

# Internship Program

Diagnosis and Treatment in Pediatric  
Cardiology and Congenital Heart Disease



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Cardiology and Congenital Heart Disease

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# 01 Introduction

Cardiovascular problems in children are increasing as a consequence of unhealthy lifestyle habits and the continuous discovery of different congenital heart diseases. In this context, medical specialists are challenged to keep up to date with the most advanced diagnostic and therapeutic procedures. Although there are several programs that cover these topics, most of them are theoretical and do not offer the professional the practical skills required in this field of health. Faced with this reality, this TECH Internship Program breaks into the educational market by offering an intensive, immersive and 100% face-to-face experience that will ensure the pediatric cardiologist the necessary updating of his or her health care skills. Thus, during 3 weeks, students will have the opportunity to learn with great experts and with the best technologies.



*The intensive face-to-face stay provided by TECH with this Internship Program will allow you to expand your professional practice with the most modern technological resources and skills in relation to Pediatric Cardiology”*







Congenital Heart Disease represents one of the most important health problems for pediatric patients. For this reason, science and technology are continually exploring the development of therapeutic and surgical procedures to improve the quality of life of pediatric patients and, above all, to prevent deaths. Specific care tools for the diagnosis and treatment of children and adolescents have been developed on the basis of various research and clinical trials, which are frequently advanced and updated. These innovations represent a challenge for medical specialists who must master all of them from a theoretical and, at the same time, practical point of view.

For this reason, TECH has developed this Internship Program, 100% practical and intensive, where the pediatric cardiologist will be able to update himself/herself on the most modern praxis in the management of these diseases. The program consists of 3 weeks of exhaustive and rigorous learning in a hospital institution of reference in the study of Congenital Heart Disease. During this time, you will have access to optimal surgical, hemodynamic and diagnostic technologies that will significantly enhance your skills. In addition, you will be able to choose the healthcare facility that best suits your geographic location or your interests in international advancement.

Likewise, the academic stay offers the possibility of exchanging with great experts in pediatric cardiology. From this educational process, the physician will be able to acquire new experiences, based on excellent research results. Likewise, an assistant tutor will be in charge of supervising their progress, including dynamic and innovative activities throughout the duration of this Internship Program.

# 02

## Why Study an Internship Program?

Nowadays, the programs of learning about Diagnosis and Treatment in Pediatric Cardiology and Congenital Heart Diseases do not offer the physician the main practical aspects for the care of these conditions. For this reason, TECH has created a degree program based on the direct, face-to-face and immersive study of all the problems of this medical area. This academic modality, which lasts 3 weeks, facilitates contact with real cases of varying complexity, under the supervision of leading experts in the field. Thus, the physician will acquire the most requested competencies in the therapeutic and surgical scenario with greater speed and flexibility.



*Enroll in this TECH Internship Program and you will learn the main surgical advances to implement fetal and neonatal cardiac surgeries”*

### 1. Updating from the latest technology available

Throughout this Internship Program, the specialist will handle modern technologies for the diagnosis of cardiovascular pathologies and other problems related to the human heart in children. At the same time, they will examine the most innovative surgical tools that today make possible such complex procedures as cardiac or pulmonary transplantation.

### 2. Gaining In-Depth Knowledge from the Experience of Top Specialists

This Internship Program will provide the pediatric cardiologist with the support of a renowned healthcare team. Through these professionals, the physician will develop high competencies in reading echocardiograms and other non-invasive diagnostic tests. In addition, he or she will be able to perform difficult interventions to repair congenital defects in an optimal way.

### 3. Entering First-Class Clinical Environments

TECH also facilitates the access of its graduates to prestigious and rigorous healthcare institutions. In these facilities, the doctor will have access to the best equipment to perform stress tests, surgical procedures and provide the necessary follow-up to pediatric patients with different heart diseases. In turn, he or she will work with distinguished experts who possess the highest level of skills in this area of health.



#### 4. Putting the acquired knowledge into daily practice from the very first moment

The academic market has educational Programs focused on the theoretical assimilation of the latest developments in the area of Pediatric Cardiology and the study of Congenital Heart Disease. However, this degree stands out in the educational panorama, offering a 100% practical preparation to professionals and the opportunity to execute their competencies in first person, to attend several real cases.

