



**Pediatric Cardiology Fellowship Training Program**  
**Children's National Medical Center**  
111 Michigan Avenue, NW  
Washington, DC

**Children's National**  
**HeartInstitute**

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**Program Overview**

The Pediatric Cardiology Fellowship Training Program at Children's National Medical Center is approved by the ACGME and involves clinical, academic, and research training over a 36 month period. Fellows benefit from the vast expertise of and dedicated teaching by faculty from the Division of Cardiology as well as the other programs within the Children's National Heart Institute.

The CNHI is a multidisciplinary team consisting of Cardiology, Cardiovascular Surgery, Cardiac Intensive Care, and Cardiac Anesthesia and is a national and international referral center. It has experienced remarkable growth over the past eight years and is the largest congenital heart program in the mid-Atlantic region. Significant milestones in our recent history include the addition of world-class faculty such as Richard Jonas, David Wessel, and Charles Berul; the opening of the East Inpatient Tower in 2007, the new Cardiology Clinic and Echocardiography Laboratory in 2010, and the 26-bed Cardiac Intensive Care Unit in December of 2011; and the strengthening of our relationships with the National Institutes of Health and the Washington Hospital Center. This year brings the exciting prospect of conducting an international conference in Dubai, re-establishing our heart transplantation service, and constructing our third cardiac catheterization lab with interventional MRI capabilities.

**Fellowship Curriculum**

The Pediatric Cardiology Fellowship Training Program at Children's National Medical Center involves clinical, research, and academic training. An approximate breakdown of the fellowship schedule is shown below:

Weeks of Training

	Year One	Year Two	Year Three	Total
Research	5	25	25	55
CICU	6	4	2	12
HKU*	4	4	2	16
Consults*	6			
Echo	7-8	2	6	15-16
EP	5-6	2	3-4	11-12
Cath	8	4	4	16
ACHD	2	3-4	2	7-8
Nights	4	4	4	12
Vacation	4	4	4	12

*\*During the second and third years of training, HKU and consults are performed together*

### ***Clinical***

Clinical rotations include the Cardiology Inpatient Service (HKU), the Inpatient Consultation Service, the Cardiac Intensive Care Unit, the Echocardiography Laboratory, the Cardiac Catheterization Laboratory, the Electrophysiology Service, and the Adult Congenital Service. Fellows participate in outpatient continuity clinic for one half day per week during their first year and for one full day every other week during their second and third years. Training during the third year can allow for flexibility for elective experience and to tailor the year to meet individual training goals.

On call responsibilities for the cardiology fellowship are performed predominantly through a night float system, which allows for continuity of care without sacrificing time from clinical and research duties. Monday night through Saturday night coverage is provided by an in-house cardiology fellow. Saturday day shift and Sundays are covered by an additional fellow, allowing for continuity of care over the weekend. Sunday overnight call may be performed at home if the clinical service allows. Call responsibilities include coverage of cardiology service and consult patients, new consults throughout the hospital and in the Emergency Department, answering parent phone calls, and assisting in the Cardiac Intensive Care Unit as needed. On call fellows may also spend time performing echocardiograms and participating in cardiac catheterizations and electrophysiology procedures as they arise. Fellows are on call for approximately four weeks of night float and four weekends per year.

Cardiac Intensive Care Unit call is approximately every fourth night while on service in the CICU and is shared by cardiology and critical care medicine fellows. Each fellow also performs a limited number of additional cross-cover CICU calls per year. CICU call responsibilities include the primary care of all Cardiac Intensive Care Unit patients.

The cardiology fellowship program is supportive of and compliant with all ACGME duty hour standards.

### ***Research***

Research experience occupies approximately 13 of the 36 months of training and occurs predominantly in the second and third years. Opportunities for clinical and basic science research are available with Children's National faculty in Cardiology and other divisions as well as at the National Institutes of Health. Fellows are provided support to prepare their research for presentation at national meetings and for publication in peer-reviewed journals. Recent fellow research projects have included screening for rheumatic heart disease in Uganda, a review of femoral vein homografts used in the Norwood procedure, computational models of flow dynamics in reconstructed aortic arches, comparative cardiac embryology of the murine and human fetus, percutaneous VSD closure in pigs using interventional MRI, and echocardiography in mouse models of congenital heart disease.

