

# Postgraduate Diploma

## Hemodynamic Emergencies in the PICU





## Postgraduate Diploma Hemodynamic Emergencies in the PICU

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Global University
- » Credits: 18 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/medicine/postgraduate-diploma/postgraduate-diploma-hemodynamic-emergencies-picu](http://www.techtute.com/us/medicine/postgraduate-diploma/postgraduate-diploma-hemodynamic-emergencies-picu)

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# 01

# Introduction

Hemodynamic Emergencies in the PICU are a crucial clinical challenge that requires a multidisciplinary approach and rapid intervention. With the advancement of medical technology and improved diagnostic methods, a better understanding of the causes and pathophysiological mechanisms behind these emergencies in pediatric patients has been achieved. In addition, specialized medical teams are implementing updated protocols and using advanced monitoring technologies to optimize hemodynamic stability. In this context, TECH has designed a comprehensive and flexible online program, which only requires a device with an Internet connection to access the didactic materials. In addition, this program uses the innovative learning methodology called Relearning.





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*Thanks to this 100% online Postgraduate Diploma, you will cover from the fundamental principles of Pediatric Intensive Care to the advanced management of specific hemodynamic emergencies”*

The care of Hemodynamic Emergencies in the Pediatric Intensive Care Unit (PICU) remains a crucial challenge in contemporary Pediatric Medicine. With the advancement of medical technology and a deeper understanding of the underlying pathophysiology, PICU teams are better equipped than ever to effectively diagnose and treat these emergencies.

This is how this Postgraduate Diploma is born, in which the essential foundations of ethics, evidence-based decision making and meticulous initial assessment of the critically ill pediatric patient will be established. In addition, physicians will acquire advanced skills in hemodynamics to optimize cardiovascular support, as well as examine the ethical challenges inherent in the PICU, highlighting the importance of effective communication with families and interdisciplinary collaboration.

In addition, the agenda will focus on hemodynamic emergencies such as pediatric Shock and Heart Failure. The course will also focus on the interpretation of pediatric electrocardiograms, the management of Shock and the diagnosis of Heart Failure, providing comprehensive specialization in the pharmacological and surgical management of these conditions.

Finally, professionals will be instructed in advanced management strategies, such as specialized life support and specific therapeutic options for each condition. In this sense, graduates will be prepared to interpret Echocardiography studies and guide accurate clinical decisions in a Pediatric Intensive Care setting. Overall, this academic program will provide a solid foundation and specialized skills to effectively address hemodynamic emergencies in the PICU.

In this context, TECH has created a comprehensive online program, specifically designed to fit the individual needs of the student body, eliminating obstacles such as physical travel or the obligation to follow fixed schedules. In addition, it is based on the innovative Relearning methodology, which focuses on the repetition of key concepts to ensure an effective and sustained understanding of the contents.

This **Postgraduate Diploma in Hemodynamic Emergencies in the PICU** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ♦ The development of practical cases presented by experts in Emergency Hemodynamics in the PICU
- ♦ The graphic, schematic and eminently practical contents with which it is conceived gather scientific and practical information on those disciplines that are indispensable for professional practice
- ♦ Practical exercises where the self-assessment process can be carried out to improve learning
- ♦ Its special emphasis on innovative methodologies
- ♦ 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



*You will acquire specialized knowledge in initial evaluation, pharmacological treatment, interpretation of imaging studies and ethical decision making in critical situations. What are you waiting for to enroll?"*

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*You will be specialized in the use of diagnostic tools, such as Echocardiography and Chest X-ray, through the best didactic materials on the market, at the educational and technological forefront"*

The program's teaching staff includes professionals from the sector who contribute their work experience to this specializing program, as well as renowned specialists from leading societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive education programmed to learn 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 during the course. For this purpose, students will be assisted by an innovative interactive video system created by renowned and experienced experts.

*You will delve into specific cardiology emergencies, such as Congenital Heart Disease, Myocarditis and Cardiomyopathies, at the hands of the best digital university in the world, according to Forbes.*

*Bet on TECH! You will emphasize the application of advanced hemodynamic knowledge to optimize cardiovascular support, select and administer critical drugs, and address ethical challenges in the PICU.*



# 02 Objectives

The objectives of the university program are multifaceted and will range from the acquisition of fundamental knowledge to specialization in the advanced management of critical situations in children. Therefore, healthcare professionals will be specialized to perform meticulous initial assessments, quickly identify signs of life-threatening conditions and prioritize care. In addition, they will be provided with a deep understanding of hemodynamic pathophysiology in pediatric patients, enabling them to apply advanced therapies such as Cardiovascular Support and pharmacological management with precision and safety.







