

PEDIATRIC CARDIOLOGY FELLOWSHIP TRAINING PROGRAM

DESCRIPTION

Pediatric Cardiology
 NYU Fink Children’s Ambulatory Care Center
 160 East 32nd Street
 New York, NY 10016
 Phone: 212-263-9990; Fax: 212-263-3995
Program Director: Gillian Henry, MBBS
Gillian.Henry@nyumc.org

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WELCOME!

Welcome to NYU, and thank you for your interest in our program.

Our tradition of excellence continues today with the growth and development of a world-class academic pediatric and congenital heart center. Here you will find all the hallmarks of a large,

comprehensive training program. We see an unusually broad clinical spectrum in a medium-size pediatric cardiac surgical program. We have committed, award-winning educators. We have an array of scholarly opportunities not only within our Division, but also spanning across all of New York University. And yet, we are small enough to be a tight-knit group, where our trainees are never “lost in the crowd” and where one-on-one learning with a mentor is still the norm. We believe, therefore, that we have the very best characteristics of both large and small programs.

We appreciate your taking this opportunity to learn more about us as we learn about you. We wish you the very best for your future career.

Gillian Henry, MBBS
Fellowship Program Director

Achi Ludomirsky, MD
Director, Pediatric Cardiology

PEDIATRIC CARDIOLOGY FACULTY

The Pediatric Cardiology faculty at NYU School of Medicine is a distinguished group of individuals who hail from all over the country and the world. Widely recognized for their excellence and commitment, they are passionate about patient care, scholarship, and teaching. They are frequent invited lecturers at scientific conferences and academic medical centers. Our faculty members have won awards at the local and national levels, for patient care (“Best” lists), research, and teaching. Having trained and worked at some of the finest institutions anywhere, the NYU faculty ensure a breadth and depth of experience that create an outstanding training environment.

<i>Achiau Ludomirsky, MD</i>	Chief, Division of Pediatric Cardiology
<i>Doff McElhinney, MD</i>	Associate Chief, Division of Pediatric Cardiology
<i>Michael Argilla, MD</i>	Director, Pediatric & Congenital Interventional Cardiology
<i>Frank Cecchin, MD</i>	Director, Pediatric Electrophysiology
<i>Sujata Chakravarti, MD</i>	Director, Pediatric Cardiac Critical Care
<i>Gillian Henry, MBBS</i>	Director, Pediatric Cardiology Fellowship Training
<i>Colin Phoon, MPhil, MD</i>	Director, Pediatric & Fetal Echocardiography
<i>Ralph Mosca, MD</i>	Chief, Division of Pediatric & Adult Congenital Cardiac Surgery
<i>Puneet Bhatla, MBBS, MD</i>	Attending Pediatric Cardiologist & Advanced Cardiac Imaging
<i>Melissa Busovsky-McNeal, MD</i>	Attending Pediatric & Congenital Interventional Cardiology
<i>Anne Chun, MD</i>	Associate Director, Pediatric & Fetal Echocardiography
<i>William Coetzee, DSc</i>	Vice-Chair for Research, Pediatrics
<i>Alan Langsner, MD</i>	Attending Pediatric Cardiologist
<i>Sharda McGuire, MSN, FNP</i>	Pediatric Cardiology & Electrophysiology Services
<i>Daniela Rafii, MD</i>	Attending Pediatric Cardiologist
<i>Rebecca Rapoport, PNP</i>	Pediatric Cardiology Outpatient Services

FACULTY PROFILES

Achiau Ludomirsky, MD

Andrall E. Pearson Professor of Pediatric Cardiology

Professor of Pediatrics

Director, Pediatric Cardiology

E-mail: Achi.Ludomirsky@nyumc.org

Medical Education: Sackler School of Medicine, Tel Aviv University

Residency Training: Hadassah Hebrew University Hospital

Fellowship Training: Baylor College of Medicine,
Texas Children's Hospital (Pediatric Cardiology)

