

# Postgraduate Diploma

## Update on Cardiorenal Medicine in Nephrology





## Postgraduate Diploma Update on Cardiorenal Medicine in Nephrology

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/medicine/postgraduate-diploma/postgraduate-diploma-update-cardiorenal-medicine-nephrology](http://www.techtute.com/us/medicine/postgraduate-diploma/postgraduate-diploma-update-cardiorenal-medicine-nephrology)

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Certificate

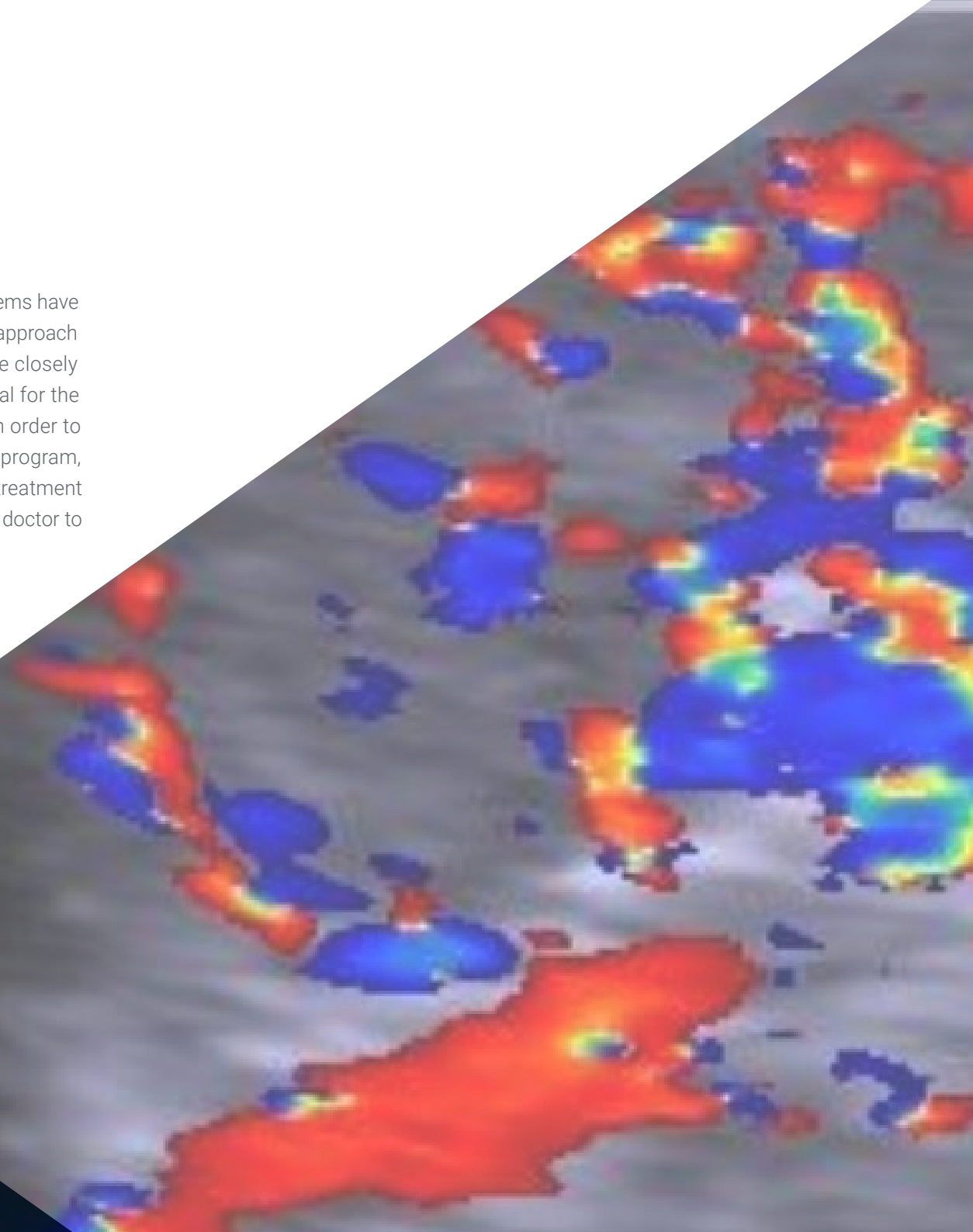
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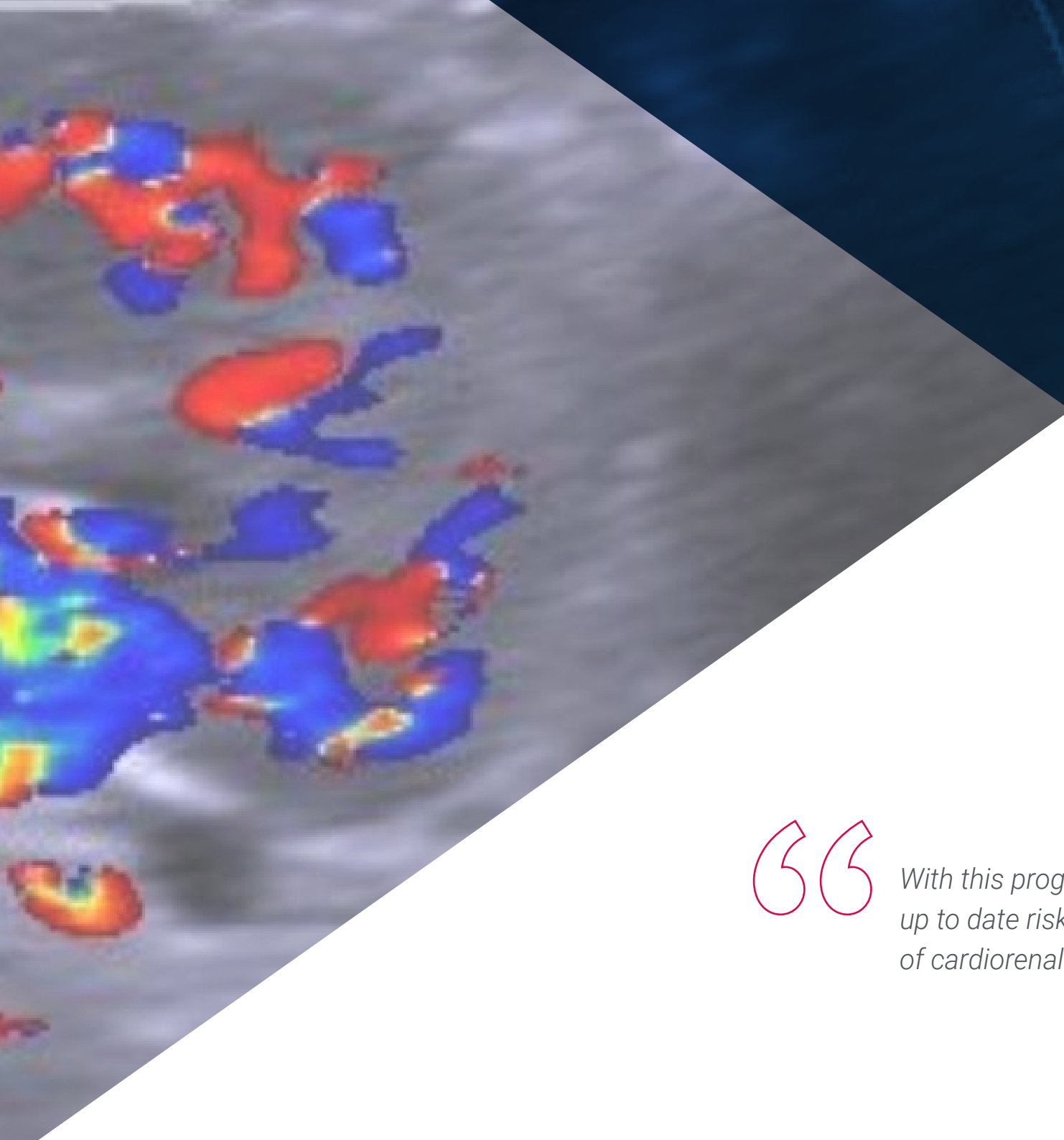
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# 01