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*Don't miss this unique TECH opportunity! The goal of the program will be to prepare you to provide comprehensive and high quality care to pediatric patients in hemodynamic emergency situations"*



## General Objectives

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- ♦ Provide a comprehensive understanding of the essential principles of pediatric intensive care
- ♦ Provide a comprehensive understanding of hemodynamic monitoring techniques and tools specific to the pediatric population
- ♦ Provide advanced specialization on the diagnosis, management and treatment of Congenital Heart Disease in the Pediatric Intensive Care Unit
- ♦ Prepare pediatric specialists to perform critical interventions, including Cardiorespiratory Resuscitation and the use of specialized pharmacological agents in the intensive care setting



*You will develop effective communication skills, both with patients' families and within the healthcare team, fostering a culture of teamwork and interdisciplinary collaboration in the PICU"*





## Specific Objectives

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### Module 1. Pediatric Intensive Care

- ♦ Develop the fundamental principles and importance of pediatric intensive care, including ethics and evidence-based decision making
- ♦ Perform a meticulous initial assessment of the critically ill pediatric patient, rapidly identifying signs of life-threatening illness and prioritizing care
- ♦ Apply advanced knowledge of hemodynamics to optimize Cardiovascular Support through the appropriate use of fluids, inotropic drugs, vasopressors, and continuous monitoring
- ♦ Select and administer critical drugs with thorough understanding of their pharmacokinetics and pharmacodynamics in children, as well as manage potential drug-drug interactions and side effects
- ♦ Navigate the ethical challenges present in the PICU, participating in patient- and family-centered decision making, and managing sensitive communications about prognosis and treatment options
- ♦ Foster an environment of collaboration and respect on the intensive care team, enhance communication skills with patients' families, and contribute to a climate of teamwork that supports the delivery of high quality care

### Module 2. Hemodynamic Emergencies in the Pediatric Intensive Care Unit

- ♦ Accurately interpret Electrocardiograms (ECGs) in children, identifying key differences between pediatric and adult ECG patterns
- ♦ Instruct in advanced strategies for the management of pediatric Shock, including optimization of blood volume, the use of inotropic and vasopressor agents and airway management

- ♦ Provide in-depth knowledge for the diagnosis of Heart Failure in children, using diagnostic tools such as Chest X-rays, Echocardiography and laboratory tests
- ♦ Specialize in the integral management of Pediatric Heart Failure, ranging from pharmacological treatment to the consideration of Mechanical Ventricular Assist and Cardiac Transplantation, when appropriate

### Module 3. Cardiologic Emergencies in the Pediatric Intensive Care Unit

- ♦ Analyze initial management strategies for Congenital Heart Disease, including stabilization and preparation for additional interventions
- ♦ Apply advanced management protocols for patients with Congenital Heart Disease in the ICU, including life support and specialized monitoring
- ♦ Identify and treat acute conditions, such as Myocarditis and Cardiomyopathies, applying the latest research
- ♦ Manage complications such as pericarditis and pericardial effusion, including diagnostic techniques and therapeutic options
- ♦ Implement effective postoperative care after Pediatric Cardiac Surgery, focusing on recovery and prevention of sequelae
- ♦ Interpret PICU Echocardiography studies to guide clinical decision making and patient management

# 03

# Course Management

The faculty are highly qualified and experienced professionals in the field of Pediatric Medicine and Intensive Care. These mentors are committed to constantly updating their knowledge and applying the latest research and best practices in clinical practice. As such, their goal will be to provide graduates with comprehensive, up-to-date specialization that will enable them to meet the complex challenges of caring for critically ill pediatric patients with confidence and competence.





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*The faculty combines solid theoretical knowledge with extensive practical experience in the management of hemodynamic emergencies in children”*

## Management



### Dr. Ocete Hita, Esther

- ♦ Head of the Pediatric Hospitalization Section of Virgen de las Nieves University Hospital of Granada
- ♦ FEA Pediatrics in the Pediatric Intensive Care Unit of Virgen de las Nieves University Hospital of Granada
- ♦ Associate Professor in the Faculty of Medicine at the University of Granada
- ♦ Specialist Pediatrician
- ♦ Doctor of Medicine
- ♦ Degree in Medicine

## Professors

### Dr. Rosa Camacho, Vanessa

- ♦ FEA of Pediatrics in Critical Care and Pediatric Emergency, HRU Maternity Hospital, Malaga
- ♦ Specialist in Pediatric Intensive Care from the Valle de Hebron Hospital, Barcelona
- ♦ Specialist in Pediatrics and Specific Areas at the HRU Carlos Haya Maternity Hospital, Malaga
- ♦ Doctor of Medicine, University of Malaga
- ♦ Master's Degree in Pediatric Emergencies by the Catholic University of Valencia
- ♦ Degree in Medicine and General Surgery from the University of Granada

### Dr. Gómez Luque, José María

- ♦ Assistant Physician of the Pediatric Intensive Care Unit of the Virgen de las Nieves Hospital
- ♦ Medical specialist in Pediatric Intensive Care
- ♦ Instructor in Advanced CPR and Pediatric CPR
- ♦ Doctor of Medicine and Surgery from the University of Granada

**Dr. García Soler, Patricia**

- ♦ FEA in Critical Care and Pediatric Emergencies of the Regional University Hospital of Malaga
- ♦ Specialist in Pediatrics at the Regional University Hospital of Malaga
- ♦ University Expert in Clinical Research and Epidemiology by the Andalusian School of Pediatrics
- ♦ Doctor of Medicine and Surgery from the University of Málaga
- ♦ Graduate in Medicine and Surgery, University of Malaga