#### 5. Expanding the Boundaries of Knowledge

TECH, as the largest digital academic institution of the moment, dedicates special attention to the training of its graduates in a practical and comprehensive way. For this reason, it has developed this academic modality that favors the access of professionals to international centers where they will update their skills in the management of various pediatric cardiac pathologies.



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



# 03 Objectives

This Internship Program in Diagnosis and Treatment in Pediatric Cardiology and Congenital Heart Disease delves into the latest trends in the approach to heart disease in children and adolescents. Through its innovative learning methodology, the physician will be able to develop competencies in a more direct way, offering specific care to real patients from the first educational day. In addition to updating their practice, they will have the opportunity to exchange with leading experts in these areas.



## General Objectives

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- Develop the skills required to diagnose and treat a new-born with heart disease
- Apply the most innovative diagnostic methods to detect congenital heart disease in breastfeeding infants, children and adolescents with heart problems
- Determine the appropriate treatment for congenital heart disease in the pediatric age group
- Gain in-depth understanding of the areas in which professionals must be trained, in order for them to be able to provide the best practice when dealing with fetuses, children and adolescents with heart disease, both congenital and acquired







## Specific Objectives

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- ♦ Identify, classify and orientate the different types of heart disease in pediatrics
- ♦ Investigate the the pediatric heart failure and transplantation and pulmonary
- ♦ Master the diagnostic protocol for pediatric PHT
- ♦ Define when and how to perform cardiac catheterization
- ♦ Apply non-invasive diagnostic techniques that currently allow to diagnose the lesion and its functional status
- ♦ Evaluate the performance of prenatal screening and other indications for fetal echocardiography
- ♦ Review the current status for the management of the different arrhythmias that may occur in fetuses, infants and children, with their clinical invasive and use of devices
- ♦ Distinguish the different types of supraventricular tachycardias
- ♦ Correct handling of the defibrillation test
- ♦ Understand the terminology and principles of surgery for congenital heart disease and the immediate care that must be given during the patient's stay in the ICU
- ♦ Study rotational angiography and new imaging techniques in adolescent and adult congenital heart disease
- ♦ Gain in-depth understanding of the transition of patients from pediatric to adult age, focusing especially on the new problems which they could face
- ♦ Analyze types of arrhythmias, conduction disturbances and electrophysiological abnormalities in adults with congenital heart disease
- ♦ Differentiate the different types of coronary anomalies and manage surgical techniques for septal defects and rings



*Enroll in this degree and you will be able to assess in situ different types of arrhythmias, conduction disturbances and electrophysiological abnormalities in pediatric patients with congenital heart disease”*

# 04 Educational Plan

This Internship Program is a 3-week Postgraduate Certificate, during which the physician will delve in a practical, face-to-face and immersive way into the main novelties in the field of Pediatric Cardiology. For this innovative mode of study, TECH provides its graduates with direct access to real patients, under the supervision of experts with extensive clinical and surgical experience. Thanks to them, the medical professional, enrolled in the degree, will be able to handle high scope technology and implement modern therapies based on the latest scientific discoveries.

In this training proposal, of a completely practical nature, the activities are aimed at developing and perfecting the competencies necessary for the provision of pediatric care, and are oriented towards specific training for the practice of the activity, in an environment of safety for the patient and high professional performance.

The training sessions will take place from Monday to Friday until 120 educational hours are completed. Throughout the Internship Program, the physician will have an assistant tutor by his side who will supervise his progress and will also be in charge of inserting the student in the work dynamics of an office or surgical unit specialized in Pediatric Cardiology and Congenital Cardiopathies.

The practical teaching 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 teachers and other fellow trainees who facilitate teamwork and multidisciplinary integration as transversal competencies for the praxis of pediatric medicine (learning to be and learning to relate).

The procedures described below will form the basis of the practical part of the training, 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:



*Receive specialized education in an institution that can offer you all these possibilities, with an innovative academic program and a human team that will help you develop your full potential"*