Clinical and Research Interests:

- Congenital heart disease
- New imaging modalities for the diagnosis and management of congenital heart disease
- Therapeutic (high-intensity focused) ultrasound for the treatment of congenital heart disease
- Strain and strain rates measured by non-invasive modalities to evaluate ventricular function

Michael Argilla, MD

Assistant Professor of Pediatrics

Director, Pediatric & Congenital Interventional Cardiology

E-mail: Michael.Argilla@nyumc.org

Medical Education: University of Colorado School of Medicine

Residency Training: NYU Medical Center (Pediatrics)

Fellowship Training: NYU Medical Center (Pediatric Cardiology),
UCSF Medical Center (Interventional Pediatric Cardiology)

Clinical and Research Interests:

- Pediatric and congenital interventional catheterization

Puneet Bhatla, MBBS, MD

Assistant Professor of Pediatrics

E-mail: Puneet.Bhatla@nyumc.org

Medical Education: University of Rajasthan, India

Residency Training: Maimonides Medical Center (Pediatrics)

Fellowship Training: Mount Sinai Medical Center (Pediatric Cardiology)

Advanced Fellowship: Mount Sinai Medical Center (Non-Invasive Imaging)

Clinical and Research Interests:

- Non-invasive imaging: Cardiac MR, fetal and pediatric echocardiography
- Normative data for quantification of chamber size
- Segmental approach to congenital heart disease
- Cardiac intensive care of congenital heart disease patients

Melissa Busovsky-McNeal, MD

Instructor in Pediatrics

Attending, Pediatric & Congenital Interventional Cardiology

E-mail: Melissa.Busovsky-McNeal@nyumc.org

Medical Education: Indiana University School of Medicine
Residency Training: Indiana University School of Medicine,
Riley Hospital for Children (Pediatrics)
Fellowship Training: Yale-New Haven Hospital (Pediatric Cardiology),
Columbia University Medical Center, New York Presbyterian Hospital
(Interventional Pediatric Cardiology)

Clinical and Research Interests:

- Pediatric and congenital interventional catheterization
- Pediatric cardiac critical care
- Aviation medicine

Frank Cecchin, MD

Professor of Pediatrics and Medicine

Director, Pediatric Electrophysiology

E-mail: Frank.Cecchin@nyumc.org

Medical Education: East Carolina University, Brody School of Medicine
Residency Training: Texas Children's Hospital, Baylor College of Medicine (Pediatrics)
Fellowship Training: Texas Children's Hospital, Baylor College of Medicine (Pediatric
Cardiology)
Advanced Fellowship: Texas Children's Hospital, Baylor College of Medicine
(Pediatric Electrophysiology)

Clinical and Research Interests:

- Pediatric arrhythmias and electrophysiology
- Radiofrequency ablation of arrhythmias associated with congenital heart defects
- Innovative approaches to catheter ablation and device implantations

Sujata Chakravarti, MD

Assistant Professor of Pediatrics

Director, Pediatric Cardiac Critical Care

E-mail: Sujata.Chakravarti@nyumc.org

Medical Education: University of Rochester School of Medicine and Dentistry
Residency Training: Montefiore Medical Center, Albert Einstein College of Medicine
Fellowship Training: Mount Sinai Medical Center (Pediatric Cardiology)
Advanced Fellowship: Children's Hospital Boston (Cardiac Critical Care)

Clinical and Research Interests:

- Pediatric cardiac critical care
- Quality improvement (QI) initiatives in pediatric cardiac critical care

Anne Chun, MD

Assistant Professor of Pediatrics

Associate Director, Pediatric & Fetal Echocardiography Laboratory

E-mail: Anne.Chun@nyumc.org

Medical Education: University of Connecticut School of Medicine
Residency Training: University of Chicago Hospitals (Pediatrics)
Fellowship Training: Columbia University Medical Center,
New York Presbyterian Hospital (Pediatric Cardiology)

