.6.2. Dissociative
    - 6.6.2.1. Phencyclidine and Ketamine
  - 6.6.3. Methaqualone Derivatives
  - 6.6.4. Synthetic Phenylethylamines
    - 6.6.4.1. DOM, BOB, 2C-B, MDA
    - 6.6.4.2. Ecstasy (MDMA)
    - 6.6.4.3. Liquid Ecstasy (GHB)
    - 6.6.4.4. Conclusions and Key Points
- 6.7. Psychosocial Component of Drugs of Abuse
- 6.8. Sex and Drugs: Chemsex (Chemical Sex)
  - 6.8.1. What is meant by Chemsex?
  - 6.8.2. Historical Background and Epidemiologic Profile of Consumers
  - 6.8.3. Risks Associated with the Practice of Chemsex
  - 6.8.4. Most Commonly Used Drugs
  - 6.8.5. Conclusions and Key Points
- 6.9. Language and Drugs
  - 6.9.1. A Language that Emergency Physicians Must Know
  - 6.9.2. Drug Slang
  - 6.9.3. The Slang of Drugs of Abuse
  - 6.9.4. Conclusions and Key Points
- 6.10. A Society Besieged by Drugs
  - 6.10.1. Introduction
  - 6.10.2. The "Botellón" a Toxic Social Phenomenon
  - 6.10.3. Electronic Parties and Drugs of Abuse
  - 6.10.4. The "Jarra Loca"
  - 6.10.5. Conclusions and Key Points
- 6.11. Body packers y Body Stuffers in urgencies
  - 6.11.1. Definition
  - 6.11.2. Clinical Manifestations
  - 6.11.3. Diagnosis
  - 6.11.4. Treatment Management
  - 6.11.5. Conclusions and Key Points
- 6.12. Chemical Submission
  - 6.12.1. Concept
  - 6.12.2. Epidemiology
  - 6.12.3. Keys to Diagnosis
  - 6.12.4. Crimes Related to Chemical Submission
  - 6.12.5. Drugs Most Commonly Used in Chemical Submission
  - 6.12.6. Conclusions and Key Points
- 6.13. Withdrawal Syndromes
  - 6.13.1. Introduction and Objectives
  - 6.13.2. Alcohol Withdrawal Syndrome
    - 6.13.2.1. Concept
    - 6.13.2.2. Clinical Manifestations and Criteria Diagnosis
    - 6.13.2.3. Delirium Tremens
    - 6.13.2.4. Alcohol Withdrawal Syndrome Treatment
    - 6.13.2.5. Conclusions and Key Points
  - 6.13.3. Opioid Withdrawal Syndrome
    - 6.13.3.1. Concept
    - 6.13.3.2. Opioid Dependence and Tolerance
    - 6.13.3.3. Clinical Manifestations and Diagnosis of the Withdrawal Syndrome
    - 6.13.3.4. Treatment of Drug Addicts with Withdrawal Syndrome
  - 6.13.4. Detoxification Treatment
  - 6.13.5. Conclusions and Key Points
- 6.14. Addictive Behavior Unit

## Module 7. Toxicology and Pharmacology

- 7.1. Poisoning by Analgesics and Anti-Inflammatory Drugs
  - 7.1.1. Preliminary
    - 7.1.1.1. Introduction
    - 7.1.1.2. Index
    - 7.1.1.3. Objectives
  - 7.1.2. Paracetamol
  - 7.1.3. NSAIDs
  - 7.1.4. Salicylates
  - 7.1.5. Colchicine
  - 7.1.6. Conclusions and Key Points
- 7.2. Psychotropic Drug Poisoning
  - 7.2.1. Preliminary
    - 7.2.1.1. Introduction
    - 7.2.1.2. Index
    - 7.2.1.3. Objectives
  - 7.2.2. Antidepressants
    - 7.2.2.1. Tricyclics
    - 7.2.2.2. Selective Serotonin Reuptake Inhibitors (SSRIs)
    - 7.2.2.3. Monoamine Oxidase Inhibitors (MAOIs)
  - 7.2.3. Lithium
  - 7.2.4. Sedative-Hypnotic Drugs
    - 7.2.4.1. Benzodiazepines
    - 7.2.4.2. Barbiturates
    - 7.2.4.3. Non-Benzodiazepine and Non-Barbiturate Sedative-Hypnotic Drugs
  - 7.2.5. Antipsychotics
  - 7.2.6. Anticonvulsants
  - 7.2.7. Conclusions and Key Points
- 7.3. Antiarrhythmic and Antihypertensive Drug Poisoning
  - 7.3.1. Preliminary
    - 7.3.1.1. Introduction
    - 7.3.1.2. Index
    - 7.3.1.3. Objectives
  - 7.3.2. Digoxin
  - 7.3.3. Beta-Blockers
  - 7.3.4. Calcium Antagonists
  - 7.3.5. Conclusions and Key Points