# Introduction

Recent findings on the relationship between the cardiovascular and renal systems have led to significant improvements in medical care. Therefore, a more integrated approach has been adopted, where Nephrology and Cardiology specialists collaborate closely to provide effective and coordinated care to patients. Therefore, it is essential for the nephrologist to keep up to date with the evolution of Cardiorenal Medicine in order to develop a state-of-the-art praxis. Given this situation, TECH has created this program, through which the student will learn the latest techniques for diagnosis and treatment of various cardiorenal conditions. All this, in a 100% online mode, allowing the doctor to optimize his update from home.





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*With this program, you will delve into the up to date risk factors for the contraction of cardiorenal diseases”*

The exponential evolution of Cardiorenal Medicine has enabled a refined approach to the management of diseases affecting both the heart and kidneys. As a result, physicians can now enjoy diagnostic tools and techniques that help to accurately and early assess cardiac or renal damage. In addition, innovative and multidisciplinary therapies have emerged that improve patient outcomes and quality of life. As such, specialists are under an obligation to identify these advances in order to position themselves at the forefront of healthcare.

With this in mind, TECH has developed this Postgraduate Diploma, which provides physicians with the most up-to-date knowledge in the approach to cardiorenal disorders. Through 450 hours of study, you will delve into the management of biomarkers in the patient suffering from diseases of this nature or identify the cutting-edge procedures for the treatment of acute heart failure in patients with CKD.

This Postgraduate Diploma is developed through a 100% online format, which allows professionals to combine their daily activities with their educational activities, since they will not be subject to a pre-established timetable. Likewise, the program has didactic materials in advanced formats such as explanatory video or simulation of real cases, which allows students to adapt their studies to their learning needs.

This **Postgraduate Diploma in Update on Cardiorenal Medicine in Nephrology** contains the most complete and up-to-date scientific program on the market.

The most important features include:

- ♦ Practical cases presented by specialists in Nephrology and Internal medicine
- ♦ The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- ♦ Practical exercises where self-assessment can be used 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



*Thanks to this program, you will learn about the latest diagnostic methods that allow the rapid detection of cardiorenal diseases"*

“

*TECH will offer you the best didactic tools for you to enjoy a dynamic and decisive professional update”*

The program’s teaching staff includes professionals from the field who contribute their work experience to this educational 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 academic year. For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

*Explore the advanced utilities of biomarkers in the cardiorenal patient through this program.*

*The 100% online mode of this program will allow you to study without leaving your home.*





# 02

## Objectives

The objective of this program is to provide the physician with the most up to date knowledge in the integral management of diseases that affect the cardiovascular and renal system. In this way, they will be equipped to offer cutting-edge, personalized and effective medical care to patients with cardiorenal conditions. In addition, you will complete your update online and enjoy first class educational content.







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*Get up to date in Cardioresnal Medicine  
enjoying the best study facilities in the  
educational panorama”*



## General Objectives

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- Care for patients with chronic kidney disease and its most frequent complications
- Care for patients with acute renal failure and its complications, as well as to understand the objective of initiating renal replacement therapy, its indications and management
- Have an overview of Nephrology as a specialty with its different branches of knowledge and a global approach to the patient
- Understand and learn the branches that are emerging within the specialty such as diagnostic and interventional nephrology, onconeurology, or cardioneurology

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*Learn about the up to date prognostic drugs used in Heart Failure and Chronic Kidney Disease”*





## Specific Objectives

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### **Module 1. Arterial Hypertension (AH) and Diabetic Kidney Disease**