Clinical and Research Interests:

- Non-invasive imaging: fetal and pediatric echocardiography
- Pulmonary hypertension
- Obesity

William Coetzee, DSc

Professor of Pediatrics, Pharmacology, and Physiology & Neuroscience

Vice-Chair for Research (Pediatrics)

Director of Research in Pediatric Cardiology

E-mail: William.Coetzee@nyumc.org

Postdoctoral Training:

- Research Assistant, Department of Physiology, University of Potchefstroom
- Research Fellow, Department of Physiology, University of Leuven
- Research Officer, Ischemic Heart Disease Research Unit of South African Medical Research Council, University of Cape Town
- Senior Research Officer, Ischemic Heart Disease Research Unit of South African Medical Research Council, University of Cape Town
- Research Fellow and Honorary Lecturer, Department of Biochemistry, United Medical and Dental Schools of Guy's and St. Thomas' Hospitals

Research Interests:

- Electrophysiology and molecular biology of cardiovascular membrane ion transport proteins

Gillian Henry, MBBS

Assistant Professor of Pediatrics

Director, Fellowship Training, Pediatric Cardiology

E-mail: Gillian.Henry@nyumc.org

Medical Education: University of the West Indies
Residency Training: The Brooklyn Hospital Center (Pediatrics)
Fellowship Training: NYU Medical Center (Pediatric Cardiology)

Clinical and Research Interests:

- Non-invasive imaging: fetal and pediatric echocardiography
- Brain anomalies in the fetus with congenital heart disease
- Development of Pediatric Cardiology services in the Caribbean
- Medical education

- Medical informatics

Alan Langsner, MD

Assistant Professor of Pediatrics

E-mail: Alan.Langsner@nyumc.org

Medical Education: Universidad Autonoma De Guadalajara
 Residency Training: New York Medical College (Pediatrics),
 Fellowship Training: NYU Medical Center (Pediatric Cardiology)

Clinical and Research Interests:

- Congenital heart defects
- Adult congenital heart disease
- Medical education

Doff McElhinney, MD

Professor of Pediatrics, Medicine, and Cardiothoracic Surgery

Associate Chief, Division of Pediatric Cardiology

E-mail: Doff.McElhinney@nyumc.org

Medical Education: University of California, San Francisco
 Residency Training: Children's Hospital of Philadelphia
 Fellowship Training: Children's Hospital Boston (Pediatric Cardiology)
 Advanced Fellowship: Children's Hospital Boston (Interventional Pediatric Cardiology)

Clinical and Research Interests:

- Pediatric & adult congenital interventional cardiology
- Percutaneous cardiac valve replacement

Sharda McGuire, MSN, FNP

Family Nurse Practitioner

E-mail: Sharda.McGuire@nyumc.org

Nursing Education: City College of New York (BSN)
 Hunter College, New York (MSN)
 Pace University, New York (FNP)

Clinical and Research Interests:

- Cardiac electrophysiology, implanted devices
- Outpatient management of children and adults with congenital heart disease
- Management of heart failure
- Pediatric obesity

Colin Phoon, MPhil, MD

Associate Professor of Pediatrics

Director, Pediatric & Fetal Echocardiography Laboratory

E-mail: Colin.Phoon@nyumc.org

Medical Education: University of Pennsylvania School of Medicine

Graduate Education: University of Cambridge (Pharmacology)
Residency Training: Johns Hopkins Hospital (Pediatrics)
Fellowship Training: UCSF Medical Center and Cardiovascular Research Institute (CVRI)
(Pediatric Cardiology)

Clinical and Research Interests:

- Non-invasive imaging: fetal and pediatric echocardiography
- Mitochondrial biology in heart development; Barth syndrome
- Cardiovascular physiology and morphology in the developing heart
- History of medicine, history of cardiology