- 7.4. Poisoning by Other Drugs
  - 7.4.1. Preliminary
    - 7.4.1.1. Introduction
    - 7.4.1.2. Index
    - 7.4.1.3. Objectives
  - 7.4.2. Antihistamines
  - 7.4.3. Anticoagulants
  - 7.4.4. Metoclopramide
  - 7.4.5. Hypoglycemics
  - 7.4.6. Conclusions and Key Points

## Module 8. Industrial Poisoning from Fumes

- 8.1. Effect of Different Types of Gases on the Respiratory System
- 8.2. Poisoning due to Inhalation of Fumes
  - 8.2.1. Preliminary
    - 8.2.1.1. Introduction
    - 8.2.1.2. Index
    - 8.2.1.3. Objective
  - 8.2.2. Mechanisms of Toxicity Production and Airway Damage
  - 8.2.3. Clinical Manifestations
  - 8.2.4. Medical History, Examination and Suspected Diagnosis
  - 8.2.5. Treatment Management
  - 8.2.6. Conclusions and Key Points
- 8.3. Irritant Fume Poisoning
  - 8.3.1. Preliminary
    - 8.3.1.1. Introduction
    - 8.3.1.2. Index
    - 8.3.1.3. Objective
  - 8.3.2. Hydrogen Sulfide Poisoning
    - 8.3.2.1. Sources of Exposure
    - 8.3.2.2. Toxicokinetics and Pathophysiology
    - 8.3.2.3. Clinical Manifestations and Diagnosis
    - 8.3.2.4. Treatment

- 8.3.3. Fluorine Derivative Poisoning
  - 8.3.3.1. Sources of Exposure
  - 8.3.3.2. Pathophysiology
  - 8.3.3.3. Clinical Manifestations
  - 8.3.3.4. Diagnosis and Treatment
- 8.3.4. Chlorine Derivative Poisoning
  - 8.3.4.1. General Aspects of Poisoning
- 8.3.5. Nitrogen Derivative Poisoning
  - 8.3.5.1. Ammonia Poisoning
  - 8.3.5.2. Other Intoxications
- 8.4. Poisoning by Asphyxiating Fumes: Carbon Monoxide
  - 8.4.1. Preliminary
    - 8.4.1.1. Introduction
    - 8.4.1.2. Index
    - 8.4.1.3. Objective
  - 8.4.2. Definition and Causes of Carbon Monoxide Hazards
  - 8.4.3. Epidemiology of Carbon Monoxide Poisoning: A Known and a Hidden Epidemiology
  - 8.4.4. Sources of Carbon Monoxide Exposure and Medical and Legal Causes of Poisoning
  - 8.4.5. Pathophysiology of Carbon Monoxide Poisoning
  - 8.4.6. Clinical Manifestations
  - 8.4.7. Diagnosis of Suspicion and Diagnostic Confirmation. Pulse Oximetry in the Prehospital Setting
  - 8.4.8. Poisoning Severity Criteria
  - 8.4.9. Treatment of Poisoning
  - 8.4.10. Observation, Admission and Discharge Criteria
  - 8.4.11. Conclusions and Key Points
- 8.5. Chemical Asphyxia: Cyanide
  - 8.5.1. Preliminary
    - 8.5.1.1. Introduction
    - 8.5.1.2. Index
    - 8.5.1.3. Objective
  - 8.5.2. Sources of Exposure
  - 8.5.3. Toxicokinetics and Pathophysiology
  - 8.5.4. Clinical Manifestations, Suspicion and Confirmation Diagnosis
  - 8.5.5. Treatment
  - 8.5.6. Conclusions and Key Points