### ***Academic Curriculum***

The fellowship training program prides itself on a robust schedule of protected time for fellow lectures and conferences, including formal fellow conferences, cardiology division conferences, and hospital-wide conferences.

Division conferences include our weekly combined Cardiology – Cardiovascular Surgery management conference, catheterization conference, and performance improvement conference. Fellow conferences incorporate a wide variety of both topics and learning modalities and are relevant to both a robust education in pediatric cardiology as well as the pediatric cardiology board examination. Regular fellow conferences include sessions on echocardiography, electrophysiology, cardiac critical care, core book review, surgical techniques and perspectives, pathology, embryology, and principles of outpatient management.

Fellows are also encouraged to attend Pediatric Grand Rounds, Pediatric Professorial Rounds, hospital basic science research lectures, and Washington Hospital Center cardiology conferences.

## **Children's National Heart Institute Programs**

A description of select components of the CNHI's programs is provided below.

### ***Cardiac Catheterization***

Approximately 600 cardiac catheterizations per year are performed at Children's National Medical Center in our two state-of-the-art digital catheterization laboratories. Well over half of these are interventional procedures including balloon dilation, stent placement, coil embolization, endomyocardial biopsies, and ASD and VSD closures. Interventional cardiologists at Children's National routinely utilize intracardiac echocardiography for guidance during procedures. The Cardiac Catheterization team is looking forward to the construction of their third catheterization laboratory which will also serve as an MRI suite with interventional MRI capabilities.

### ***Cardiac Intensive Care***

The CICU at Children's National cares for surgical and medical patients including neonates, infants, children, and adults with congenital heart disease. A dedicated CICU at Children's National first opened in 2005 and expanded to a 13 bed unit in the East Inpatient Tower in 2007. In December 2011, we opened our new 26 bed Cardiac Intensive Care Unit. This 34,000 square foot unit includes state-of-the-art monitoring equipment, a fully equipped simulation room, and a comprehensive digital media room. In February 2012, the 4 bed Cardiac Procedure Recovery Unit (CPRU) will open within the CICU and will provide procedure and recovery space with specialized care for infants, children, and adults undergoing cardiac catheterization, electrical cardioversion, and transesophageal and sedated transthoracic echocardiograms. Children's National has a long history as a national leader in Extra-Corporeal Membrane Oxygenation (ECMO) and will be establishing a ventricular assist device program in the coming year. The CICU is actively involved in thirteen clinical research protocols and is staffed by physicians with backgrounds in cardiology, critical care medicine, and anesthesiology.

### ***Cardiovascular Surgery***

Over 550 cardiac operations are performed each year at Children's National. Repair of simple and complex cardiac disease in children and adults with congenital heart disease is carried out including complex neonatal repairs in the smallest infants. Dr. Richard Jonas, one of the most accomplished pediatric cardiac surgeons in the world, joined Children's National in 2004 after leading the cardiac surgery program for many years at Children's Hospital Boston. In addition to its active clinical program, the Division of Cardiovascular Surgery maintains an active research laboratory in the Children's Research Institute.

### ***Echocardiography***

The Echocardiography Laboratory was the first digital pediatric echocardiography lab in the country and performs approximately 15,000 echocardiograms per year. Activities include routine inpatient and outpatient transthoracic echocardiography, transesophageal echocardiography, fetal echocardiography, telemedicine, three-dimensional echocardiography, strain and strain-rate imaging, and dyssynchrony and cardiac resynchronization studies. The Echocardiography Laboratory includes a telemedicine terminal as well as a dedicated research station with state-of-the-art software to analyze ventricular mechanics. Children's National serves as a development site for industry leaders in echocardiography and telemedicine and frequently has access to new technology before it is released to the market.