Daniela Rafii, MD

Instructor in Pediatrics

E-mail: DRafii@maimonidesmed.org

Medical Education: Weill Cornell Medical College
Residency Training: New York Presbyterian – Weill Cornell Medical Center (Pediatrics)
Fellowship Training: Columbia University Medical Center, New York Presbyterian Hospital
(Pediatric Cardiology)
Advanced Fellowship: Columbia University Medical Center, New York Presbyterian Hospital
(Pediatric/Fetal Echocardiography)

Clinical and Research Interests:

- Non-invasive imaging: fetal and pediatric echocardiography

Rebecca Rapoport, MSN, PNP

Pediatric Nurse Practitioner

E-mail: Rebecca.Rapoport@nyumc.org

Nursing Education: Georgetown University (BSN)
New York University (MSN)
New York University (Advanced Practice Nursing, PNP)

Clinical and Research Interests:

- Outpatient management of children and young adults with congenital heart disease
- Adolescent health care

BRIEF PROGRAM DESCRIPTION

Pediatric Cardiology is a comprehensive and dynamic program within the Department of Pediatrics at New York University School of Medicine and NYU Langone Medical Center. One of the nation's leading academic medical centers, NYU Langone Medical Center carries a long and distinguished history of pediatric care, including pediatric cardiology care. Dr. Janet Baldwin, one of the Division's first Directors, introduced pediatric cardiac catheterization to the New York City region. Dr. Eugenie Doyle, who directed the Division over a 4-decade period, made important observations on rheumatic fever and contributed to enormous advances in the medical and post-surgical care of young patients as effective surgery for congenital heart defects was being developed. Dr. Doyle worked closely with the prominent NYU cardiothoracic surgeon Dr. Frank Spencer, who trained under Dr. Alfred Blalock, developer of the "blue baby operation" that bears his name. Dr. Michael Artman later expanded the scientific and clinical programs, while Dr. Stephen Colvin pioneered techniques in mitral valve and congenital heart repair as well as minimally-invasive surgical approaches. Dr. Achi Ludomirsky, widely recognized for his contributions to pediatric heart imaging, was recruited in 2007 as the current Director of Pediatric Cardiology. Internationally recognized as an accomplished congenital heart surgeon, Dr. Ralph Mosca joined the Department of Cardiothoracic Surgery in 2009 as the Division Chief for **Pediatric and Adult Congenital Cardiac Surgery**.

The Division of Pediatric Cardiology and Dr. Mosca are working closely together to build a world-class pediatric and adult congenital heart disease center at NYU. Since his recruitment in 2009, Dr. Mosca has performed all manner of corrective and palliative cardiac surgery, from complex neonatal operations to challenging adult congenital cases. Performing over 200 operations yearly now, Dr. Mosca enjoys one of New York State's lowest surgical mortality rates. NYU Langone Medical Center participates in the Gift of Life Program and in the Kids World Wide Program, which provide cardiac diagnostic and surgical care to children from overseas. Dr. Sunil Malhotra joined Dr. Mosca in 2010 as Assistant Professor in the Division of Pediatric and Adult Congenital Cardiac Surgery. His clinical interests include neonatal cardiac surgery and the surgical management of complex congenital cardiac defects. He serves as site director of the pediatric cardiac surgery program at the Children's Hospital of New Jersey at the Newark Beth Israel Medical Center. The cardiothoracic surgery, pediatric cardiology, and pediatric critical care teams collaborate closely on the care of our post-operative patients.