## Module 9. Industrial Poisoning by Solvents

- 9.1. Introduction to the Module
- 9.2. Hydrocarbon Poisoning
  - 9.2.1. Preliminary
    - 9.2.1.1. Introduction
    - 9.2.1.2. Index
    - 9.2.1.3. Objective
  - 9.2.2. Aliphatic or Linear
    - 9.2.2.1. Short Chain Hydrocarbons: Butane, Propane, Ethane and Methane
    - 9.2.2.2. Long-Chain Hydrocarbons: Pentanes, Hexanes, Heptanes and Octanes
    - 9.2.2.3. Petroleum Distillates: Gasoline, Kerosene, and Others
    - 9.2.2.4. Halogenated Products
    - 9.2.2.5. Carbon Tetrachloride
    - 9.2.2.6. Chloroform
    - 9.2.2.7. Dichloromethane
    - 9.2.2.8. Trichloroethylene
    - 9.2.2.9. Tetrachloroethylene
    - 9.2.2.10. Trichloroethane
  - 9.2.3. Aromatic or Cyclic
    - 9.2.3.1. Benzene
    - 9.2.3.2. Toluene
    - 9.2.3.3. Conclusions and Key Points
- 9.3. Aliphatic Alcohols Poisoning
  - 9.3.1. Preliminary
    - 9.3.1.1. Introduction
    - 9.3.1.2. Index
    - 9.3.1.3. Objective
  - 9.3.2. Methyl Alcohol
  - 9.3.3. Isopropyl Alcohol
  - 9.3.4. Conclusions and Key Points
- 9.4. Glycol Poisoning
  - 9.4.1. Preliminary
    - 9.4.1.1. Introduction
    - 9.4.1.2. Index
    - 9.4.1.3. Objective

- 9.4.2. Ethylene Glycol
- 9.4.3. Diethylene Glycol
- 9.4.4. Propylene Glycol
- 9.4.5. Conclusions and Key Points
- 9.5. Nitrogen Derivative Poisoning
  - 9.5.1. Preliminary
    - 9.5.1.1. Introduction
    - 9.5.1.2. Index
    - 9.5.1.3. Objective
  - 9.5.2. Aniline
  - 9.5.3. Toluidine
  - 9.5.4. Nitrobenzene
  - 9.5.5. Conclusions and Key Points
- 9.6. Acetone Poisoning
  - 9.6.1. Preliminary
    - 9.6.1.1. Introduction
    - 9.6.1.2. Index
    - 9.6.1.3. Objective
  - 9.6.2. Conclusions and Key Points

## Module 10. Industrial Poisoning by Heavy Metal

- 10.1. Introduction: General Aspects of Heavy Metals and their Main Chelating Agents
- 10.2. Iron Poisoning
  - 10.2.1. Definition, General Aspects
  - 10.2.2. Sources of Exposure
  - 10.2.3. Toxicokinetics and Mechanism of Action
  - 10.2.4. Clinical Manifestations
  - 10.2.5. Diagnosis
  - 10.2.6. Treatment
  - 10.2.7. Conclusions and Key Points
- 10.3. Phosphorus Poisoning
  - 10.3.1. Definition, General Aspects
  - 10.3.2. Sources of Exposure
  - 10.3.3. Toxicokinetics and Mechanism of Action
  - 10.3.4. Clinical Manifestations

- 10.3.5. Diagnosis
- 10.3.6. Treatment
- 10.3.7. Conclusions and Key Points
- 10.4. Lead Poisoning
  - 10.4.1. Definition, General Aspects
  - 10.4.2. Sources of Exposure
  - 10.4.3. Toxicokinetics and Mechanism of Action
  - 10.4.4. Clinical Manifestations
  - 10.4.5. Diagnosis
  - 10.4.6. Treatment
  - 10.4.7. Conclusions and Key Points
- 10.5. Mercury Poisoning
  - 10.5.1. Definition, General Aspects
  - 10.5.2. Sources of Exposure
  - 10.5.3. Toxicokinetics and Mechanism of Action
  - 10.5.4. Clinical Manifestations
  - 10.5.5. Diagnosis
  - 10.5.6. Treatment
  - 10.5.7. Conclusions and Key Points
- 10.6. Arsenic Poisoning
  - 10.6.1. Definition, General Aspects
  - 10.6.2. Sources of Exposure
  - 10.6.3. Toxicokinetics and Mechanism of Action
  - 10.6.4. Clinical Manifestations
  - 10.6.5. Diagnosis
  - 10.6.6. Treatment
  - 10.6.7. Conclusions and Key Points
- 10.7. Cadmium Poisoning
  - 10.7.1. Definition, General Aspects
  - 10.7.2. Sources of Exposure
  - 10.7.3. Toxicokinetics and Mechanism of Action
  - 10.7.4. Clinical Manifestations
  - 10.7.5. Diagnosis
  - 10.7.6. Treatment
  - 10.7.7. Conclusions and Key Points