**Dr. Abril Molina, Ana**

- ♦ Assistant Physician in the Pediatric Intensive Care Unit at Virgen de las Nieves University Hospital
- ♦ Collaborator in clinical trials and research projects with the Progreso y Salud Foundation
- ♦ PhD in Medicine, University of Granada
- ♦ Degree in Medicine from the University of Córdoba

**Dr. Moyano Leiva, Olalla**

- ♦ FEA in Pediatrics in the PICU of the Maternal-Children's Hospital, Málaga
- ♦ FEA in Pediatrics in the PICU of the Virgen del Rocio Hospital, Seville
- ♦ FEA in Pediatrics in the Neonatal and PICU of the Hospital Nisa Pardo de Aravaca, Madrid
- ♦ Rotation in the Neonatal Intensive Care Unit, Hospital Vall d'Hebron, Barcelona
- ♦ Specialist in Pediatrics and its Specific Areas, subspecialty in Pediatric Intensive Care, Maternal Hospital, Malaga
- ♦ Degree in Medicine and Surgery from the University of Granada

**Dr. Collado Caparrós, Juan Francisco**

- ♦ FEA in Pediatrics and Pediatric Critical Care at the University Regional Hospital, Malaga
- ♦ FEA in Pediatrics in the PICU of Virgen de la Arrixaca University Hospital, Murcia
- ♦ Specialist in Pediatrics and its Specific Areas by the Regional University Hospital of Malaga
- ♦ Master's Degree of Research in Social and Health Sciences by the Catholic University San Antonio of Murcia
- ♦ Master's Degree in Pediatric Emergencies from San Vicente Mártir Catholic University of Valencia
- ♦ Graduate in Medicine from the University of Córdoba

**Dr. Yun Castilla, Cristina**

- ♦ FEA in Critical Care Pediatrics and Pediatric Emergencies, Maternal-Children's Hospital, Malaga
- ♦ FEA in the Home Hospitalization Unit (HADO) of the Regional University Hospital, Malaga
- ♦ Pediatrician for PRIES Group, at Parque San Antonio Hospital, Malaga, and Xanit International Hospital, Benalmadena
- ♦ Specialist in Pediatrics and Specific Areas at the Carlos Haya Maternity and Children's Hospital, Malaga
- ♦ Online Master's Degree in Diagnosis and Treatment in Pediatric Cardiology and Congenital Heart Disease by Cardenal Herrera University
- ♦ University Master's Degree in Pediatric Emergencies by the University of Valencia
- ♦ Postgraduate Diploma in Statistics Applied to Health Sciences by the UNED (UNED).
- ♦ Degree in Medicine from the University of Córdoba

**Dr. Valverde Montoro, Delia**

- ♦ FEA in Pediatrics in the Critical Care and Pediatric Emergency Unit of the HRU of Malaga
- ♦ FEA in Pediatrics in the Intensive Care Unit of the Vall d'Hebron University Hospital, Barcelona
- ♦ FEA in Pediatrics at the Quirón Dexeus University Hospital, Barcelona
- ♦ FEA in Pediatrics in the Intensive Care Unit of the Doctor Josep Trueta University Hospital, Girona
- ♦ Specialist in Pediatrics at the Regional University Hospital of Malaga
- ♦ Master's Degree in Neonatology from the Spanish Society of Neonatology (SENEO)
- ♦ Expert Level of Hospital Care Pediatrician by the Accreditation Program of Professional Competence
- ♦ Degree in Medicine from the University of Cordoba

**Dr. Roldán Tormo, Elena**

- ♦ FEA in Pediatrics at the PICU of the Maternal-Children's Hospital of Malaga
- ♦ FEA in Pediatrics in the Pediatric Intensive Care Unit of the Virgen de la Arrixaca Laboratory University Hospital, Murcia
- ♦ Specialist in Pediatrics and its Specific Areas, subspecialty in Pediatric Intensive Care, Maternal Hospital of Málaga
- ♦ Master's Degree in Clinical Reasoning and Clinical Practice, Alcalá University
- ♦ Master's Degree in Neonatology from the Catholic University of San Antonio de Murcia
- ♦ University Expert in Pediatric Emergency Medicine from the Catholic University of Valencia
- ♦ Graduate in Medicine from the University of Granada

**Dr. Sanchíz Cárdenas, Sonia**

- ♦ FEA in Pediatrics, Emergency and Pediatric Critical Care at the Regional University Hospital, Malaga
- ♦ Assistant Specialist Physician in the Pediatric Intensive Care Unit of the Virgen de la Arrixaca Laboratory University Hospital, Murcia
- ♦ Specialist in Pediatrics and its Specific Areas by the Regional University Hospital of Malaga
- ♦ Master's Degree in Research in Social and Health Sciences from San Antonio de Murcia Catholic University
- ♦ Master's Degree in Pediatric Emergencies from the San Vicente Mártir Catholic University, Valencia
- ♦ University Expert in Pediatric Emergency Medicine, San Vicente Mártir Catholic University, Valencia
- ♦ Degree in Medicine from the University of Malaga