- ◆ Know in depth the novelties in the diagnosis and study of Arterial Hypertension
- ◆ Understand in depth the indication for the study of Secondary Arterial Hypertension
- ◆ Understand Diabetic Renal Disease as one of the most frequent causes of CKD
- ◆ Learn the management and indication of new nephroprotective drugs

### **Module 2. Cardiorenal Medicine**

- ◆ Expand the knowledge and study of cardiorenal syndrome
- ◆ Learn about the application of ultrasound and biomarkers for the study of patients with cardiorenal syndrome
- ◆ Improve the management of patients with decompensated heart failure, optimization of diuretics
- ◆ Learn the usefulness and criteria for renal replacement therapy in cardiorenal patients

### **Module 3. Glomerular Diseases and Systemic Diseases**

- ◆ Have an in-depth knowledge of the main glomerular diseases, their treatment and management
- ◆ Know in depth how systemic diseases affect the kidney
- ◆ Understand how monoclonal component producing diseases affect the kidney
- ◆ Understand hemolytic uremic syndrome, its differential diagnosis and treatment according to the etiology



03

# Course Management

To preserve the educational quality that distinguishes TECH, this program has a faculty composed of experts in Nephrology. These professionals, who actively practice in prestigious hospitals, have extensive skills in the treatment of cardiorenal diseases. Consequently, the knowledge that the student will acquire will be aligned with the latest advances in this field.





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*This teaching staff is made up of experts with extensive experience in the field of Nephrology, with whom you will update your knowledge of Cardiorenal Medicine"*



## Management



### **Dr. Ribas Closa, Andrés**

- Nephrologist at the Sant Jordi Clinic in Sant Andreu
- Nephrology Del Mar Hospital, Barcelona
- Expert in Clinical Ultrasound at the Francisco de Vitoria University
- Master's Degree in Infectious Diseases and Antimicrobial Treatment from the CEU Cardenal Herrera University
- Degree in Medicine from the Autonomous University of Barcelona



### **Dr. Galcerán, Josep María**

- Head of Nephrology Service at Fundació Althaia in Manresa
- Head of Nephrology Service at the Hospital de Palamós
- Professor of Nephrology at the International University of Catalonia
- Former President of the Catalan Societies of Nephrology and Arterial Hypertension
- Specialization in Nephrology by the Hospital de Bellvitge
- Postgraduate degree in Basic Nephrology from the University of Minnesota
- Degree in Medicine and Surgery from the University of Barcelona
- Member of: Spanish Society of Nephrology and Arterial Hypertension



## Professors

### Dr. Galcerán, Isabel

- ◆ Specialist in Nephrology at Del Mar Hospital of Barcelona
- ◆ Bachelor in Medicine and Surgery from the Autonomous University of Barcelona