### ***Electrophysiology***

A wide range of invasive and non-invasive electrophysiologic procedures are performed at Children's National. Over 80 electrophysiology studies and ablations and over 20 transvenous pacemaker/AICD insertions are performed each year. Noninvasive testing includes pacemaker interrogation, electrocardiograms, Holter monitoring, event recorders, tilt table testing, and signal-averaged electrocardiography. The electrophysiology team is comprised of four electrophysiologists and four dedicated nurses and nurse practitioners.

### ***Fetal Heart Program***

The Fetal Heart Program addresses the needs of the fetus with heart defects. Fetal echocardiography can detect heart defects at 16 to 18 weeks gestation, and Children's National's First Trimester Fetal Cardiac Imaging Program has performed these evaluations as early as 12 weeks gestation. The Fetal Heart Program's goal is to understand how heart defects affect fetal well-being in-utero and determine when and if intervention may be possible to best assure that the fetus is well taken care of for the duration of the pregnancy. Fetal cardiologists collaborate with maternal-fetal medicine specialists and obstetricians as well as cardiac intensivists, interventional cardiologists, electrophysiologists, and adult congenital cardiologists to provide care for the fetus and mother and to coordinate risk-adjusted deliveries. Fetal cardiologists also work with other specialists in the Division of Fetal Medicine to care for fetuses with extracardiac abnormalities.

### ***Heart and Kidney Unit***

The Heart and Kidney Unit, a 20 bed acute care unit, cares for neonates, infants, children and adults with congenital heart disease on the Cardiovascular Surgery and Cardiology Inpatient Services.

### ***Heart Transplantation and Heart Failure***

Children's National Medical Center cares for a large number of patients who have received a heart transplant for congenital and acquired heart disease. Children's National has continually provided medical and interventional pre- and post-transplant care for many years, and we are happy to announce the re-certification of our transplantation program for the first time since 2007. The CNHI utilizes state-of-the-art technology for the diagnosis and management of patients with heart failure including strain and strain rate imaging, three-dimensional echocardiography, pharmacologic therapy, and biventricular pacing.

### ***Cardiac MRI***

Cardiac MRI at Children's National is a joint program between Cardiology and Radiology. Approximately 180 – 200 studies are performed annually. The cMRI program will be expanding with the construction of a combination MRI suite and interventional cath lab, a joint venture of Children's National and the NIH.

### ***Outpatient Clinics***

Over 12,000 outpatient cardiology visits per year take place at Children's National and its regional outpatient clinics. Children's National has specialized cardiology clinics for patients with inherited arrhythmias, pulmonary hypertension, heart failure, oncologic and hematologic disorders, hyperlipidemia, hypertension, and adults with congenital heart disease. Our Single Ventricle Clinic utilizes telemedicine home monitoring and is staffed by a multi-disciplinary team of cardiologists, nurse practitioners, and a dedicated nutritionist and has resulted in one of the lowest interstage mortality rates in the country.

### ***Preventive Cardiology***

Preventive cardiology at Children's National includes the evaluation and management of patients with hyperlipidemia, obesity, hypertension, and family history of heart disease. Over 200 stress tests are performed yearly and include pulmonary function testing and cardiac output measurements.

### ***Washington Adult Congenital Heart Program***

A large number of adolescents and adults with repaired or palliated congenital heart disease are followed by Children's National's specialized team of transitional and adult congenital cardiologists. This population includes older patients who underwent the Mustard or Senning operation for D-transposition of the great arteries, modified Fontan operation for single ventricle anatomy, and tetralogy of Fallot repair. Complex issues including arrhythmias, polycythemia, pregnancy, and psychosocial ramifications are addressed by the adult congenital team. A joint clinic is also held with adult cardiologists from the Washington Hospital Center.