## Module 11. Pesticide or Phytosanitary Product Poisoning in Rural Areas

- 11.1. Introduction to the Module: General Aspects of Pesticide Poisoning
  - 11.1.1. Concept of Pesticides
  - 11.1.2. Classification of Pesticides
  - 11.1.3. Preventive and Protective Measures for Workers
  - 11.1.4. First Aid at the Poisoning Site
- 11.2. Poisoning by Insecticides and Fungicides
  - 11.2.1. Preliminary
    - 11.2.1.1. Introduction
    - 11.2.1.2. Index
    - 11.2.1.3. Objective
  - 11.2.2. Organochlorines
  - 11.2.3. Organophosphates
  - 11.2.4. Carbamates
  - 11.2.5. Pyrethroids
  - 11.2.6. Conclusions and Key Points
- 11.3. Herbicide Poisoning
  - 11.3.1. Preliminary
    - 11.3.1.1. Introduction
    - 11.3.1.2. Index
    - 11.3.1.3. Objective
  - 11.3.2. Diquat
  - 11.3.3. Paraquat
  - 11.3.4. Conclusions and Key Points
- 11.4. Fungicide Poisoning
  - 11.4.1. Conclusions and Key Points
- 11.5. Rodenticide Poisoning
  - 11.5.1. Conclusions and Key Points

## Module 12. Household Poisoning from Cleaning Products, Personal Hygiene Products and Caustic Poisons

- 12.1. Introduction to the Module
- 12.2. Poisoning from Cleaning, Personal Hygiene and Cosmetic Products
  - 12.2.1. Classification According to Toxicity
  - 12.2.2. Specific Poisonings
    - 12.2.2.1. Soaps and Shampoos
    - 12.2.2.2. Nail Polish and Nail Polish Remover
    - 12.2.2.3. Hair Substances: Hair Dyes, Hairsprays, Hair Softeners, etc.
    - 12.2.2.4. Others
  - 12.2.3. General Therapeutic Measures and Controversies
  - 12.2.4. Conclusions and Key Points
- 12.3. Caustic Poisoning
  - 12.3.1. Introduction
  - 12.3.2. Main Caustic Substances
  - 12.3.3. Pathophysiology
  - 12.3.4. Clinical Symptoms
  - 12.3.5. Diagnosis
  - 12.3.6. Acute and Late Complications
  - 12.3.7. Treatment and Attitude to be Followed
  - 12.3.8. Conclusions and Key Points

## Module 13. Poisoning from Natural Agents: Plants, Mushrooms and Animals

- 13.1. Plant Poisoning
  - 13.1.1. Classification According to Target Organ, Apparatus or System
    - 13.1.1.1. Gastrointestinal
    - 13.1.1.2. Cardiovascular
    - 13.1.1.3. Central Nervous System
    - 13.1.1.4. Others
  - 13.1.2. Conclusions and Key Points

- 13.2. Mushroom Poisoning
  - 13.2.1. Epidemiology of Mushroom Poisoning
  - 13.2.2. Pathophysiology
  - 13.2.3. The Clinical History as a Fundamental Element for Diagnosis
  - 13.2.4. Classification According to the Latency Period of Onset of Clinical Manifestations and Clinical Syndromes
    - 13.2.4.1. Short Latency Syndromes
      - 13.2.4.1.1. Acute Mushroom Gastroenteritis (Gastroenteritic, Resinoid or Lividian Syndrome)
      - 13.2.4.1.2. Intolerance Syndrome
      - 13.2.4.1.3. Delirium Syndrome (Mycoatropinic or Anticholinergic)
      - 13.2.4.1.4. Muscarinic Syndrome (Mycocholinergic or Sweat Syndrome)
      - 13.2.4.1.5. Hallucinatory Syndrome (Psychotropic or Narcotic)
      - 13.2.4.1.6. Nitritoid Syndrome (Coprinic or Antabus Effect Syndrome)
      - 13.2.4.1.7. Hemolytic Syndrome
    - 13.2.4.2. Long-Latency Syndromes
      - 13.2.4.2.1. Giromitrile Syndrome (Ogiromitrile)
      - 13.2.4.2.2. Orellanic Syndrome (Cortinaric or Nephrotoxic)
      - 13.2.4.2.3. Phalloid, Hepatotoxic or Cyclopeptide Syndrome
        - 13.2.4.2.3.1. Etiology
        - 13.2.4.2.3.2. Pathophysiology and Toxicokinetics
        - 13.2.4.2.3.3. Clinical Symptoms
        - 13.2.4.2.3.4. Diagnosis
        - 13.2.4.2.3.5. Treatment
        - 13.2.4.2.3.6. Prognosis
    - 13.2.4.3. New Syndromes
      - 13.2.4.3.1. Proximal Syndrome
      - 13.2.4.3.2. Erythromelalgia or Achromelalgia
      - 13.2.4.3.3. Rhabdomyolysis
      - 13.2.4.3.4. Hemorrhagic Syndrome (or Szechwan's Syndrome)
      - 13.2.4.3.5. Neurotoxic Poisoning
      - 13.2.4.3.6. Encephalopathy
    - 13.2.4.4. Conclusions and Key Points