**Dr. Alés Palmer, María Luisa**

- ♦ Specialist in the Pediatric Emergency Department of the University Hospital Virgen de las Nieves
- ♦ Specialist in the Neonatology Unit of the Virgen de las Nieves University Hospital
- ♦ Master's Degree in Genetic, Nutritional and Environmental Determinants of Growth and Development by the University of Granada
- ♦ University Expert in Pediatric Emergency Medicine from the Catholic University of Valencia
- ♦ Degree in Medicine and Surgery from the University of Granada
- ♦ Graduate in Pharmacy from the University of Granada



**Dr. Sánchez Yáñez, Pilar**

- ♦ FEA in Pediatrics in the Critical Care and Pediatric Emergency Unit of the HRU of Malaga
- ♦ Coordinator of the Research Working Group of the Pediatric Intensive Care Unit, Malaga Regional University Hospital
- ♦ Member of the Working Group on Infectious Diseases and Control of Healthcare-Related Infections of the Pediatric Intensive Care Unit, Malaga Regional University Hospital
- ♦ Member of the Working Group on Extracorporeal Membrane Oxygenation of the Pediatric Intensive Care Unit, Malaga Regional University Hospital
- ♦ Member of the Pediatric Research Group at the Biomedical Research Institute of Malaga (IBIMA) and the Nanomedicine Platform (BIONAND)
- ♦ Member of the Ultrasound Working Group of the Spanish Society of Pediatric Intensive Care (SECIP)
- ♦ FEA in the Pediatric and Neonatal Intensive Care Unit at the Josep Trueta Hospital, Gerona
- ♦ FEA in the Pediatric Hospitalization Service, Neonatology Unit and Pediatric Intensive Care Unit at Hospital Quirón, Málaga
- ♦ FEA in the Pediatric Intensive Care and Emergency Unit of the Carlos Haya Hospital, Malaga
- ♦ Rotation in the Pediatric Intensive Care Unit (PICU) and the Pediatric Cardiovascular Intensive Care Unit (CICU) at Great Ormond Street Hospital, London
- ♦ Specialist in Pediatrics and Specific Areas at the Maternal-Children's Hospital HRU of Malaga
- ♦ University Expert in Statistics Applied to Health Sciences from the National University of Distance Education (UNED)
- ♦ Degree in Medicine and Surgery from the University of Granada

**Dr. Hernández Yuste, Alexandra**

- ♦ FEA in Pediatrics at the PICU of the Maternal-Children's Hospital of Malaga
- ♦ Specialist in Pediatrics and Specific Areas, subspecialty in Pediatric Intensive Care Cardiac, by the Regional University Hospital of Malaga
- ♦ Master's Degree in Diagnosis and Treatment in Pediatric Cardiology and Cardiopathologies by the CEU-Cardenal Herrera University
- ♦ University Expert in Surgery, Anesthesia and Intensive Care of Congenital Heart Diseases from the CEU - Cardenal Herrera University
- ♦ University Expert in Fetal and Pediatric Cardiophysiology by the CEU-Cardenal Herrera University
- ♦ University Expert in Pediatric and Adolescent Cardiology and Cardiac Catheterization from the CEU - Cardenal Herrera University
- ♦ University Expert in Noninvasive Pediatric Cardiology by the CEU-Cardenal Herrera University
- ♦ Degree in Medicine from the University of Salamanca



*A unique, crucial and decisive learning experience to boost your professional development"*

# 04

## Structure and Content

From the fundamental principles of Pediatric Intensive Care, including meticulous initial assessment and ethical decision making, to the advanced approach to specific hemodynamic emergencies, such as pediatric Shock and Heart Failure, the program will offer comprehensive specialization. Therefore, aspects such as the interpretation of pediatric Electrocardiograms, the appropriate use of fluids, inotropic drugs and vasopressors, the management of acute cardiac complications, and the application of postoperative care protocols in Pediatric Cardiac Surgery will be included.





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*The contents of this Postgraduate Diploma will cover a wide range of topics crucial to the effective management of critically ill pediatric patients, through an extensive library of multimedia resources”*