Module	Practical Activity
<b>Non-Invasive Cardiac Imaging and Functional Tests</b>	Implement transthoracic echocardiography, 2D and 3D, or Strain to study the shape, function and internal structures of the heart
	Apply transesophageal echocardiography as a complementary ultrasound-based examination to other imaging procedures and functional tests
	Use cardiac CT to diagnose, monitor and plan appropriate treatments for various vascular conditions in veins and arteries
	Detect pericarditis and tumors of heart by cardiac magnetic resonance imaging
	Apply electrocardiogram and other functional tests to record your heart's electrical activity
	Perform stress and stress tests in pediatric patients and measure their results through electrocardiographic Holter and blood Artery
<b>Interventional diagnostic techniques based on pediatric hemodynamics</b>	Extract samples from the cardiac muscle, by means of Endomyocardial Biopsy, through a peripheral vein access
	Perform Aortogram protocols, injecting a contrast substance into the aorta and taking a sequence of X-ray images
	Perform vascular diagnostic radiology tests such as Arteriography to evaluate peripheral vascular disease
	Assess coronary arteries supplying the heart using cardiac intravascular ultrasound
	Evaluate pulmonary arterial hypertension using pulmonary vascular reactivity testing

Module	Practical Activity
<b>Surgery, Anesthesia and Intensive Care of Heart Diseases</b>	Place ductal stents in newborns with severe congenital heart disease
	Perform embolization of arteriovenous fistulas
	Use radiofrequency to treat perforation of obliterated structures, and pressure guidewires to access locations unapproachable with the usual catheters
	Apply percutaneous treatments for acute and chronic pulmonary thromboembolism, Foramen Ovale, atrial septal defect, ventricular septal defect, aortic coarctation, arteriovenous fistulas, among others
	Repair aortic coarctation especially with aortic arch hypoplasia and other arch alterations such as aortic arch interruption, using selective cerebral perfusion techniques
	Perform Tirone David surgery especially with patients with Marfan type anomalies who have ascending aortic aneurysms
<b>Transition and Congenital Heart Disease in Adults</b>	Proceed to cardiac transplantation, with ECMO type ventricular assistance
	Implement interventional surgical treatment for the correction of aortic valve disease
	Use palliative surgeries such as systemic pulmonary fistulas and pulmonary cerclage for ventricular preparation and subsequent surgeries
	Close the Ostium Secundum type atrial septal defect by means of extracardiac Cortocircuits
	Apply the Transposition corrected of great arteries Mitral atresia



# 05

## Where Can I Do the Internship Program?

By taking this Internship Program, the physician will have within his reach the opportunity to study in hospital institutions located in different cities and countries around the world. This learning opportunity, unique in its kind, is offered by TECH so that its graduates achieve a comprehensive mastery of international standards on Pediatric Cardiology and other congenital heart pathologies. In addition, all the locations selected for this educational modality have accredited technologies and qualified experts from whom the student will get the most out of.

“

*Enroll in TECH and you will put into practice the most modern surgical procedures in the field of Pediatric Cardiology”*





The student will be able to do this program at the following centers:



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 Montepíncipe

Country	City
Spain	Madrid

Address: Av. de Montepíncipe, 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 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 Nuevo Belén