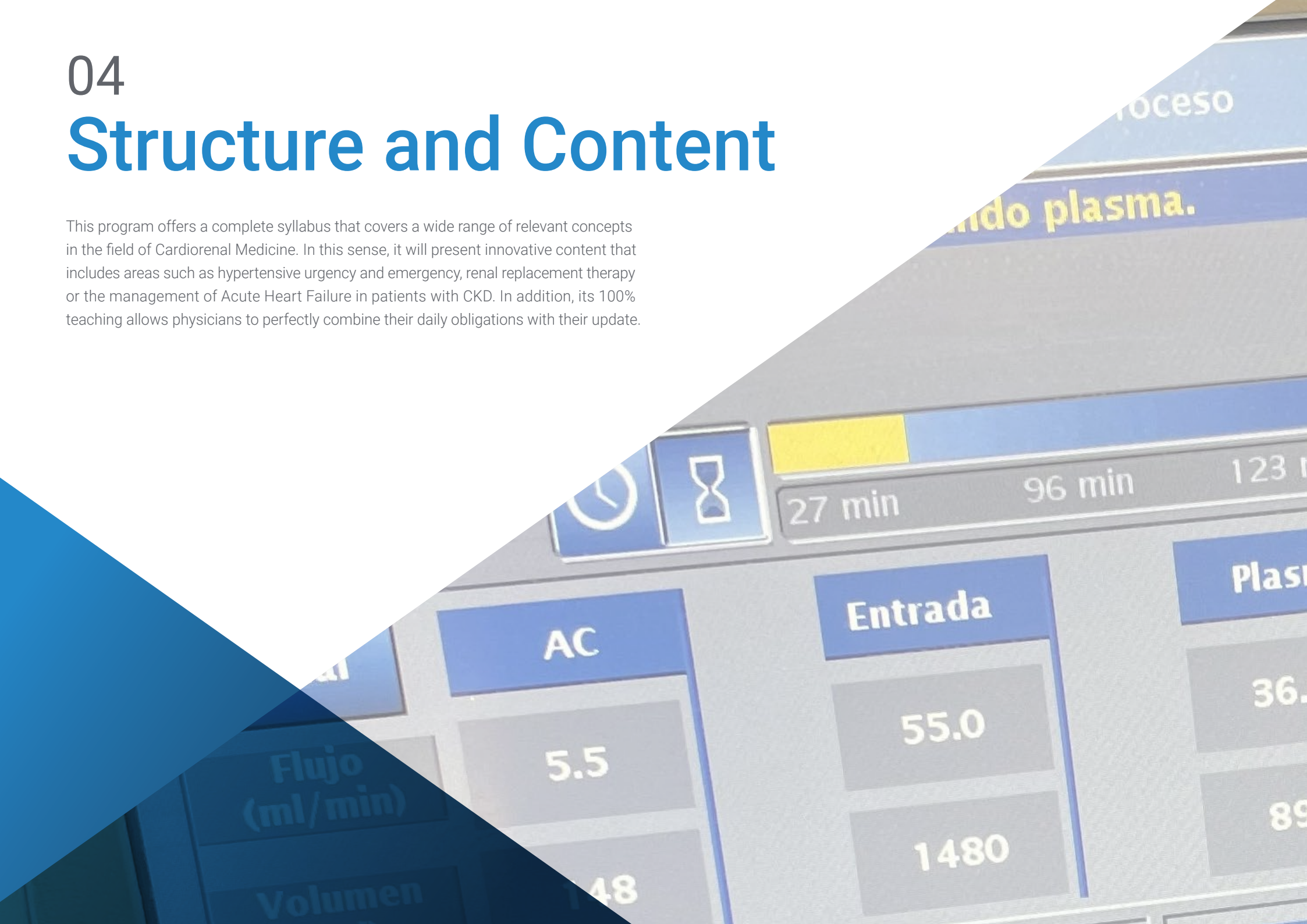
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*Learn about the up to date prognostic drugs used in Heart Failure and Chronic Kidney Disease”*

04

# Structure and Content

This program offers a complete syllabus that covers a wide range of relevant concepts in the field of Cardiorenal Medicine. In this sense, it will present innovative content that includes areas such as hypertensive urgency and emergency, renal replacement therapy or the management of Acute Heart Failure in patients with CKD. In addition, its 100% teaching allows physicians to perfectly combine their daily obligations with their update.





Finalizar proceso

Factor de  
concentración

20

Reposición

30.3

“

*It has the most up to date content on Cardioresnal  
Medicine in the educational panorama"*

