

## **PEDIATRIC CARDIOLOGY**

### **Department of Pediatrics**

### **SCOPE OF PRACTICE**

#### **PGY-4 – PGY-6**

(or PGY-5 – PGY-7 if Medicine/Pediatrics resident)

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#### **PGY-4 – PGY-6**

**(or PGY-5 – PGY-7 if**

**Medicine/Pediatrics Resident)**

The Pediatric Cardiology Training Program at MUSC does not make distinctions in the Scope of Practice between PGY-4, -5, and -6 Resident Physicians. As trainees progress they are encouraged to assume greater degrees of independence, as suited to their knowledge and skills in the judgment of the supervising faculty in general and the attending physician specifically, in the discharge of the responsibilities noted below:

- Assist in determining and serving the needs of inpatient and outpatient children with acquired or congenital diseases of the heart and blood vessels.
- Assist in determining and serving the needs of adult inpatients and outpatients with congenital diseases of the heart and blood vessels for who the specific expertise of pediatric cardiologists is needed or requested.
- Complete a history and physical examination on patients admitted to or consulted by the pediatric cardiology service.
- Examine and assess pediatric cardiology inpatients on a daily basis. Patients in special care units require multiple daily evaluations.
- Inform the attending physician and appropriate nursing staff and house staff of all important historical information, physical examination findings, and laboratory results involving pediatric cardiology patients.
- Participate in or direct rounds on pediatric cardiology inpatients.
- Determine, organize, and review laboratory studies obtained in the care of pediatric cardiology patients.

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- Write notes on pediatric cardiology inpatients a minimum of once per day.
- Coordinate, assess, and improve the care delivered by more junior house staff, medical students, and nursing staff.
- Assist in or perform discharge planning for inpatients.
- Participate in or perform the formal evaluation of junior house officers and medical students.
- Assist in or perform, under attending physician supervision as appropriate for their knowledge and experience, echocardiograms, ECGs, cardiac MRIs, cardiac CT-angiograms, Holter monitors, exercise testing with or without gas analysis, autonomic testing, pacemaker interrogation and programming, and cardiac catheterizations.
- Interpret or assist in interpreting, under attending physician supervision as appropriate for their knowledge and experience, echocardiograms, ECGs, cardiac MRIs, cardiac CT-angiograms, Holter monitors, exercise testing with or without gas analysis, autonomic testing, pacemaker interrogation, transtelephonic recordings, and cardiac catheterizations.
- Complete catheterization summaries in a timely fashion.
- Present and participate at patient care and didactic conferences.
- Provide care of outpatients in Pediatric Cardiology Clinic under the supervision of pediatric cardiology attending physicians.
- Assist or perform the following procedures under the degree of attending physician supervision appropriate to the trainee's knowledge and experience and the urgency of the patient's need: central venous line insertion, arterial line insertion, endotracheal intubation, cardioversion, pericardiocentesis, thoracentesis, chest tube insertion and withdrawal, and

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central line removal.

- Provide telephone consultation to outside physicians and to the MeduCare Emergency Transport Service.
- Assist in or direct the coordination and supervision of the transfer of patients to and from Children's Hospital.
- Assist in planning and participate in the Pediatric Cardiology Resident's On-Call Schedule.

**Objectives - Beginning Fellow:** We do not expect technical or intellectual knowledge of pediatric cardiology at the start of pediatric cardiology subspecialty residency training. We do require that trainees be experienced physicians and have excellent general pediatric clinical skills. A trainee well-suited for our program should therefore be comfortable and reliable in the following: mentored, but serially graduated independent decision making, performance and documentation of general history and physical examination skills, progress note documentation, phlebotomy, peripheral intravenous access, sterile technique, endotracheal intubation, chest x-ray interpretation, laboratory test interpretation, invasive arterial blood pressure monitoring, general indications for and principles of mechanical ventilation, general pediatric pharmaceutical principles and strategies, and indications for and administration of blood and blood products.