Outpatients are seen in the NYU Faculty Practice offices and in a large general Pediatric Cardiology Clinic that is held weekly at Bellevue Hospital Center. Outpatient visits average about 6000 per year. Recently, Dr. Catherine Weinberg was recruited to the Division of Cardiology (Department of Medicine) to bolster expertise in adult congenital cardiac care. The Pediatric & Fetal Echocardiography Laboratory provides cardiac ultrasound imaging for inpatients and outpatients at both NYU Langone Medical Center and Bellevue Hospital. The laboratory performs over 5500 studies each year, including over 1000 fetal and 200 transesophageal studies. We collaborate closely with the Department of Radiology and the Adult Echocardiography Lab. The MRI/MRA and cardiac CT suites provide state-of-the-art facilities for cardiac imaging and analysis, including 3-dimensional reconstruction. Stress treadmill exercise testing and stress echocardiography testing are routinely performed by Pediatric Cardiology faculty as indicated. The NYU Cardiopulmonary Exercise Laboratory provides additional comprehensive and sophisticated analysis of cardiac and respiratory responses to exercise. The Pediatric Cardiac Catheterization Laboratory performs 180 to 200 procedures per

year and provides diagnostic, interventional and electrophysiology services to children and adolescents, as well as adults with congenital heart disease.

The **ACGME–accredited three-year fellowship training program** currently has 5 fellows. Fellows, residents, and medical students are taught at NYU Langone Medical Center’s Tisch Hospital. Bellevue Hospital Center, the “crown jewel” of the NYC public hospital system and the oldest public hospital in the US, serves as the major affiliate clinical and training site. The diversity of our clinical caseload is reflected in New York City’s population, and immigrants who have not received optimal care in their homelands provide challenging clinical problems rarely seen elsewhere in the US. Our clinical program is supported by dedicated specialists in other Departments/Divisions, including Cardiology (Cardiovascular Genetics and Adult Congenital Heart Disease), Radiology (Cardiac and Pediatric Radiology), and Pediatric Critical Care. NYU’s dedicated Congenital Cardiovascular Care Unit (CCVCU), one of the few of its kind in the nation, provides further focus and training on the pre- and post-operative management of the sick cardiac patient. Formal affiliations with major New York metro area hospitals, including Maimonides Medical Center and the Children’s Hospital of New Jersey, ensure the scope, breadth, and growth of our program.

The training program emphasizes knowledge and skills necessary for general pediatric cardiology clinical practice or further training in a pediatric cardiology subspecialty. In addition to a diverse patient population, numerous opportunities for didactic learning abound. Unparalleled opportunities for clinical, basic science, and epidemiological research span across departments and schools within New York University, the largest private university in the country. There are also opportunities to pursue courses in higher education offered by NYU, such as Masters degree programs in public health and clinical investigation, and courses in medical statistics. Our fellows also learn how to teach, and teach well they do: two in the past 3 years have garnered the Fellow of the Year, Award of Excellence in Teaching from the Pediatrics housestaff. We are justifiably proud of our graduates, who have placed well throughout the country in clinical practice, further subspecialty training positions, and in full-time faculty positions.

SELECTION

Fellows are selected to the program on the basis of past academic performance and potential for success in the field of pediatric cardiology. Prior clinical, teaching, research and administrative interests and experience are reviewed in conjunction with letters of recommendation by their residency program director and faculty mentors. An interview with the Program Director, attending staff and current fellows is arranged for qualified applicants. This provides the applicant with an opportunity to view our clinical facilities, ask questions about our educational opportunities and philosophies, and express their goals and objectives for the training period and their careers. The program adheres to the Equal Opportunity Employer (EOE) / Affirmative Action (AA) policy of the NYU Langone Medical Center.

Applicants are accepted through the National Residency Matching Program and must apply directly to the NRMP to participate (www.nrmp.org). Accepted applicants must adhere to the policies and procedures of the Match and are notified directly by the NRMP and the Program Director. All candidates must have successfully completed a residency in an ACGME-accredited Pediatrics or Med-Peds residency program and must be eligible to obtain an unrestricted New York State medical license prior to the start of their training period.