## Module 1. Arterial Hypertension (AH) and Diabetic Kidney Disease


- 1.1. Pathogenesis of Arterial Hypertension and cardiovascular risk
  - 1.1.1. Renin angiotensin system
  - 1.1.2. Cardiac remodeling in patients with hypertension
- 1.2. New developments in the diagnosis of AH
  - 1.2.1. ACC/AHA, ESC/ESH Guidelines
  - 1.2.2. Diagnostic Procedures in Arterial Hypertension
  - 1.2.3. Usefulness of the ABPM and the AMPA
- 1.3. Arterial Hypertension in Special Situations
  - 1.3.1. Resistant and refractory AH
  - 1.3.2. Spurious AH
  - 1.3.3. AH in Chronic Kidney Disease
- 1.4. Secondary Arterial Hypertension
  - 1.4.1. When is the study indicated? Etiologies
  - 1.4.2. Complementary examinations in secondary hypertension
  - 1.4.3. Secondary hyperaldosteronism Diagnosis
  - 1.4.4. Treatment in secondary hyperaldosteronism Updates
- 1.5. Hypertensive Emergency and Urgency
  - 1.5.1. Diagnosis of Hypertensive Emergency
  - 1.5.2. Management of hypertensive emergency/hypertensive emergency
- 1.6. Therapeutic developments in AH
  - 1.6.1. Renal Denervation in patients with AH refractory to treatment
  - 1.6.2. New aldosterone receptor antagonists
  - 1.6.3. PCSK9 Inhibitors
- 1.7. Diabetic Kidney Disease
  - 1.7.1. Definition. Histological Classification
  - 1.7.2. New developments in the Pathophysiology of Diabetic Kidney Disease
- 1.8. New Treatments in Diabetic Kidney Disease
  - 1.8.1. Inhibitors of sodium-glucose cotransporter type 2 (SGLT-2) Utility and practical aspects Diabetic and non-diabetic patients
  - 1.8.2. GLP-1-Agonists:

- 1.9. Carotid Ultrasound
  - 1.9.1. Intima-media thickness
  - 1.9.2. Atheroma plaques
  - 1.9.3. Cardiovascular risk according to carotid ultrasound findings
- 1.10. Renovascular Arterial Hypertension
  - 1.10.1. Renal Artery Stenosis
  - 1.10.2. Renal Doppler Indications
  - 1.10.3. Arteriography and angioplasty indications

## Module 2. Cardiorenal Medicine

- 2.1. Pathophysiology of Cardiorenal Syndrome
  - 2.1.1. Physiological interactions between the heart and the kidney
  - 2.1.2. Risk factors in heart-kidney interaction
  - 2.1.3. Congestive phenotypes in the cardiorenal patient
- 2.2. Vexus Protocol in the Cardiorenal Patient
  - 2.2.1. Stratification of systemic congestion
  - 2.2.2. Portal venous Doppler
  - 2.2.3. Suprahepatic venous Doppler
  - 2.2.4. Renal venous Doppler
- 2.3. Pleuropulmonary Ultrasound in Cardiorenal Patients
  - 2.3.1. Normal Pulmonary Ultrasound A lines pattern
  - 2.3.2. Pleural sliding and pleural effusion
  - 2.3.3. Blue Protocol for dyspnea study
- 2.4. Basic Echocardiography in the Cardiorenal Patient
  - 2.4.1. Basic echocardiographic planes
  - 2.4.2. Assessment of valvulopathies
  - 2.4.3. Ventricular function. TAPSE, MAPSE
  - 2.4.4. Diastolic alterations in the chronic renal patient
- 2.5. Biomarkers in the Cardiorenal Patient
  - 2.5.1. Usefulness of CA125. Usefulness of Nt-ProBNP
  - 2.5.2. Management of biomarkers in the cardiorenal patient
  - 2.5.3. Resistance to diuretics Mechanisms. Treatment



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- 2.6. Bioimpedance in Cardiorenal Medicine
    - 2.6.1. Usefulness of Bioimpedance
    - 2.6.2. Limitations
    - 2.6.3. Useful parameters in the cardiorenal patient
  - 2.7. Prognostic drugs in Heart Failure and CKD
    - 2.7.1. ARA-II, ACE INHIBITORS
    - 2.7.2. ARNI
    - 2.7.3. Uses of ISGLT-2 in cardiorenal patient
  - 2.8. Diuretics in the Cardiorenal Patient
    - 2.8.1. Utility of loop diuretics
    - 2.8.2. Utility of acetazolamide, ADVOR study
    - 2.8.3. Sequential blockade of the nephron
    - 2.8.4. Resistance to diuretics
  - 2.9. Management of Acute Heart Failure in Patients with CKD
    - 2.9.1. Diuretic dosage
    - 2.9.2. Acid-base balance disturbances. Alkalosis due to diuretic
    - 2.9.3. Furosemide Test
    - 2.9.4. Utility of inotropes
  - 2.10. Renal Replacement Therapy in the Management of the Cardiorenal Patient
    - 2.10.1. Peritoneal Dialysis Utility in the patient with refractory heart failure
    - 2.10.2. Other renal replacement techniques Continuous renal replacement techniques, SCuF, intermittent hemodialysis