## DIVISION OF CARDIOLOGY FACULTY ROSTER



### **Charles I. Berul, M.D.**

Dr. Berul is Chief of the Division of Cardiology within the Center for Heart, Lung and Kidney Disease and the Children's National Heart Institute. He was born in Washington, DC and was raised in the area. He earned his bachelor's and master's degrees in biology from Bucknell University and then received his doctorate of medicine from the University of Maryland. Dr. Berul completed his internship and residency in pediatrics at Yale, followed by specialty fellowship training in pediatric cardiology and electrophysiology at Children's Hospital of Philadelphia. He was the director of the Pacemaker Program at Children's Hospital Boston, Harvard Medical School until coming to Children's National Medical Center in 2009. Dr. Berul is a professor of Pediatrics at George Washington University School of Medicine. Dr. Berul is a fellow of the Heart Rhythm Society, the American Academy of Pediatrics, the American College of Cardiology, the Society for Pediatric Research, and the American Heart Association's Council on Cardiovascular Disease in the Young. Dr. Berul has over 150 publications in the field of pediatric cardiology. He is an invited speaker nationally and internationally and is an acknowledged expert in the area of pediatric cardiac electrophysiology.



### **E. Anne Greene, M.D.**

Dr. Greene joined Children's National in May 2009 as an attending on the electrophysiology service and as medical director for the Heart and Kidney Unit. She is director of the Pediatric Cardiology Fellowship Training Program. Dr. Greene has a long-standing interest in resident and fellow education and has received numerous teaching awards. Dr. Greene completed her pediatric cardiology fellowship at Children's National in 2002 and training in pediatric electrophysiology at UCSF and Stanford University in 2003. Previously, she completed a fellowship in pediatric emergency medicine and a residency in emergency medicine at Georgetown/George Washington University. Dr. Greene is board certified in pediatric cardiology, pediatrics, and pediatric emergency medicine. She is a fellow of American Academy of Pediatrics, and a member of the Pediatric Electrophysiology Society, Heart Rhythm Society and American Heart Association. Her research interests include utilization of pediatric ECGs in the emergency department and risk factors for sudden death in pediatric patients.



### **Jeffrey A. Becker, M.D.**

Dr. Becker joined Children's National in August 2008 and is director of Outpatient Services. He is the primary pediatric cardiology consultant at Holy Cross Hospital and sees patients throughout the DC region. He is board certified in general pediatrics and pediatric cardiology, a diplomat of the National Board of Medical Examiners, a fellow of the American Academy of Pediatrics and the American College of Cardiology, and a member of the North American Society for Cardiac Imaging. Dr. Becker received his doctorate of medicine from the George Washington University School of Medicine. He completed his residency in pediatrics at Walter Reed Army Medical Center, Washington, D.C. and his fellowship training in cardiology at Children's National Medical Center. His primary interests include non-invasive cardiac imaging, outpatient cardiology, and quality management.



**Stanley D. Beder, M.D.**

Dr. Beder's primary interests include outpatient cardiology and electrophysiology. He has been in practice for over 25 years. He is board certified in pediatric cardiology and a fellow of the American Academy of Pediatrics and the American College of Cardiology. He received his training in pediatric cardiology at the Texas Children's Hospital. He has performed research in the areas of pharmacologic and non-pharmacologic evaluation and treatment of arrhythmias, investigational pacing devices, and antiarrhythmic drugs in neonates, infants, children, and adolescents.



**John T. Berger, III, M.D.**

Dr. Berger has joint appointments Divisions of Cardiology and Critical Care at Children's National Medical Center and is board certified in pediatric critical care and pediatric cardiology. In addition to serving as medical director of the Cardiac Intensive Care Unit, he serves as director of the pulmonary hypertension program. He has completed the Master Teacher program at George Washington University and has been an invited speaker regionally and nationally. Dr. Berger serves as the co-investigator in the NIH funded Collaborative Pediatric Critical Care Research Network and is the site investigator and consortium cardiologist for the Therapeutic Hypothermia After Pediatric Cardiac Arrest trials.