**Objectives - Intermediate Fellow:** The full transition from beginning to intermediate level of pediatric cardiology skills generally requires 12 to 18 months (depending on the trainee) of consistent clinical exposure to the broad range of pediatric cardiology clinical activities. An intermediate level trainee has achieved independence in most of the clinical skills routinely associated with the general practice of pediatric cardiology. Independence for trainees is very real for some procedures, such as performing an echocardiogram, while in others it is hypothetical, as in the catheterization laboratory, where supervision is present 100% of the time.

The skills to be acquired include:

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- Understanding of the segmental analysis of congenital heart malformations and its use in clinical description of cardiac defects.
- Understanding of the basic pathophysiologic processes of pediatric cardiac patients with left to right shunts, mixed shunts, right to left shunts, regurgitant lesions, and stenotic lesions.
- Understanding of fetal and transitional physiology and how it determines clinical features of cardiac malformations and function in the newborn and premature infant.
- Understanding the general outpatient and inpatient management of acquired and congenital forms of pediatric heart disease.
- Understand diagnosis and management of common arrhythmias and pacemaker problems.
- Understand and demonstrate the use of the cardiovascularly directed history and physical examination, transthoracic echocardiography, exercise stress testing, Holter and other forms of ambulatory ECG recordings, and surface ECG's in the diagnosis and management of cardiovascular disease of childhood.
- Understand and demonstrate the use of intracardiac electrocardiograms, invasive and noninvasive blood pressure monitoring, noninvasive and invasive techniques for monitoring the critically ill or post-operative patient, ventilator management, nuclear medicine scans, and diagnostic interpretation of angiographic and physiologic data determined by cardiac catheterization.
- Understand the roles, specific indications and limitations of cardiac surgery, technologies for cardiac circulatory support, the use of nitric oxide, interventional catheterization, fetal and transesophageal echocardiography, and arrhythmia ablation.

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- Understand the principles and practice of radiation safety as it applies to the catheterization laboratory.
  
- Understanding of the indications and risks as well as demonstration of the procedural skills required for:
  - Intubation in the critically ill neonatal cardiac patient
  - Femoral arterial and venous line insertion and use
  - Umbilical venous and arterial line insertion and use
  - Chest tube insertion
  - Right heart catheterization and angiography
  - Left heart catheterization and angiography
  - Balloon atrial septostomy
  - Transesophageal and temporary pacing wire ECG interpretation
  - Transesophageal and temporary pacing wire overdrive pacing
  - CPR and DC cardioversion
  - Zoll temporary pacing
  - Volume, inotropic agent, and afterload modifying drugs and their use in the pediatric cardiac patient
  - Pericardiocentesis and pericardial drainage
  - Indications, contraindications, and practice of moderate sedation for procedures in the inpatient and outpatient settings

Not every pediatric cardiology fellow will have equal opportunity to participate in infrequently performed procedures over a 12-18 month time period. Not every pediatric cardiology career requires the independent application of all of the procedural skills listed above. For both of these

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*For information regarding this scope of practice, please contact:  
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<http://www.musckids.com/heart/training.html>*

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reasons we do not describe these expectations as requirements, but rather as goals. However, the more clinical experience that a pediatric cardiology fellow has received, the more likely we are to view the following performance-related criteria as grounds for formal corrective action:

- Failure to demonstrate growth of judgment and knowledge in the indications, contraindications, and application of procedural skills
- Failure to understand or adhere to clinically accepted performance guidelines for procedures in which the trainee has been previously instructed
- Failure to appropriately recognize and act to correct acutely life-threatening situations.

**Objectives Advanced Fellow:** The advanced pediatric cardiology fellow has achieved the intermediate level skills defined above and has built upon those skills to acquire depth in a specific subset of skills in clinical or basic research, and clinical practice. The specific goals are defined by the individual pediatric cardiology fellow and are intended to enhance and define the future career opportunities of the pediatric cardiology fellow. The advanced trainee has also developed depth in the general skills required for continued participation in the on call schedule at our institution and in their future career. We expect that by the completion of their training each pediatric cardiology fellow will meet the minimum criteria established in the 2015 SPCTD/ACC/AAP/AHA Training Guidelines for Pediatric Cardiology Fellowship Programs – 250 echocardiograms, 100 catheterizations, and 10 pediatric electrophysiology studies.