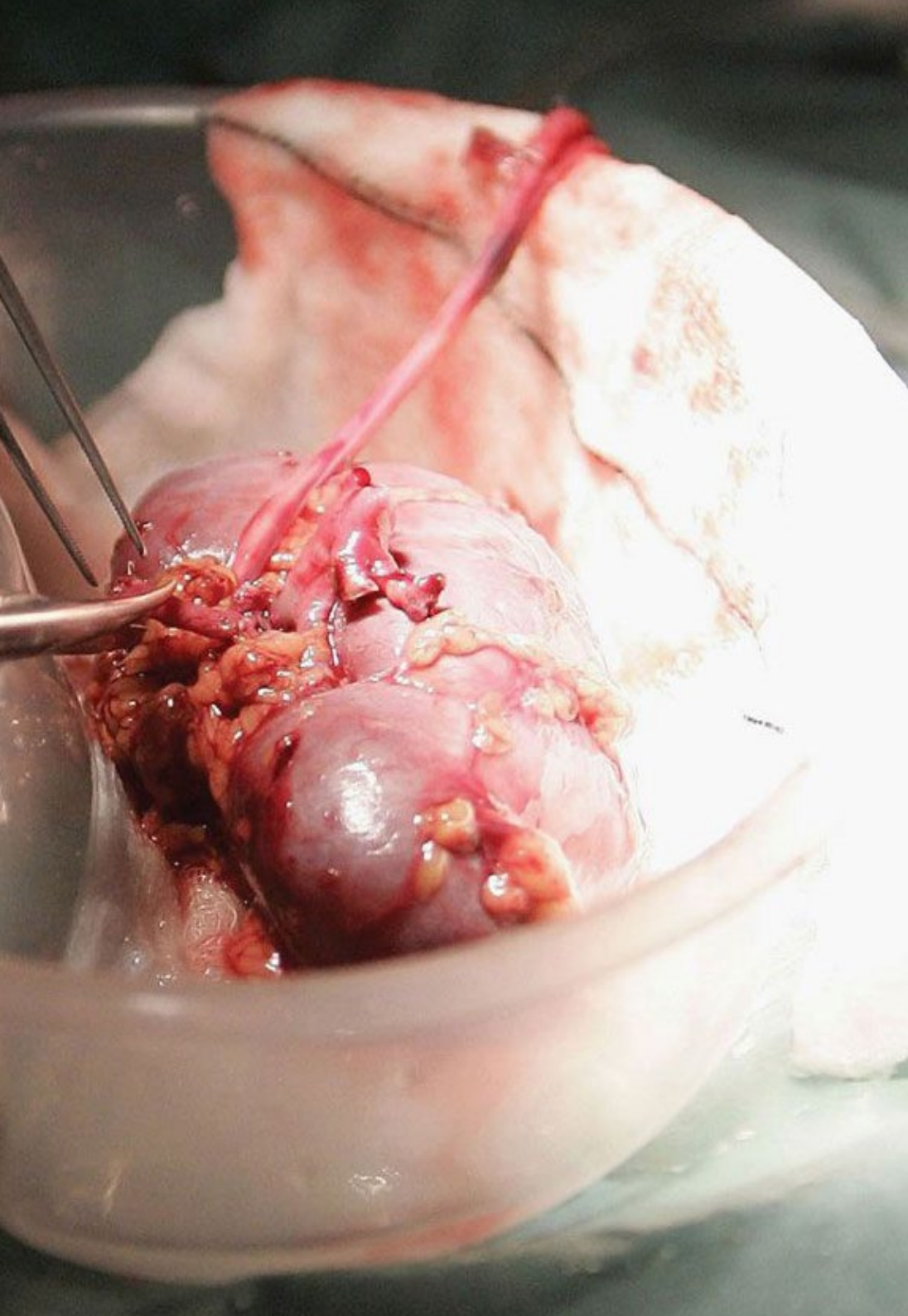
### Module 3. Glomerular Diseases and Systemic Diseases

