

**Pediatric Cardiology Fellowship Training Program Manual**

*Saudi Commission for Health Specialties*



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Training Program Manual**

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# **Pediatric Cardiology Fellowship Training Program Manual**

## **1-INTRODUCTION**

Pediatric Cardiology is a subspecialty concerning the congenital abnormalities of the heart in growing and developing individuals.

Changes in the practice of Pediatric cardiology over the last decade had necessitated a fresh definition of work patterns, training and required expertise.

The Specialty provides service for fetus, childhood and up adulthood.

It has close liaison with general Pediatrics, its subspecialties, and other specialties like Cardiothoracic Surgery, Adult Cardiologist, Obstetrics, Radiology and Pathology. The need for a program is to provide an outline for Pediatric cardiology Fellowship training and certification process under the supervision of Saudi Commission for Health Specialties. The key for success of the program is a strong collaboration between the accredited centers in Pediatric cardiology fellowship training in the Kingdom of Saudi Arabia.

## **2-GOALS AND OBJECTIVES**

### **General:**

Training Pediatrician to be competent in recognizing and managing patients with congenital heart defect.

### **Specific:**

Pediatric Cardiology Fellowship Training Program should provide an intellectual environment for acquiring the knowledge, skills and clinical judgment essential for this specialty. The program will have an appropriate balance between clinical service and academic endeavors. It will encourage the trainee to become dedicated to continuous education and teaching. The trainee upon completion of the program would be able to provide an all round care of infant, children adolescence and grown-up with congenital heart disease (Adult Congenital Heart Disease).

## **3-CONTENT OF THE CURRICULUM**

A desirable Pediatric cardiologist fellowship Program should ensure trainee adequate exposure, expertise development and competency in the following areas:(see program syllabus for details)

- Medical information and Clinical Assessment
- Interpretation of Physical Findings
- Appropriateness of various testing modalities and Interpretation of results.

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These areas are summarized as:

### 3.1 Electrophysiology including:

- 3.1.1 Twelve lead Electrocardiogram (ECG)
- 3.1.2 Twenty four hours ambulatory (Holter report)
- 3.1.3 Various exercise testing form and autonomic studies
- 3.1.4 Newborn, infant and children's congenital and acquired arrhythmia; diagnosis and management
- 3.1.5 Transesophageal Electrocardiogram and pacing
- 3.1.6 Transvenous pacemaker insertion, management and programming
- 3.1.7 Fetal abnormal arrhythmia; detection and management
- 3.1.8 Indication and basic interpretation of Intracardiac electrophysiology studies and radio frequency ablation

### 3.2 Echocardiogram and Doppler imaging:

- 3.2.1 M-mode and conventional 2-D echocardiography examinations of normal heart and all various forms of complex congenital heart diseases
- 3.2.2 Doppler echocardiography [spectral and color Doppler]  
In assessment of normal and abnormal flow across valves and vessels
- 3.2.3 Application of segmental anatomy in diagnosis and interpretation of echocardiographic studies
- 3.2.4 Various forms of ventricular function assessment including digitization of M- mode strips and volumetric comparative studies

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3.2.5 Quantitative analysis of valvular area and heart chamber areas

3.2.6 Skills of emergency and intensive care echocardiography

3.2.7 Skills of Transesophageal echocardiography performance and interpretation

3.2.8 Fetal M-mode Doppler cardiography

3.2.9 Sedation and monitoring techniques of infants and children to perform echocardiography

### 3.3 Cardiac catheterization and Angiography

3.3.1 Pre-catheterization studies, indications and patients assessment

3.3.2 Appropriate selection of sedating agents

3.3.3 Skills of obtaining vascular accesses

3.3.4 Right and left heart catheterization and catheter manipulation

3.3.5 Calculation of cardiac output, shunts and gradients

3.3.6 Pharmacological manipulations of the cardiovascular system

3.3.7 Arrhythmia management during procedures

3.3.8 Angiography skills: angulations, contrast injections manipulations

3.3.9 Indications for specific therapeutic procedures, such as, balloon angioplasty, balloon and blade atrial septostomy, stent placement, transcatheter occlusion techniques with coils, devices and umbrellas, as well as, myocardial biopsies