## Module 1. Pediatric Intensive Care

- 1.1. Pediatric Intensive Care
  - 1.1.1. Pediatric Physiology and Pathophysiology in the Context of Intensive Care
  - 1.1.2. Pediatric and Adult Patients in the ICU Key Differences
  - 1.1.3. Principles of Bioethics and Evidence-based Decision Making in the Pediatric Intensive Care Unit.
- 1.2. Initial Assessment of the Critically Ill Pediatric Patient
  - 1.2.1. Comprehensive and Systematic Assessment
  - 1.2.2. Signs of Severity and Stabilization of Vital Functions
  - 1.2.3. Prioritization of Interventions According to Immediate Clinical Needs
- 1.3. Airway Management in Pediatrics
  - 1.3.1. Airway Patency and Ventilatory Management
  - 1.3.2. Endotracheal Intubation and Management of Complications
  - 1.3.3. Selection and Use of Noninvasive Airway Support Devices
- 1.4. Monitoring in the Pediatric Intensive Care Unit
  - 1.4.1. Implementation of Advanced Monitoring Techniques
  - 1.4.2. Interpretation of Data to Adjust Patient Management
  - 1.4.3. Monitoring Technologies to Improve Patient Safety
- 1.5. Pediatric Intensive Care Pharmacology
  - 1.5.1. Pharmacotherapy Management in Emergency and Intensive Care Situations
  - 1.5.2. Pharmacokinetics and Pharmacodynamics in the Pediatric Patient
  - 1.5.3. Identification and Management of Drug Interactions and Adverse Drug Effects
- 1.6. Nutrition in the Critically Ill Pediatric Patient
  - 1.6.1. Assessment of Nutritional Status and Requirements in the Critically Ill Patient
  - 1.6.2. Implementation of Enteral and Parenteral Nutrition Strategies
  - 1.6.3. Monitoring and Adjustment of Nutrition Based on Clinical Response
- 1.7. Ethical Aspects in Pediatric Intensive Care
  - 1.7.1. Specific Ethical Dilemmas in Pediatric Intensive Care
  - 1.7.2. Communicating Bad News in a Compassionate and Effective Manner
  - 1.7.3. Participation in End-of-life Decisions and Palliative Care
- 1.8. Communication with Families and Teamwork
  - 1.8.1. Development of Communication Skills with Families During Stress
  - 1.8.2. Shared Decision Making with Caregivers
  - 1.8.3. Team Approach to Interdisciplinary Care



- 1.9. Prevention of Healthcare-associated Infections in the Pediatric Intensive Care Unit
  - 1.9.1. Protective Barriers and Isolation
  - 1.9.2. Appropriate Use of Antibiotics
  - 1.9.3. Infection Surveillance and Control Strategies
- 1.10. Intrahospital Transport in the Pediatric Critically Ill Patient
  - 1.10.1. Planning and Coordination
  - 1.10.2. Equipment and Monitoring
  - 1.10.3. Safety and Risk Minimization

## Module 2. Hemodynamic Emergencies in the Pediatric Intensive Care Unit

- 2.1. Hemodynamic Monitoring in Pediatrics
  - 2.1.1. Hemodynamic Monitoring in the Critically Ill Pediatric Patient
  - 2.1.2. Interpretation of Hemodynamic Data for the Identification and Treatment of Cardiovascular Function Alterations
  - 2.1.3. Evaluation of the Effectiveness of Therapeutic Interventions with Advanced Monitoring Techniques
- 2.2. The Electrocardiogram (ECG) in Pediatrics
  - 2.2.1. The Pediatric ECG Physiological Differences According to Age
  - 2.2.2. Diagnosis of Electrolyte Disorders, Congenital Heart Disease and Cardiomyopathies through ECG Analysis
  - 2.2.3. Management of Urgent Pediatric Arrhythmias based on ECG Presentation
- 2.3. Shock in Pediatrics: Early Recognition
  - 2.3.1. Identification of Early Signs and Symptoms of Shock in Children for Rapid interventions
  - 2.3.2. Shock in Pediatric Patients: Hypovolemic, Distributive, Cardiogenic, Obstructive
  - 2.3.3. Hemodynamic Monitoring Parameters for Early Detection of Shock
- 2.4. Shock Management in Pediatrics
  - 2.4.1. Evidence-based Resuscitation Protocols for the Treatment of Shock in Children
  - 2.4.2. Use of Fluid Therapy, Inotropes and Vasopressors in the Management of Pediatric Shock
  - 2.4.3. Assessment of Response to Treatment and Adjustment of Life Support Therapy according to the Individual Patient's Needs
- 2.5. Diagnosis of Heart Failure in Children
  - 2.5.1. Use of Imaging Techniques and Biomarkers for Early Diagnosis of Heart Failure in Pediatrics
  - 2.5.2. Acute and Chronic Heart Failure in Children: Clinical Manifestations
  - 2.5.3. Underlying Causes of Heart Failure in the Pediatric Population for Appropriate Etiological Management
- 2.6. Management of Heart Failure in Pediatrics
  - 2.6.1. Implementation of Medical Management Strategies: Optimal Pharmacotherapy for Heart Failure in Children
  - 2.6.2. Surgical Management: Circulatory Assist Devices and Transplantation
  - 2.6.3. Monitoring and Management of Side Effects and Complications of Heart Failure Treatment
- 2.7. Bradyarrhythmias in the Intensive Care Unit
  - 2.7.1. Causes of Bradyarrhythmia in critical pediatric patients.
  - 2.7.2. Management of Emergencies Associated with Bradyarrhythmias: Use of Temporary Pacemakers
  - 2.7.3. Continuous Monitoring and ECG Interpretation in the Management of Bradyarrhythmias
- 2.8. Tachyarrhythmias in the Intensive Care Unit
  - 2.8.1. Tachyarrhythmias Based on the Clinical Presentation and ECG Findings in Children
  - 2.8.2. Implementation of Acute Management Protocols for Tachyarrhythmias: Antiarrhythmic and Cardioversion Medication
  - 2.8.3. Long-term Management Planning for Pediatric Patients with Recurrent Tachyarrhythmias
- 2.9. Hypertension in Pediatrics
  - 2.9.1. Diagnosis and Evaluation of Hypertension in Children: Identification of Secondary Hypertension
  - 2.9.2. Management of Pediatric Hypertension with Lifestyle Modifications and Pharmacotherapy
  - 2.9.3. Monitoring of the Efficacy and Safety of Therapeutic Interventions in Children with Hypertension
- 2.10. Thrombosis and Anticoagulation in Pediatrics
  - 2.10.1. Antithrombotic Prophylaxis in the PICU
  - 2.10.2. Treatment of Thrombosis in Pediatrics
  - 2.10.3. Indications for Anticoagulation in Pediatrics