- 3.1. Idiopathic Nephrotic Syndrome in Adults
  - 3.1.1. Definition and Classification
  - 3.1.2. Minimal change disease. Etiology, Diagnosis and Treatment
  - 3.1.3. Focal and segmental glomerulosclerosis. Etiology, Diagnosis and Treatment
- 3.2. Membranous Nephropathy
  - 3.2.1. Etiology, Definition and Classification
  - 3.2.2. New developments in diagnosis. New serological markers
  - 3.2.3. Treatment. Current clinical trials
  - 3.2.4. New molecules in treatment

- 3.3. ANCA vasculitis
  - 3.3.1. Classification of ANCA vasculitides and diagnosis. Urine soluble CD163
  - 3.3.2. Diagnosis of ANCA vasculitis
  - 3.3.3. New developments in the treatment of ANCA vasculitis. Avacopan
  - 3.3.4. Plasmapheresis. PEXIVAS study
- 3.4. IgA Nephropathy
  - 3.4.1. Diagnosis
  - 3.4.2. Treatment. KDIGO Guidelines
  - 3.4.3. New developments in treatment. Nefecon
- 3.5. Lupus and Kidney
  - 3.5.1. Lupus nephritis. Indications for renal biopsy
  - 3.5.2. Complement pathway in lupus nephritis
  - 3.5.3. Treatment in lupus nephritis
- 3.6. Kidney and Monoclonal Gammopathies
  - 3.6.1. Monoclonal Gammopathies of uncertain significance
  - 3.6.2. Monoclonal Gammopathies of Renal Significance
  - 3.6.3. Enf. Waldstrom and hyperviscosity sde
- 3.7. Myeloma kidney
  - 3.7.1. Diagnosis and indications for renal biopsy
  - 3.7.2. Renal Replacement Therapy
  - 3.7.3. Elimination of light chains by depuration techniques
  - 3.7.4. Prognosis of Disease
- 3.8. Hemolytic Uremic Syndrome
  - 3.8.1. Differential Diagnosis
  - 3.8.2. Usefulness of plasmapheresis in HUS/PTT
  - 3.8.3. Eculizumab. Indications
- 3.9. Renal amyloidosis
  - 3.9.1. Types of amyloidosis
  - 3.9.2. Etiopathogenesis and Histology
  - 3.9.3. Diagnosis
  - 3.9.4. Treatment. IL-6 Inhibitors
- 3.10. Recurrence of Glomerular Diseases in Post Kidney Transplantation
  - 3.10.1. Focal and segmental glomerulosclerosis
  - 3.10.2. IgA Nephropathy







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*With TECH's Relearning method, you will avoid investing long hours in studying and you will be able to focus on the key concepts of the syllabus in an efficient way"*

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 NUpdate on Cardioresenal Medicine in Nephrology guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Technological University.







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

This **Postgraduate Diploma in Update on Cardiorenal Medicine in Nephrology** contains the most complete and up-to-date scientific on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Diploma** issued by **TECH Technological University** via tracked delivery\*.

The diploma issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Diploma, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Diploma in Update on Cardiorenal Medicine in Nephrology**

Official N° of Hours: **450 h.**



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

future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present  
online training  
development language  
virtual classroom



## Postgraduate Diploma

Update on Cardiorenal  
Medicine in Nephrology

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online



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## Update on Cardiorenal Medicine in Nephrology