PEDIATRIC CARDIOLOGY FELLOWSHIP: DIDACTIC LEARNING OPPORTUNITIES

Conference	Frequency	Person(s) responsible for conducting conference	Venue
Pediatric Cardiology Fellows Core Lecture Series	3 / month	Pediatric Cardiology Attending Pediatric Cardiology Fellow	NYU
Pediatric Cardiac Catheterization – Surgery Conference	1 / week	Pediatric Cardiology & Cardiac Surgery Attendings Pediatric Cardiology Fellow	NYU
Echocardiography Conference	1 / week	Pediatric Cardiology Attending Pediatric Cardiology Fellow	NYU
Case Management Conference	1 / week	Pediatric Cardiology Attending Pediatric Cardiology Fellow	NYU
Bellevue Pediatric Cardiology Post-Clinic Conference	1 / week	Pediatric Cardiology Attending Pediatric Cardiology Fellow	BHC
Electrophysiology Conference	1 / week	Pediatric Cardiology Attending Pediatric EP Nurse Practitioner	NYU
New York Pediatric Echo Society	4 / year	Pediatric Cardiology Attendings & Fellows Pediatric Cardiac Sonographers	Rotating, NY City Hospitals
Dept. of Pediatrics Grand Rounds	1 / week	Pediatrics Attendings Pediatrics Chief Residents Visiting Professors	NYU
Adult Cardiology Grand Rounds	1 / week (as relevant)	Adult Cardiology Attendings Visiting Professors	NYU
Dept. of Pediatrics M&M	QO week	Pediatrics Chief Residents Pediatrics Attendings	NYU
Basic Science Rotation: Work-in-Progress talks	~Q3months	Pediatric Cardiology Fellow	NYU
Basic Science Rotation: Journal Club	As scheduled	Pediatric Cardiology Fellow Lab Personnel Basic Science faculty	NYU
Center for Translational Science Institute (CTSI)	As scheduled	CTSI personnel NYU Clinical & Basic Science faculty	NYU
Biostatistics & Research Design (course offered yearly)	As scheduled	Pediatrics Attendings	BHC

OVERALL PROGRAM GOALS AND OBJECTIVES

Clinical Curriculum		Competency
Goal	To develop evidence based approach to the care of pediatric patients with acute and chronic, congenital and acquired cardiology ailments. Inpatient and outpatient experiences.	
Objectives	1. The overall goal is for the trainee to become proficient, effective, compassionate and professional in the delivery of comprehensive care for fetuses, premature and term infants, children, adolescents and young adults with congenital and acquired cardiovascular diseases both in outpatient and inpatient environments.	K, PC, PBL, P, ISC, SBP
	2. Describe the pathophysiology of disease	K
	3. Describe the epidemiology of disease	K
	4. Perform a directed history and examination	K, PC
	5. Select and interpret appropriate laboratory tests	K, PC, PBL
	6. Select and interpret appropriate radiological tests	K, PC, PBL
	7. Understanding and application of pharmacologic principles as they pertain to the pediatric cardiology patient.	K, PC
	8. Basic application of assist ventilation and cardiopulmonary interactions.	K, PC
	9. Principles and application of pain control, conscious and deep sedation	K, PC
	10. Arrive at presumptive and alternative diagnosis	K, PC, PBL
	11. Participate and eventually effectively conduct bedside working and teaching rounds as well as outpatient encounters.	K, PC, P, PBL, SBP
	12. Generate an initial and daily care plan.	K, PC, PBL, SBP
	13. Generate appropriate patient progress notes and consultations.	K, PC, ISC, PBL, P

	14. Resource utilization: appropriate use of consultants	K, PC, ISC, SBP
	15. Describe appropriate disposition and referral	K, PC, ISC, SBP
	16. Resource utilization: Use appropriate monitoring techniques	K, PC, SBP
	17. Utilize information resources to evaluate and improve care.	K, PC, PBL
	18. Conduct oneself in a respectful, professional, ethical manner	PC, ISC, P, SBP
	19. Demonstrate recognition of limits, continuous self assessment	PBL, P
	20. Participate in the detection and critical evaluation of medical errors	PBL, SBP
	21. Advocate for patients experiencing difficulties with the health care system	ISC, P, S
Goal	Develop competency in cardiopulmonary resuscitation	
Objectives	1. Recognize and manage airway compromise	K, PC
	2. Recognize and manage respiratory distress and failure	K, PC
	3. Recognize and manage shock	K, PC
	4. Initial evaluation, monitoring, stabilization and transport of critically ill neonates and pediatric patients with life threatening cardiac conditions.	K, PC, ISC, SBP, P
Goal	Develop competency in Pediatric Echocardiography	
Objectives	1. Describe indications and contraindications	K, PC
	2. Become technically confident and capable in the performance of all type of echocardiographic modalities.	K