- 13.3. Animal Poisoning: Snakes
  - 13.3.1. Preliminary
    - 13.3.1.1. Introduction
    - 13.3.1.2. Index
    - 13.3.1.3. Objectives
  - 13.3.2. Epidemiology of Snake Bites
  - 13.3.3. Classification of Snakes
  - 13.3.4. Differences between Vipers and Snakes
  - 13.3.5. The Poison Apparatus of Snakes
  - 13.3.6. The Effect of Snake Venoms on Humans
  - 13.3.7. Clinical Symptoms
    - 13.3.7.1. Clinical Syndromes
      - 13.3.7.1.1. Neurological Syndrome
      - 13.3.7.1.2. Hemotoxic-Cytotoxic Syndrome
      - 13.3.7.1.3. Cardiotoxic and Myotoxic Syndromes
      - 13.3.7.1.4. Hypersensitivity Syndromes
    - 13.3.7.2. Clinical Grading of the Intensity of the Poisoning
  - 13.3.8. Treatment
    - 13.3.8.1. Symptoms
    - 13.3.8.2. Specific
  - 13.3.9. Conclusions and Key Points
- 13.4. Animal Bites: Mammals
  - 13.4.1. Preliminary
    - 13.4.1.1. Introduction
    - 13.4.1.2. Index
    - 13.4.1.3. Objectives
  - 13.4.2. Epidemiological Aspects
  - 13.4.3. Clinical-Diagnostic Aspects
  - 13.4.4. Therapeutic Aspects
    - 13.4.4.1. Initial Management
    - 13.4.4.2. Surgical Address: Suture
    - 13.4.4.3. Antibiotic Prophylaxis
    - 13.4.4.4. Tetanus Prophylaxis
    - 13.4.4.5. Rabies Prophylaxis
    - 13.4.4.6. Antiviral Prophylaxis: Anti-Hepatitis B and Anti-HIV
  - 13.4.5. Conclusions and Key Points
- 13.5. Marine Animals
  - 13.5.1. Fish Poisoning
    - 13.5.1.1. Stonefish
    - 13.5.1.2. Viperfish
    - 13.5.1.3. Stingray
  - 13.5.2. Food Poisoning from Fish and Shellfish
    - 13.5.2.1. Paralytic Shellfish Poisoning
    - 13.5.2.2. Scombroidosis. Histamine Poisoning
    - 13.5.2.3. Pufferfish Poisoning
  - 13.5.3. Coelenterate Poisoning
    - 13.5.3.1. Jellyfish Stings
    - 13.5.3.2. Physalia Physalis or the Portuguese Man o' War Sting
    - 13.5.3.3. Treatment
  - 13.5.4. Conclusions and Key Points
- 13.6. Invertebrates
  - 13.6.1. Preliminary
    - 13.6.1.1. Introduction
    - 13.6.1.2. Index
    - 13.6.1.3. Objectives
  - 13.6.2. Insects: Wasps, Bees and Bumblebees
  - 13.6.3. Arachnids
    - 13.6.3.1. Spiders
    - 13.6.3.2. Scorpions
    - 13.6.3.3. Ticks
  - 13.6.4. Conclusions and Key Points

07

# Clinical Internship

Doctors who pass the theoretical study of this degree may continue to broaden and develop their practical skills through a first level stay in prestigious hospitals. This way, they will update their practice based on the latest scientific evidence of international reference.