**Linda Bradley-Tiernan, M.D.**

Dr. Bradley is an attending in cardiology with interests in outpatient cardiology, the care of the medically complex patient with congenital heart disease in subacute care, and the transitioning of young adults with congenital heart disease. Dr. Bradley completed her pediatric residency and pediatric cardiology fellowship at Children's National Medical Center in 1985. Following her training, she spent two additional years in a research fellowship studying inflammatory mediators in the newborn pulmonary and coronary circulation. Dr. Bradley developed "Follow My Heart," the first electronic personal health record specific to congenital heart disease, which has been endorsed by the American College of Cardiology and the Adult Congenital Heart Association.



**Kristin M. Burns, M.D.**

Dr. Burns joined the Children's National Medical Center faculty in 2011. She received her bachelor's degree from Wellesley College and her medical degree from the University of Massachusetts. Dr. Burns completed her pediatric residency and chief residency at Hasbro Children's Hospital and Brown University and her pediatric cardiology fellowship at Children's National Medical Center. She is also a medical officer in the Heart Development and Structural Diseases Branch in the Division of Cardiovascular Sciences at the National Heart, Lung, and Blood Institute (NHLBI), part of the NIH.



**Sarah B. Clauss, M.D.**

Dr. Clauss joined our staff in September 2002. She received her bachelor's degree from Cornell University and her medical degree from SUNY Buffalo. She completed her pediatric residency at Children's Hospital of Pittsburgh and her pediatric cardiology fellowship at Johns Hopkins. Dr. Clauss's interests include echocardiography, fetal cardiology, and dyslipidemias.

**Jessica H. Colyer, M.D.**

Dr. Colyer joined the Children's National Medical Center faculty in 2011. She received her undergraduate degree from the College of the Holy Cross and her medical degree from Pennsylvania State University. She completed her pediatric residency, chief residency, and pediatric cardiology fellowship training here at Children's National. During her fellowship, she performed research the National Heart, Lung, and Blood Institute (NHLBI) of the NIH in interventional cardiac MRI. Dr. Colyer participates in inpatient and outpatient care and is focusing her clinical practice on northern Virginia, the eastern shore of Maryland, and Delaware.



**Russell R. Cross, M.D.**

Dr. Cross is co-director of the Cardiac MRI program and director of the Quality and Outcomes Program at the Children's National Heart Institute. He is also active in inpatient and outpatient care as well as in the echocardiography laboratory. He received his B.S. in electrical engineering from the University of Texas at Austin and his master of science in biomedical engineering and his doctorate of medicine from the University of Texas Southwestern. After pediatric residency training at the University of Texas Houston, he completed his cardiology fellowship training at Children's National Medical Center. Dr. Cross was the director of pediatric cardiology inpatient services at Children's National for nine years. His interests include information technology in medicine. He is active in the Joint Council on Congenital Heart Disease's National Pediatric Cardiology Quality Improvement Collaborative.



**Susan D. Cummings, M.D., M.P.H.**

Dr. Cummings' primary interests are in inpatient and outpatient care as well as echocardiography. Dr. Cummings joined the Children's National staff in 1998. She received her bachelor's degree from Duke University, her medical degree from Johns Hopkins University, and her pediatric residency and pediatric cardiology fellowship at Children's Hospital Boston. She subsequently completed a senior fellowship in echocardiography at Children's National Medical Center. Dr. Cummings' focus includes education in transthoracic, transesophageal, and fetal echocardiography. She precepts fellows in the outpatient setting.



**Niti Dham, M.D.**

Dr. Dham completed her fellowship in pediatric cardiology and a senior fellowship in advanced cardiac imaging fellowship at Children's National Medical Center. Prior to this, her cardiology fellowship included training at Columbia University and Tulane University. Her clinical interests include echocardiography, heart failure, and inpatient and outpatient care. Dr. Dham is the lead cardiologist involved in Children's National's Cardiology-Oncology-Blood Disorders Clinic, a multidisciplinary clinic focusing on the cardiac evaluation and management of children and young adults with a history of malignancies and hematologic diseases. Her research is focused on echocardiography in the evaluation of patients with sickle cell disease and heart failure.