3.3.10 Temporary pacemaker placement

3.3.11 Post catheterization management and therapy for arterial occlusion and other vascular complications

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### 3.4 Ancillary skills and other test utilization:

- 3.4.1 To get familiar with the special need and emerging clinical problems of adult congenital heart disease
- 3.4.2 The basics of setting up problem focused clinical research
- 3.4.3 Informed consent conditions and family counseling skills
- 3.4.4 Indications and applications of nuclear isotope testing
- 3.4.5 Indication and interpretation of plain film chest X-ray
- 3.4.6 Indications and applications of magnetic resonance imaging
- 3.4.7 Skills to seek current cardiovascular literature and correlate published studies to clinical practice
- 3.4.8 Knowledge of basic cardiovascular epidemiology

## **4-ORGANIZATION OF THE PROGRAM CONTENT AND DURATION OF TRAINING**

The Scientific Board/ Committee of the Pediatric Cardiology Subspecialty will be responsible to maintain and improve the professional and educational standards for the training and certification of Pediatric Cardiology subspecialty in accordance with the by-laws of the Saudi Commission for Health Specialties. The Duration and program content are listed in details in the syllabus attached including each year requirement and expectations, the following are the highlights:

- 4.1 The length of the training program will be 3 years including rotation outside the training center and first year will spent at the training center
- 4.2 Any Fellowship candidate will be appointed to a training center that will assume primary responsibility for monitoring candidate and ensure the completeness and adequacy of the training offered to the candidate
- 4.3 Second year and Third year of training; the candidate will have an outside rotation in total of 6 months period. This will be considered as an integral part of the training and precise timing with each year would be determined by the training center in conjunction with and agreement of the center to which the candidate will rotate

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4.4 Additional elective rotation, outside the locally accredited centers can be arranged (for example in north America or Europe) but no more than three month

4.5 Active involvement in an outpatient services, inpatient services, consultations, intensive care settings and on-call coverage are essential prerequisites

4.6 Clinical and or basic research is an important part of the Fellowship training program. Protected research time should be made available during training by the Training center (see the syllabus)

### **5-EDUCATIONAL & TRAINING METHODS**

Detailed educational expectations for each training year are provided in the syllabus attached

### **6-ASSESSMENT METHODS**

In all assessment, evaluations and promotion of the fellows, the by-laws of the Saudi Commission for Health Specialist governing the evaluation process must be observed.

Under the supervision of the Pediatric Cardiology consultants, fellows are expected to:

6.1 Carry out all the clinical requirements and duties assigned by the training center

6.2 Keep a logbook for all supervised procedures performed during the fellowship-training period (ECHO: TEE/TTE, Cardiac Catheterizations, Electrophysiology: ECG, Holter, tilt test, Cardio-versions, EP studies)

6.3 Attend and participate in all assigned educational activities in the training center

6.4 The level of competence and performance of each fellow will be evaluated by the Pediatric Cardiology staff of the training center every 3 months during his /her assigned rotation and the end of elective outside rotations which also covers procedures performed and supervised (see attached a standard evaluation form with program syllabus)

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6.5 At the end of every year, there will be an annual process carried out by the Scientific Board/ Committee to evaluate the fellow performance and composed of written and clinical part. Each part carries 50% of the total evaluation. This will determine the candidate suitability for promotion to subsequent year of training

6.6 Holidays and vacations are per the Saudi Commission for Health Specialities

### **7-EVALUATION AND COMMUNICATION OF THE PROGRAM DETAILS**

7.1 The accredited training centers will be reviewed regularly by the Scientific Board/ Committee of the Subspecialty and accreditation will be renewed periodically, every three years (according to the accreditation by-laws of the Saudi Commission for Health Specialities )

7.2 A structured educational program and academic activities for fellows which should include but not limited to; lecture series, journal clubs, and bedside teaching activities will be kept with the program director of the center to refer to during accreditation/renewal process performed by the Scientific Board/ Committee of the subspecialty