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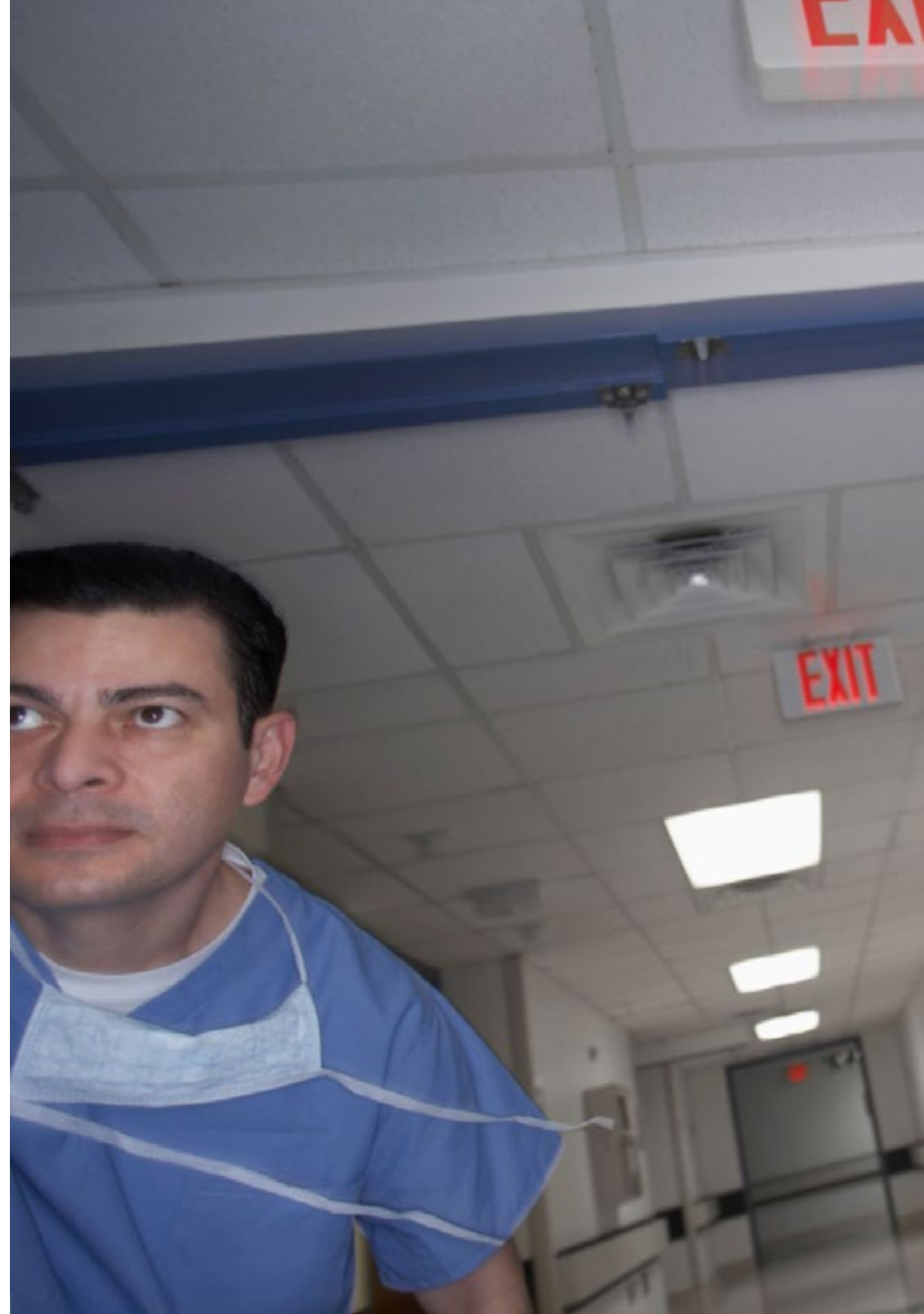
*The clinical practices of this degree will provide you with the most advanced tools for the management of patients intoxicated by the bite of insects, reptiles and other venomous animal species”*

The practical training of this educational program is designed to enable the physician to apply, in a first class hospital environment, all the knowledge acquired in the theoretical phase of the degree. Thus, with real patients under their care, they will indicate cutting-edge therapeutic strategies and use the most advanced technologies for their development and follow-up.

This clinical practice will take place over 3 weeks, from Monday to Friday, for 8 consecutive hours. In the health facilities, the specialist will have an assistant tutor who will be in charge of supervising their progress and verifying the quality of their care. At the same time, the physician will be able to corroborate concepts or clarify doubts with the other members of the team of experts that make up the staff of these health facilities.

The practical part will be carried out with the active participation of the student performing the activities and procedures of each area of competence (learning to learn and learning to do), with the accompaniment and guidance of the professors and other training partners that facilitate teamwork and multidisciplinary integration as transversal competences for the praxis Doctor (learning to be and learning to relate).

The procedures described below will form the basis of the practical part of the internship, and their implementation is subject to both the suitability of the patients and the availability of the center and its workload, with the proposed activities being as follows:





Module	Practical Activity
<b>New diagnostic methods in Emergency Toxicology</b>	Apply molecular toxicology tests to patients suspected of having been subjected to pesticide toxicokinetics
	Monitoring, by means of biomonitoring, of patients susceptible to heavy metal poisoning
	Indicate blood and urine tests to measure the levels of toxic substances in the body
	Detect drug abuse as early as possible in order to provide effective treatment through rapid patient questionnaires or medical history review
<b>Therapeutic strategies against poisoning in the Emergency Department</b>	Treat patients diagnosed with substance abuse or opioid-based drugs through withdrawal treatment based on a thorough physical and psychological examination
	Clean the blood through dialysis of patients contaminated with potent industrial products
	Use the chelating agent EDTA to remove heavy metals from the patient's body through urine
	Implement ion-exchange based treatment for calcium or resin contamination
	Address animal contact intoxications and their possible antidotes
	Recommending specific diets to patients after acute chemical poisoning
<b>Follow-up protocols for of patients who have suffered from chemical poisoning</b>	Monitor the functioning of kidneys and other organs affected by chemical poisoning
	Supervise the evolution of the ocular apparatus after contact with any topical substance
	Identify violent and self-injurious behaviors derived from psychiatric toxicology
	Apply personalized care procedures for pregnant women, children and the elderly

## Civil Liability Insurance

This institution's main concern is to guarantee the safety of the trainees and other collaborating agents involved in the internship process at the company. Among the measures dedicated to achieve this is the response to any incident that may occur during the entire teaching-learning process.