**Mary T. Donofrio, M.D.**

Mary T. Donofrio is director of the Fetal Heart Program, director of High-Risk Delivery Services, director of the Advanced Cardiac Imaging Fellowship, and co-director of the Echocardiography Laboratory. She has developed and expanded the Fetal Heart Program to include first trimester fetal cardiac imaging and coordinated delivery services for babies with complex critical defects. She joined the staff at Children's National Medical Center after spending nine years at the Virginia Commonwealth University School of Medicine, directing the echocardiography laboratory there. She graduated from Johns Hopkins University, received her M.D. from Mount Sinai School of Medicine, and completed her pediatric residency at the New York Hospital – Cornell Medical Center. Dr. Donofrio subsequently completed her cardiology fellowship training in 1995 at Children's Hospital of Philadelphia and received advanced training in fetal echocardiography at Yale University. Dr. Donofrio is a fellow of the American College of Cardiology, American Academy of Pediatrics, and American Society of Echocardiography. Her research has focused on fetal cardiovascular physiology and heart function, including studies of autoregulation of cerebral blood flow in fetuses with congenital heart disease and the neurodevelopmental outcome of babies born with congenital heart disease. She is a national expert in the areas of fetal cardiology, echocardiography, and pediatric cardiology. Dr. Donofrio is on several journal editorial boards, research committees, and has published over 50 papers and abstracts.



**Robin W. Doroshow, M.D.**

Dr. Doroshow's primary interests include outpatient cardiology, echocardiography, and medical education. She leads the Georgetown University pediatric cardiology program. She has been in practice since 1978 after completing fellowship training at the University of Colorado and a research fellowship at Children's Hospital Boston. She joined the staff at Children's National Medical Center in 2003 after spending 12 years in the University of California, Los Angeles Medical System. Dr. Doroshow is a fellow of the American College of Cardiology and American Academy of Pediatrics. She is the faculty leader of the division's journal club and is active in medical student, resident, and fellow education.



**Lowell H. Frank, M.D.**

Dr. Frank is an attending in the Division of Cardiology at Children's National Medical Center and Assistant Professor of Pediatrics at the George Washington University School of Medicine. He received his B.A. *with Distinction in All Subjects* at Cornell University with dual majors in music and biochemistry and received his M.D. from the Weill Medical College of Cornell University. Dr. Frank completed his training in pediatrics at Cornell where he received the Department of Pediatrics Award for Teaching Excellence in his final year. He completed his fellowship training in pediatric cardiology here at Children's National, where he twice received the David Lewis Award for Most Outstanding Fellow. He subsequently completed a senior fellowship in advanced cardiac imaging at Children's National Medical Center. Dr. Frank has conducted research at the National Heart, Lung, and Blood Institute of the National Institutes of Health analyzing ventricular mechanics in models of congenital heart disease. His research interests include advanced echocardiographic measures of ventricular function, dyssynchrony, and complex congenital heart disease. He participates in transthoracic, transesophageal, and three-dimensional echocardiography as well as inpatient and outpatient care and is active in medical education.





**Ashraf S. Harahsheh, M.D.**

Dr. Harahsheh joined Children's National in September 2008 after completing his residency and fellowship training at the Children's Hospital of Michigan. Dr. Harahsheh is board certified in pediatric cardiology, a fellow of the American Academy of Pediatrics and the American College of Cardiology, and a member of the American Heart Association and the American Medical Association. He received his doctorate of medicine from the University of Jordan-College of Medicine, Amman, Jordan. Dr. Harahsheh is director of resident education in the Division of Cardiology and is active in inpatient and outpatient care as well in the preventive cardiology program with a focus on hyperlipidemia. He is active in the Joint Council on Congenital Heart Disease's National Pediatric Cardiology Quality Improvement Collaborative.



