

## TRAINING STATEMENT

# Task Force 3: Pediatric Cardiology Fellowship Training in Cardiac Catheterization



*Endorsed by the Society for Cardiovascular Angiography and Interventions*

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## 1. INTRODUCTION

### 1.1. Document Development Process

The Society of Pediatric Cardiology Training Program Directors (SPCTPD) board assembled a Steering Committee that nominated 2 chairs, 1 SPCTPD Steering Committee member, and 5 additional experts from a wide range of program sizes, geographic regions, and subspecialty focuses. Representatives from the American College of Cardiology (ACC), American Academy of Pediatrics (AAP), and American Heart Association (AHA) participated. The Steering Committee member was added to provide perspective to each Task Force as a “nonexpert” in that field. Relationships with industry and other entities were not deemed relevant to the creation of a general car-

diology training statement; however, employment and affiliation information for authors and peer reviewers are provided in [Appendixes 1 and 2](#), respectively, along with disclosure reporting categories. Comprehensive disclosure information for all authors, including relationships with industry and other entities, is available as an [online supplement](#) to this document.

The writing committee developed the document, approved it for review by individuals selected by the participating organizations ([Appendix 2](#)), and addressed their comments. The final document was approved by the SPCTPD, AAP, and AHA, as well as endorsed by the Society for Cardiovascular Angiography and Interventions (SCAI) in February 2015 and approved by ACC in March 2015. This document is considered current until the SPCTPD revises or withdraws it.

### 1.2. Background and Scope

Although diagnostic indications for catheterization are less frequent as a result of advances in noninvasive cardiac imaging, innovations in equipment and technologies continue to expand the role of interventional catheterization in the treatment of pediatric and congenital heart disease. The increasing complexity of cardiac catheterization procedures, hybrid approaches to integration of cardiothoracic surgery and transcatheter intervention, and the ability to support hemodynamically vulnerable patients through complex transcatheter procedures requires a high level of proficiency. Although all pediatric cardiology fellows must understand the indications, risks, benefits, and limitations of cardiac

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catheterization, as well as acquire proficiency in assessment and utilization of the data generated through these procedures, not all fellows require the same degree of competence in performing cardiac catheterizations. The challenge inherent in the development of training guidelines for this subspecialty is that they provide sufficient instruction and experience to 2 groups of trainees: those who will continue to perform cardiac catheterizations after fellowship, and those who will not. A further challenge shared by all Task Forces is the paradox of the increasing knowledge base and complexity across all aspects of pediatric cardiology with the static total duration of fellowship training, and reduced in-hospital time because of current duty hour regulations.

The current training guidelines aim to address these challenges through a departure from the earlier focus on a minimum number of procedures, upon which the 2005 guidelines were based (1), to a training model in which proficiency of core concepts within the subspecialty are emphasized. The 3-year training experience should ensure achievement of competencies along a developmental continuum of performance, culminating in complete entrustment of professional activities expected for graduation involving the understanding of data generated by cardiac catheterization procedures.

Our revised training recommendations describe the program resources and environment that are required for training pediatric cardiology fellows, together with a competency-based system promulgated by the American College of Graduate Medical Education (ACGME), to implement specific goals and objectives for training pediatric cardiology fellows. This system categorizes competencies into 6 core competency domains: Medical Knowledge, Patient Care and Procedural Skills, Systems-Based Practice, Practice-Based Learning and Improvement, Professionalism, and Interpersonal and Communication Skills, along with identification of suggested evaluation tools for each domain. Core competencies unique to pediatric cardiac catheterization are listed in [Section 3](#) (see the “2015 SPCTPD/ACC/AAP/AHA Training Guidelines for Pediatric Cardiology Fellowship Programs [Revision of the 2005 Training Guidelines for Pediatric Cardiology Fellowship Programs]: Introduction” for additional competencies that apply to all Task Force reports).

### 1.3. Levels of Expertise—Core and Advanced

Innovations in the field of interventional cardiology have led to increasingly complex procedures in patients who are often hemodynamically vulnerable. Given the potential for great benefit as well as risk, physicians performing these procedures should be skilled in all aspects of diagnostic and therapeutic cardiac catheterization. However, because only a small percentage of pediatric cardiology fellows will ultimately perform cardiac catheterization

procedures at the completion of their general pediatric cardiology training, the concept that proficiency with physical catheter manipulation and specific interventional catheterization techniques is mandatory to the general pediatric cardiologist is no longer substantiated.

In this statement, we discuss core training for all fellows enrolled in a traditional 3-year pediatric cardiology fellowship and advanced training for fellows who wish to embark on a career as a pediatric and congenital cardiac interventionalist. Core training is required for all trainees and is intended to ensure that fellows acquire the knowledge base and skills necessary to become a pediatric cardiologist referring his/her patient for cardiac catheterization. Advanced training guidelines are recommended for fellows who wish to specialize in cardiac catheterizations following training.

## 2. PROGRAM RESOURCES AND ENVIRONMENT

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Training in pediatric and congenital cardiac catheterization should occur within a pediatric cardiology fellowship program accredited by the ACGME. The cardiac catheterization laboratory should be supported by facilities and units providing expertise in the treatment of children with congenital and acquired heart disease, including cardiac, pediatric, and neonatal intensive care units; an active cardiac surgical program; adequate cardiac imaging services; and outpatient facilities. The pediatric cardiac catheterization laboratory should be under the supervision of a designated pediatric and congenital interventional cardiologist who has primary responsibility for supervision of the laboratory. Catheterization equipment and inventory should be maintained to ensure high-quality performance and to comply with regulations and guidelines for patient safety. A minimum of 150 diagnostic and/or interventional catheterizations must be performed in the laboratory per year to provide an adequate learning environment (2).

The director of the cardiac catheterization program should maintain a curriculum of training within the catheterization laboratory. This should include regular teaching conferences and morbidity and mortality conferences in which all adverse events related to catheterization are systematically reviewed in the presence of representatives from all constituents of the congenital cardiac program. In addition, there should be an established process for discussion of patient data, as well as indications for, and expected findings and objectives of, the procedure prior to each catheterization. The cardiac catheterization laboratory should maintain active involvement in quality improvement programs, including evaluation of outcomes, a record of adverse events, and, if possible, participation in a national pediatric and congenital cardiac catheterization registry (2).

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