### Module 3. Cardiologic Emergencies in the Pediatric Intensive Care Unit

- 3.1. Diagnostic Orientation of Congenital Heart Diseases in Pediatric Intensive Care Units
  - 3.1.1. Clinical Presentations of Congenital Heart Disease in PICU
  - 3.1.2. Interpretation of Specific Diagnostic Test Findings for Congenital Heart Disease
  - 3.1.3. Integration of the Clinical History with Imaging and Laboratory Findings to Establish an Initial Diagnostic Plan
- 3.2. Management of Congenital Heart Disease in the ICU
  - 3.2.1. Coordination of the Multidisciplinary Management of Patients with Congenital Heart Disease in the ICU
  - 3.2.2. Monitoring and Adjustment of Specific Pharmacological Treatment for Each Type of Congenital Heart Disease
  - 3.2.3. Implementation of Strategies to Prevent Complications Associated with Congenital Heart Disease in the ICU
- 3.3. Mechanical Circulatory Support
  - 3.3.1. Evaluation of the Indication for Mechanical Circulatory Support in Critical Pediatric Patients
  - 3.3.2. Management of Ventricular Assist Devices Operation and Complications
  - 3.3.3. Monitoring of the Patient's Response to Circulatory Support and Adjustments According to Clinical Evolution
- 3.4. Cardiac Tamponade.
  - 3.4.1. Early Recognition of Signs and Symptoms
  - 3.4.2. Mastery of Diagnostic Techniques for Cardiac Tamponade
  - 3.4.3. Effective Implementation of Emergency Interventions
- 3.5. Myocarditis and Cardiomyopathies
  - 3.5.1. Signs and Symptoms of Myocarditis and Cardiomyopathies in Children and Young Adults
  - 3.5.2. Interpretation of Imaging and Laboratory Studies for Diagnostic Confirmation of Myocarditis and Cardiomyopathies
  - 3.5.3. Implementation of Specific Treatments for Myocarditis and Cardiomyopathies Management of Heart Failure



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- 3.6. Pericarditis and Pericardial Effusion
    - 3.6.1. Diagnosis of Pericarditis and Pericardial Effusion using Clinical and Echocardiographic Tools
    - 3.6.2. Management of Acute Pericarditis and Pericardial Effusion Pericardiocentesis
    - 3.6.3. Prevention of Long-term Complications of Pericarditis and Pericardial Effusion: Pericardial Constriction
  - 3.7. Postoperative Management of Pediatric Cardiac Surgery
    - 3.7.1. Supervision of Immediate Postoperative Hemodynamic and Respiratory Stabilization
    - 3.7.2. Detection and Treatment of Common Postoperative Complications in Pediatric Cardiac Surgery
    - 3.7.3. Recovery and Rehabilitation: Comprehensive Postoperative Care Plan
  - 3.8. Echocardiography in PICU
    - 3.8.1. Performing and Interpreting Echocardiograms to Guide Real-time Intensive Care Management
    - 3.8.2. Echocardiography to Monitor Ventricular Function and Assess for the Presence of Structural Abnormalities
    - 3.8.3. Use of Echocardiography to Assess the Efficacy of Treatment and the Need for Therapeutic Adjustments
  - 3.9. Vasopressors, Vasodilators and Inotropic Agents in Pediatrics
    - 3.9.1. Selection and Dosing of Vasopressors, Vasodilators and Inotropic Agents for Different Clinical Scenarios
    - 3.9.2. Monitoring of Cardiovascular Response and Adjustment of Pharmacological Therapy According to the Patient's Evolution
    - 3.9.3. Recognition and Management of Side Effects and Drug-drug Interactions of these Agents
  - 3.10. Basic and Advanced Cardiorespiratory Resuscitation
    - 3.10.1. Performance of Basic Cardiorespiratory Resuscitation in Pediatric Patients: Application of Chest Compressions and Assisted Ventilation
    - 3.10.2. Advanced Cardiac Life Support Techniques in Children Airway Management, Vascular Access, Drug Administration and Use of Defibrillators
    - 3.10.3. Analysis and Response to the Different Possible Scenarios of Pediatric Cardiac Arrest

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.