Country	City
Spain	Madrid

Address: Calle José Silva, 7, 28043, Madrid

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

**Related internship programs:**

- General and Digestive System Surgery
- Clinical Nutrition in Medicine



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

### HM CIEC - Centro Integral de Enfermedades Cardiovasculares

Country	City
Spain	Madrid

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

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

**Related internship programs:**

- Cardiac Surgery
- Acute Coronary Syndrome



Medicine

### HM CIEC Barcelona

Country	City
Spain	Barcelona

Address: Avenida de Vallcarca, 151,  
08023, Barcelona

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

**Related internship programs:**

- Cardiac Arrhythmias
- Cardiac Surgery



Medicine

### Policlínico HM Sanchinarro

Country	City
Spain	Madrid

Address: Av. de Manoteras, 10,  
28050, Madrid

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

**Related internship programs:**

- Diagnosis and Treatment in Pediatric Cardiology and Congenital Heart Disease



# 06

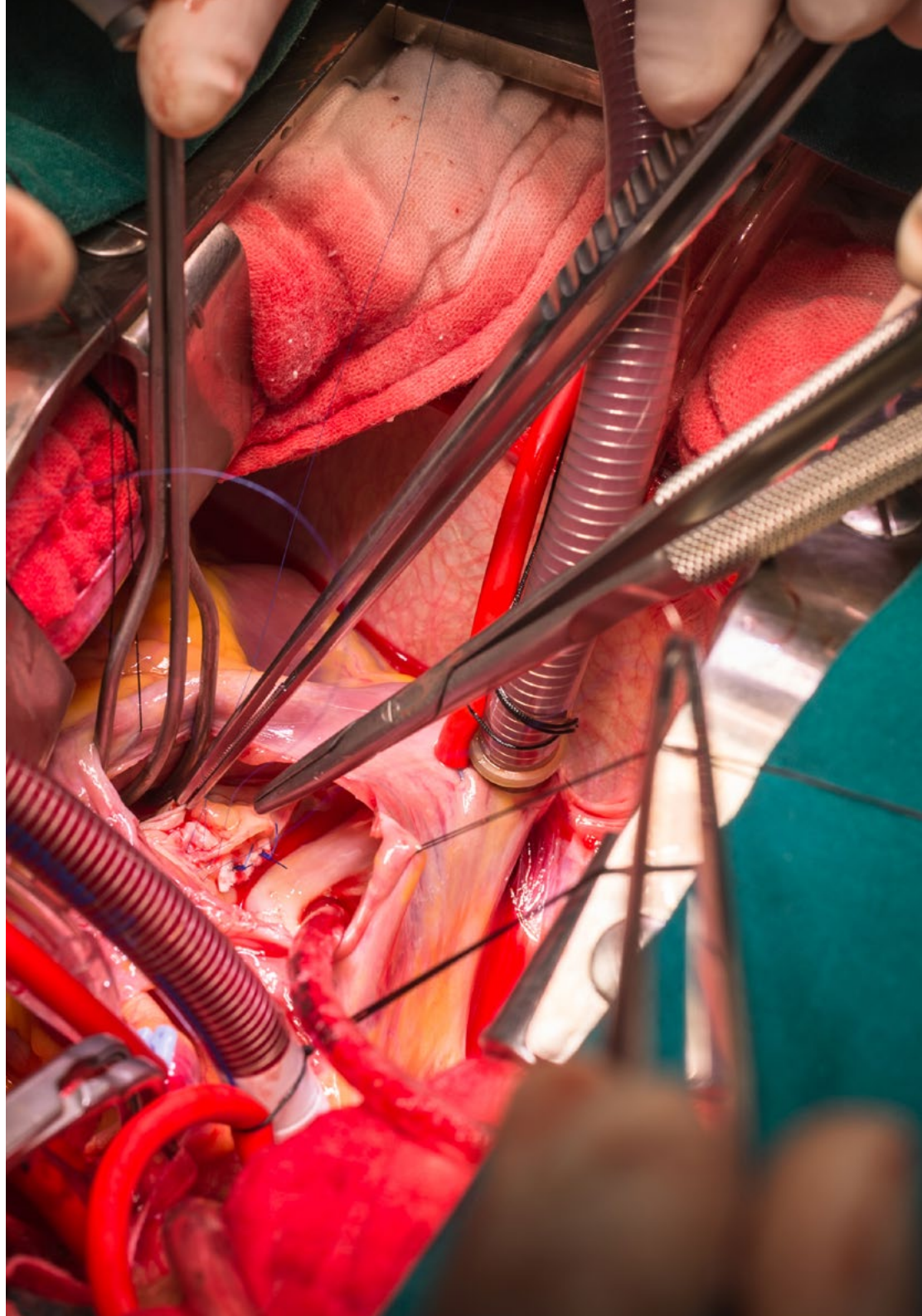
## General Conditions

### 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 practical training 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 Internship Program, students will be assigned with 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 with 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 Internship Program, 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:** Professionals who pass the Internship Program will receive a certificate accrediting their stay at the center.

**5. EMPLOYMENT RELATIONSHIP:** The Internship Program shall not constitute an employment relationship of any kind.

**6. PRIOR EDUCATION:** Some centers may require a certificate of prior education for the Internship Program. 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 Internship Program 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.

# 07 Certificate

This **Internship Program in Diagnosis and Treatment in Pediatric Cardiology and Congenital Heart Disease** contains the most complete and up-to-date program on the professional and academic scene.

After the student has passed the evaluations, they will receive their corresponding TECH Internship Program issued by TECH Technological University via tracked delivery.

The certificate issued by TECH will reflect the grade obtained in the test.

Title: **Internship Program in Diagnosis and Treatment in Pediatric Cardiology and Congenital Heart Disease**

Duration: **3 weeks**

Course Modality: **Monday to Friday, 8-hour consecutive shifts**

Total Hours: **120 h. of professional practice**



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