To this end, this entity commits to purchasing a civil liability insurance policy to cover any eventuality that may arise during the course of the internship at the center.

This liability policy for interns will have broad coverage and will be taken out prior to the start of the internship program period. That way professionals will not have to worry in case of having to face an unexpected situation and will be covered until the end of the internship program at the center.



## General Conditions of the Internship Program

The general terms and conditions of the internship agreement for the program are as follows:

**1. TUTOR:** During the Hybrid Professional Master's Degree, students will be assigned two tutors who will accompany them throughout the process, answering any doubts and questions that may arise. On the one hand, there will be a professional tutor belonging to the internship center who will have the purpose of guiding and supporting the student at all times. On the other hand, they will also be assigned an academic tutor whose mission will be to coordinate and help the students during the whole process, solving doubts and facilitating everything they may need. In this way, the student will be accompanied and will be able to discuss any doubts that may arise, both clinical and academic.

**2. DURATION:** The internship program will have a duration of three continuous weeks, in 8-hour days, 5 days a week. The days of attendance and the schedule will be the responsibility of the center and the professional will be informed well in advance so that they can make the appropriate arrangements.

**3. ABSENCE:** If the students does not show up on the start date of the Hybrid Professional Master's Degree, they will lose the right to it, without the possibility of reimbursement or change of dates. Absence for more than two days from the internship, without justification or a medical reason, will result in the professional's withdrawal from the internship, therefore, automatic termination of the internship. Any problems that may arise during the course of the internship must be urgently reported to the academic tutor.

**4. CERTIFICATION:** the student who completes the Hybrid Professional Master's Degree will receive a certificate accrediting the stay at the center in question.

**5. EMPLOYMENT RELATIONSHIP:** the Hybrid Professional Master's Degree shall not constitute an employment relationship of any kind.

**6. PRIOR EDUCATION:** Some centers may require a certificate of prior education for the Hybrid Professional Master's Degree. In these cases, it will be necessary to submit it to the TECH internship department so that the assignment of the chosen center can be confirmed.

**7. DOES NOT INCLUDE:** The Hybrid Professional Master's Degree will not include any element not described in the present conditions. Therefore, it does not include accommodation, transportation to the city where the internship takes place, visas or any other items not listed.

However, students may consult with their academic tutor for any questions or recommendations in this regard. The academic tutor will provide the student with all the necessary information to facilitate the procedures in any case.

# 08

## Where Can I Do the Clinical Internship?

The practical stay of this Hybrid Professional Master's Degree will take place in medical institutions of international reference. Thus, the professional will be able to update their skills based on global standards and will be able to apply, in real cases, the procedures learned. On the other hand, the specialist will become familiar with cutting-edge contexts, where prestigious experts are able to handle the most innovative technologies of the moment.



A city skyline at sunset with a blue and white geometric overlay. The sky is a mix of orange, pink, and blue, with clouds. The city buildings are lit up with lights. The overlay consists of a large blue triangle in the top right and a white triangle in the bottom right, meeting at a diagonal line.

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*TECH offers you a first class practical and face-to-face stay in a hospital institution where you will be able to apply procedures and skills from the first day"*



The student will be able to complete the practical part of this Hybrid Professional Master's Degree at the following centers:



Medicine

### Hospital HM Modelo

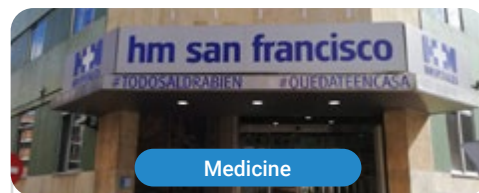
Country	City
Spain	La Coruña

Address: Rúa Virrey Osorio, 30, 15011, A Coruña

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Anaesthesiology and Resuscitation
- Palliative Care