7.3 Applicant and program materials can be obtained from accredited centers and the Saudi Commission for Health Specialities. Additional admission requirements may be required separately by the accredited center which can be obtained from the program director office of that center

### **8-PROGRAM MANAGEMENT**

The responsibility of the Scientific Board/ Committee of the subspecialty that is formed by the Saudi Commission for Health Specialities are:

8.1 Approve, disapprove and reevaluate the accredited programs

8.2 Amends rules and regulations of the fellowship program

8.3 Review, evaluate and approve all fellowship applications for fellowship

8.4 Approves number of fellowship slots for each accredited center

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8.5 Formulate program evaluation, end of year promotion/final exams and approval of the test results

8.6 Continuous monitoring and evaluation of the participating centers and assure compliance by training centers to the training requirements

8.7 Each accredited program will be responsible for their fellows funding

### **9-ADMISSION CRITERIA**

To be admitted to Pediatric Cardiology Subspecialty training Program, the candidate applying to any parent center must:

9.1 Pass a Saudi Subspecialty Certificate in Pediatrics or an equivalent recognized degree classified by the Saudi Commission for Health Specialities

OR

Had successfully completed the training program for Saudi Specialty Certificate in Pediatrics and passed the final written examination

9.2 Pass successfully the admission requirements set by the Scientific Board/ Committee/ Central Committee of the Pediatric Cardiology Subspecialty

9.3 The candidate must provide 3 letters of recommendations from consultants with whom he/she had recently worked with a minimum period of 6 months.

9.4 The candidate must provide a written permission form from his/her sponsoring institute allowing him/her to participate in a full time basis for the entire period of the program.

9.5 The candidate must register annually at the Saudi Council for Health Specialities for the program.

9.6 Initially priority will be given to Saudi candidates. But if it is thought that vacancies may not be filled, then non-Saudi applicants can be considered.

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## 10-PROGRAM ACCREDITATION

The criteria for training center to provide fellowship training are (attached accreditation application form with the program syllabus):

10.1 Minimum faculty of five full time Consultant Pediatric Cardiologist, who have completed training in accredited subspecialty program and preferably be certified in Pediatric Cardiology subspecialty

10.2 Outpatient Services should include space for optimal evaluation and care with average 3000 visits/year

10.3 Dedicated Pediatric Cardiovascular surgeon doing at least 250 operative (open heart) procedures per year

10.4 An intensive care unit with 24 hours coverage by Intensivist The training center must have adequate support of general and subspecialty Pediatric Services (hematology, neonatology service, nephrology, endocrinology, pulmonology)

10.5 Non-invasive cardiac Laboratory (Echo 3000 studies/year, ECG 3000 studies/year and Holter 100/year) facilities

10.6 Cardiac Catheterization laboratory for diagnostic and interventional procedures; a minimum of 300 cases per year; taking in consideration more fellows in the training program will require the cardiac catheterization procedures performed at the training center to be increased to provide enough exposure and grant the minimum Cath procedures for each fellow at the end of the training (100 Cath procedures)

10.7 Access to fetal Echo and advance cardiac imaging facilities (Cardiac CT /MRI)

10.8 Dedicated Electrophysiology services responsible for managing all arrhythmias including access to radio frequency ablation services. This service is preferably provided by Pediatric Cardiologist specializing in electrophysiology at the same center or affiliated staff in the same city

10.9 Other centers in Saudi Arabia could be considered for accreditation provided these criteria are met. New center accreditation will be responsibility of Scientific Board/Committee of the Subspecialty

## 11-CERTIFICATION

To be granted a certificate, the candidate should complete all of his/her requirements set by the Saudi Commission for Health Specialties for subspecialty certificate, passes promotion exams for each year and passes the final exam set by the Scientific Board/Committee of the subspecialty. The final exam will include an oral, clinical and written exam. The candidate will then be awarded the “**Saudi Specialty Certificate of Pediatric Cardiology**”.