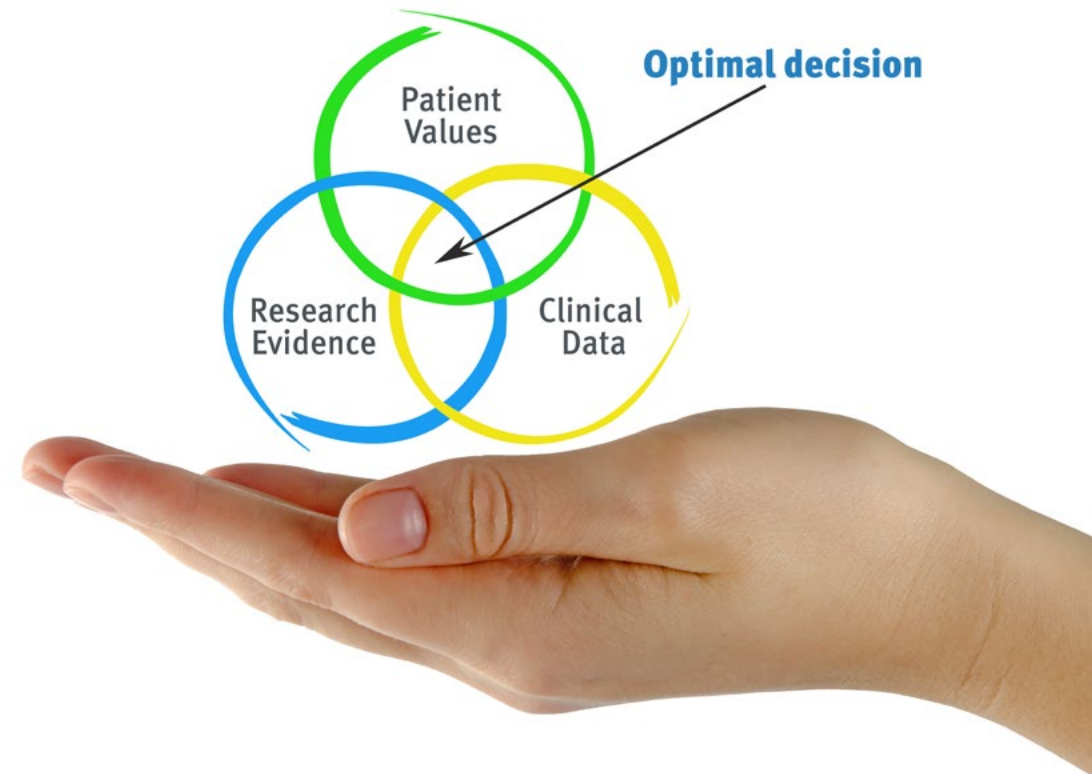
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*Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"*

## 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.

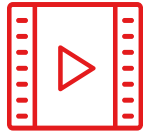
*Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.*

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

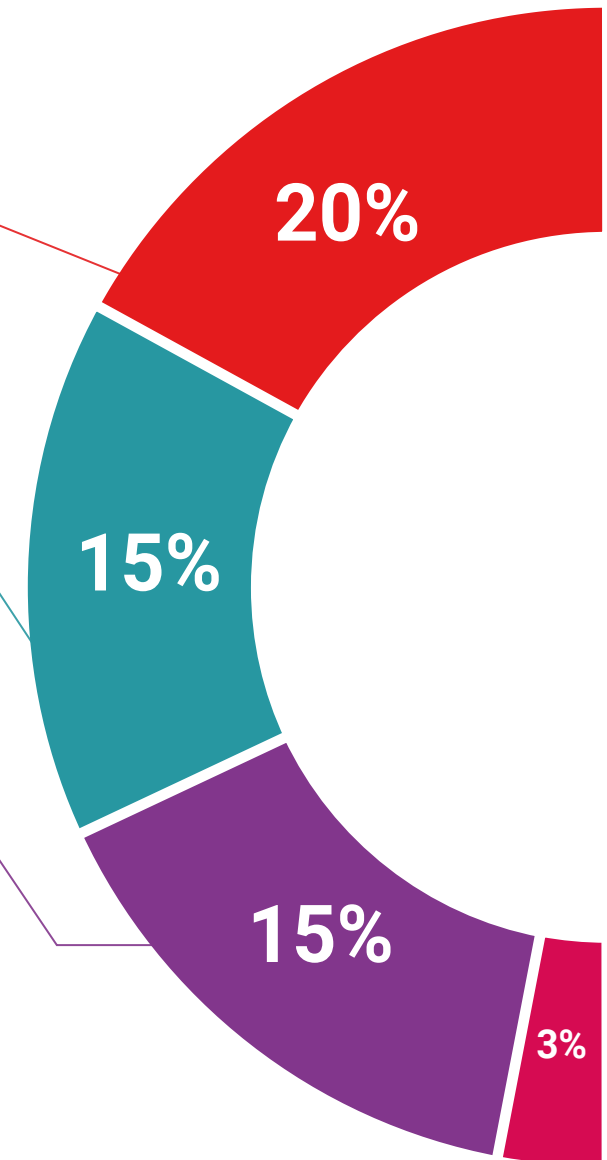
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