Medicine

### Hospital HM San Francisco

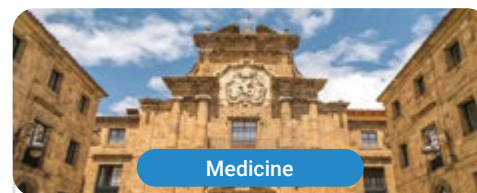
Country	City
Spain	León

Address: C. Marqueses de San Isidro, 11, 24004 León

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Update in Anesthesiology and Resuscitation
- Nursing in the Traumatology Department



Medicine

### HM Regla Hospital

Country	City
Spain	León

Address: Calle Cardenal Landázuri, 2, 24003, León

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Update on Psychiatric Treatment in Minor Patients



Medicine

### Hospital HM Nou Delfos

Country	City
Spain	Barcelona

Address: Avinguda de Vallcarca, 151, 08023 Barcelona

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Aesthetic Medicine
- Clinical Nutrition in Medicine



Medicine

### Hospital HM Madrid

Country	City
Spain	Madrid

Address: Pl. del Conde del Valle de Súchil, 16, 28015 Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Palliative Care
- Anaesthesiology and Resuscitation



Medicine

### Hospital HM Montepríncipe

Country	City
Spain	Madrid

Address: Av. de Montepríncipe, 25, 28660 Boadilla del Monte, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Palliative Care
- Aesthetic Medicine



Medicine

### Hospital HM Torrelodones

Country	City
Spain	Madrid

Address: Av. Castillo Olivares, s/n, 28250 Torrelodones, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Anaesthesiology and Resuscitation
- Palliative Care



Medicine

### Hospital HM Sanchinarro

Country	City
Spain	Madrid

Address: Calle de Oña, 10, 28050, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Anaesthesiology and Resuscitation
- Palliative Care





Medicine

### Hospital HM Puerta del Sur

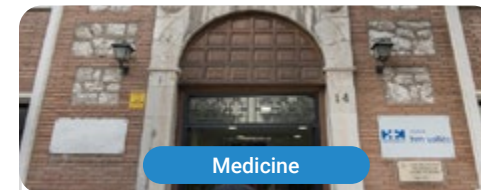
Country	City
Spain	Madrid

Address: Av. Carlos V, 70, 28938  
Móstoles, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Palliative Care
- Clinical Ophthalmology



Medicine

### Hospital HM Vallés

Country	City
Spain	Madrid

Address: Calle Santiago, 14, 28801 Alcalá  
de Henares, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

**Related internship programs:**

- Gynecologic Oncology
- Clinical Ophthalmology

# 05 Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning**.

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.





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*Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"*

## At TECH we use the Case Method

What should a professional do in a given situation? Throughout the program, students will face multiple simulated clinical cases, based on real patients, in which they will have to do research, establish hypotheses, and ultimately resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

*With TECH you will experience a way of learning that is shaking the foundations of traditional universities around the world.*



According to Dr. Gérvas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, trying to recreate the real conditions in the physician's professional practice.

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*Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method”*

The effectiveness of the method is justified by four fundamental achievements:

1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that evaluate real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.



## Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

This university is the first in the world to combine the study of clinical cases with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, a real revolution with respect to the mere study and analysis of cases.

*Professionals will learn through real cases and by resolving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.*



At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

With this methodology, more than 250,000 physicians have been trained with unprecedented success in all clinical specialties regardless of surgical load. Our pedagogical methodology is developed in a highly competitive environment, with a university student body with a strong socioeconomic profile and an average age of 43.5 years old.

*Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.*

In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

The overall score obtained by TECH's learning system is 8.01, according to the highest international standards.



This program offers the best educational material, prepared with professionals in mind:



#### Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



#### Surgical Techniques and Procedures on Video

TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current medical techniques. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch the videos as many times as you like.



#### Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.







#### Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.



#### Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.



#### Classes

There is scientific evidence on the usefulness of learning by observing experts. The system known as Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



#### Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help students progress in their learning.



# 10 Certificate

The Hybrid Professional Master's Degree in Emergency Toxicology guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.



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*Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork"*

This program will allow you to obtain your **Hybrid Professional Master's Degree certificate in Emergency Toxicology** endorsed by **TECH Global University**, the world's largest online university.

**TECH Global University** is an official European University publicly recognized by the Government of Andorra (*official bulletin*). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Hybrid Professional Master's Degree in Emergency Toxicology**

Course Modality: **Hybrid (Online + Clinical Internship)**

Duration: **12 months**

Certificate: **TECH Global University**

Recognition: **60 + 5 ECTS Credits**



\*Apostille Convention. In the event that the student wishes to have their paper certificate issued with an apostille, TECH Global University will make the necessary arrangements to obtain it, at an additional cost.



Hybrid Professional Master's Degree  
Emergency Toxicology

Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Global University

60 + 5 créditos ECTS

# Hybrid Professional Master's Degree Emergency Toxicology