	3. Become and effective teacher of the technical and clinical application aspects of the diagnostic modality.	K, PBL, ISK
	4. Describe equipment's and monitoring needs (if appropriate, i.e. TEE, sedated patients)	K, PC
	5. Describe approach and technique	K, PC
	6. Recognize and manage complications	K, PC
	7. Generate a comprehensive and clear report stating pertinent anatomic and physiologic findings.	K, PC, P
Goal	Develop competency in Pediatric Cardiac Catheterization and Invasive Electrophysiology	
	1. Describe indications and contraindications	K, PC
	2. Describe equipment and monitoring needs	K, PC
	3. Become technically confident and capable in the performance of diagnostic studies as well as simple interventions (i.e. balloon atrial septostomy, temporary pacing)	K, PC
	4. Obtain informed consent	K, PC, P, ISK
	5. Describe approach and technique	K, PC
	6. Recognize and manage complications	K, PC
	7. Basic principles of conscious and deep sedation	K, PC
	8. Pacing protocols and how they are used to show AV and VA conduction as well as refractory periods	K, PC
	9. Basic principles of cardiac hemodynamics and angiography	K, PC
	10. Generate a comprehensive and clear report stating pertinent findings, implications and suggestive plan of action (i.e. surgical intervention, observation, clinical management)	K, PC, P
	Learn the skills necessary to prioritize and manage	

Goal	the care of multiple patients	
Objectives	1. Demonstrate the ability to prioritize the simultaneous care of multiple patients	PC, SBP
	2. Interact with patients and families in an ethical, professional manner which takes into the accounts the stresses associated with acute illness, injury and death	PC, ISC,
	3. Communicate and collaborate effectively as part of a health care team	ISC, P, SBP
	4. Describe key aspects of the health care system that impact patient care	SBP
	5. Maintain comprehensive medical records	ISC, P, SBP
Goal	To develop evidence based, multidisciplinary and multi focus approach; as well as knowledge, skills and principles that concern the practice of pediatric cardiac critical care.	
Objectives	1. The overall goal is for the trainee to become proficient, effective, compassionate and professional in the delivery of comprehensive intensive care term infants, children, adolescents and young adults in need of critical care monitoring and therapy.	K, PC, PBL, P, ISC, SBP
	2. Describe the pathophysiology of disease	K
	3. Describe the epidemiology of disease	K
	4. Perform a directed history and examination	K, PC
	5. Select and interpret appropriate laboratory tests	K, PC, PBL
	6. Select and interpret appropriate radiological tests	K, PC, PBL
	7. Understanding and application of pharmacologic principles as they pertain to the pediatric patient.	K, PC
	8. Basic application of assist ventilation and cardiopulmonary interactions.	K, PC
	8. Basic principles of hemodynamic and cardiac	K, PC