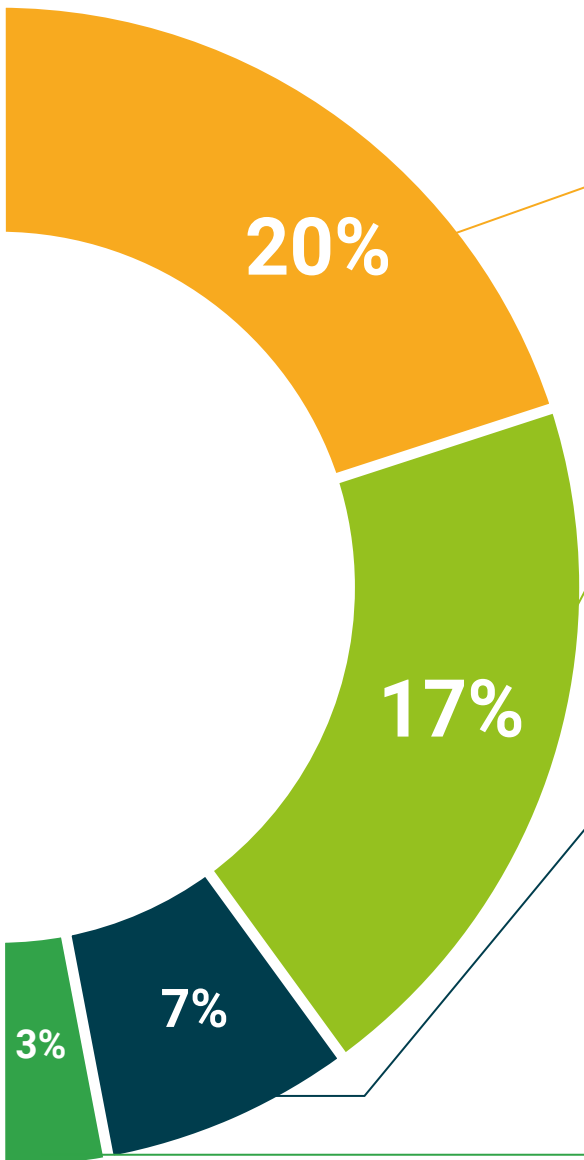
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### 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.



# 06 Certificate

The Postgraduate Diploma in Hemodynamic Emergencies in the PICU guarantees, in addition to the most accurate and up-to-date education, access to a Postgraduate Diploma issued by TECH Global University.







“

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

This private qualification will allow you to obtain a **Postgraduate Diploma in Hemodynamic Emergencies in the PICU** 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.

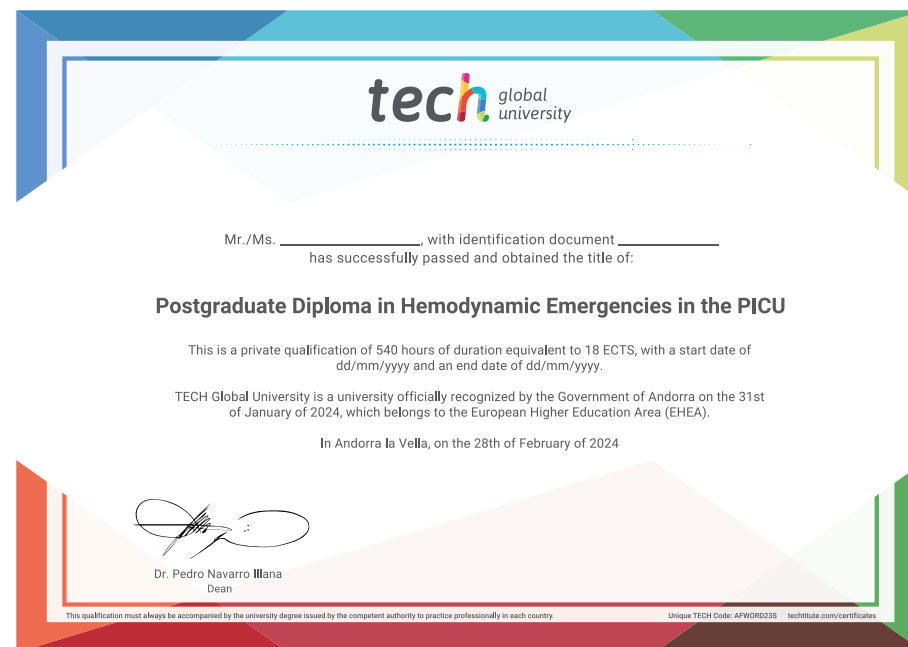
This **TECH Global University** private qualification is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Diploma in Hemodynamic Emergencies in the PICU**

Modality: **online**

Duration: **6 months**

Accreditation: **18 ECTS**



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



**Postgraduate Diploma**  
Hemodynamic Emergencies  
in the PICU

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Global University
- » Credits: 18 ECTS
- » Schedule: at your own pace
- » Exams: online

# Postgraduate Diploma

## Hemodynamic Emergencies in the PICU