	physiology	
	9. Basic principles of renal physiology and renal replacement therapy.	K, PC
	10. Basic principles of fluid management of patients with dehydration, shock, head trauma, post surgical fluid replacement	K, PC
	11. Principles of parenteral and enteral nutrition in the critically ill patient	K, PC
	12. Principles and application of pain control, conscious and deep sedation	K, PC
	13. Arrive at presumptive and alternative diagnosis	K, PC, PBL
	14. Participate and eventually effectively conduct bedside working and teaching rounds.	K, PC, P, PBL, SBP
	15. Generate an initial and daily care plan.	K, PC, PBL, SBP
	16. Generate appropriate patient progress notes and consultations.	K, PC, ISC, PBL, P
	17. Resource utilization: appropriate use of consultants	K, PC, ISC, SBP
	18. Describe appropriate disposition and referral	K, PC, ISC, SBP
	19. Resource utilization: Use appropriate monitoring techniques	K, PC, SBP
	20. Utilize information resources to evaluate and improve care.	K, PC, PBL
	21. Conduct oneself in a respectful, professional, ethical manner	PC, ISC, P, SBP
	22. Demonstrate recognition of limits, continuous self assessment	PBL, P
	23. Participate in the detection and critical evaluation of medical errors	PBL, SBP
	24. Advocate for patients experiencing difficulties with the health care system	ISC, P, S
	25. Maintain comprehensive medical records	ISC, P, SBP

Scholarly Activity		
Goal	The goal of the scholarly activity curriculum for pediatric cardiology fellows is to provide broad experience in the conduct of investigation, research and teaching. The intention is to foster a keen interest in academic medicine.	
Objectives	Thorough understanding of the literature as it relates to the assigned project.	K, PBL
	Knowledge and understanding of general investigational and experimental techniques.	K, PBL
	Development of specific writing skills required for: <ul style="list-style-type: none"> • Project description • Preparation of a research proposal for a grant application • Preparation of a research manuscript 	PBL, ICS
	Development of specific verbal skills required for: <ul style="list-style-type: none"> • Progress reports • Formal research seminars 	ICS
	Computer analysis of results, using the appropriate available software and produce graphical presentations and final reports of experiments.	PBL, ICS
	To stay abreast of the current literature.	K
	Where practical, the fellow will be encouraged to submit manuscripts for publication in research journals and research proposals to funding agencies.	ICS, PBL, K
Goal	To facilitate the learning of medical students, residents, nurses and consultants in the clinical environment that fosters an understanding of the particular concerns of pediatric cardiology patients.	
Objectives	1. To provide one on one education and consultation in the care of an individual patient	PC, PBL, P
	2. To actively participate in teaching rounds with up-to-date patient information and critical review of	PC, PBL, ISC, K, P

	the literature as it pertains to the particulars of the patient's conditions and daily decisions centered in patient management.	
	2. Provide feedback to learners	ISC, P
K - Knowledge, PC - Patient Care P - Professionalism PBL - Practice Based Learning and Improvement ISC - Interpersonal Skills and Communication SBP - Systems Based Practice		

The program is designed to:

- Facilitate acquisition of knowledge and technical expertise in the care of children with cardiovascular disease.
- Provide the academic tools to enable trainees to make meaningful scholarly contributions to the field of pediatric cardiology
- Develop the capacity for on-going continuous education and self-improvement beyond the period of formal training.

A Decade of Discovery:

Selected Publications by NYU Pediatric Cardiology Faculty (this list is not exhaustive)

- Coetzee WA.** Multiplicity of effectors of the cardioprotective agent, diazoxide. *Pharmacol Ther.* 2013 Nov; 140(2):167-75.
- McElhinney DB,** Marshall AC, Schievano S. Fracture of cardiovascular stents in patients with congenital heart disease: theoretical and empirical considerations. *Circ Cardiovasc Interv.* 2013 Oct 1;6(5):575-85.
- Ascunce RR, Nayar AC, **Phoon CKL,** Srichai MB. Cardiac magnetic resonance findings in a case of carnitine deficiency. *Tex Heart Inst J.* 2013;40(1):104-5.
- Morray BH, **McElhinney DB,** Cheatham JP, Zahn EM, Berman DP, Sullivan PM, Lock JE, Jones TK. Risk of coronary artery compression among patients referred for transcatheter pulmonary valve implantation: a multicenter experience. *Circ Cardiovasc Interv.* 2013 Oct 1;6(5):535-42.
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