**Deneen Heath, M.D.**

Dr. Heath's primary interests are in echocardiography, fetal cardiology, heart failure, inpatient cardiology, and resident education. She joined Children's National after five years of private practice in the metropolitan Washington area. She completed her pediatric residency at Georgetown University and her pediatric cardiology training at Texas Children's Hospital. During her fellowship, she served as a cardiac transplantation fellow. Dr. Heath spent an additional year of fellowship in pediatric echocardiography with emphasis on fetal and cardiology. She is a fellow of the American Academy of Pediatrics and a member of the American Society of Echocardiography.

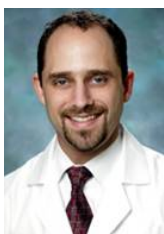
**Anitha S. John, M.D., Ph.D.**

Dr. John joined Children's National Medical Center in 2011 with a primary interest in adult congenital heart disease. After completing an accelerated undergraduate degree from Villanova University in 1994, she obtained a Ph.D. in the molecular pathobiology program in 1999 and completed her medical degree in 2001 from the Drexel University Medical School. She completed a combined internal medicine-pediatrics residency program at Brown University in 2005. Thereafter, she completed her pediatric cardiology fellowship at Children's Hospital of Philadelphia and a senior fellowship in adult congenital heart disease at the Mayo Clinic. Dr. John practices at Children's National and participates in the Echocardiography Laboratory at the Washington Hospital Center. Her recent research has focused on liver dysfunction in patients with the Fontan palliation for single ventricles.



**Jonathan Kaltman, M.D.**

Dr. Kaltman joined Children's National Medical Center in 2007 after serving on faculty as the Children's Hospital of Philadelphia, where he completed his pediatric internship and residency, his pediatric cardiology fellowship, and his subspecialty training in clinical electrophysiology. He is board certified in pediatrics and pediatric cardiology and is a fellow of the American Academy of Pediatrics and a member of the Heart Rhythm Society. Dr. Kaltman also serves as a Branch Chief in the Heart Development and Structural Diseases Branch in the Division of Cardiovascular Sciences at the National Heart, Lung, and Blood Institute (NHLBI), part of the NIH. In this role, he is responsible for developing new research initiatives and managing basic and clinical research grants in the multiple areas of pediatric cardiology-related disease states. Dr. Kaltman provides leadership for the Pediatric Cardiac Genomics Consortium, a multi-center translational research group investigating the association of genetic variation with congenital heart disease diagnosis and outcome. He also helps oversee the Pediatric Heart Network, a multi-center clinical research network conducting studies in children with congenital heart disease. His clinical interests are management of arrhythmia patients, catheter ablation and device placement.



**Joshua P. Kanter, M.D.**

Dr. Kanter is director of the Cardiac Catheterization Laboratory at Children's National. He received his medical degree and pediatric training from the State University of New York Health Science Center at Syracuse and completed fellowship training in pediatric cardiology and interventional pediatric cardiology at the New York Presbyterian Hospital, Columbia University Medical Center. Dr. Kanter specializes in diagnostic and interventional pediatric cardiac catheterization for the treatment of congenital heart disease. He has extensive experience implanting the Melody® Transcatheter Pulmonary Valve, and is an expert in the device closure of atrial septal defects, ventricular septal defects, and patent ductus arteriosus. He is an investigator in a number of national multi-center research studies to examine new devices and to track clinical outcomes. He serves on several national committees including the NCDR IMPACT™ Registry Implementation Group and the American College of Cardiology Annual Scientific Session Program Committee.

**Darren Klugman, M.D.**

Dr. Klugman joined the Children's National faculty in 2010 as an attending in the Cardiac Intensive Care Unit. He completed his undergraduate studies at Emory University and received his Masters of Science at Drexel University. He received his medical degree at the George Washington University School of Medicine and subsequently completed his pediatric residency and a joint 5-year program in Cardiology and Critical Care Medicine at Children's National Medical Center. His current responsibilities include inpatient care in the Cardiac Intensive Care Unit and serving as Director of Medical Safety for Children's National.



**Anita N. Krishnan, M.D.**

Dr. Krishnan joined the Division of Cardiology in October 2009. She received her undergraduate degree from M.I.T., where she studied chemical engineering. She attended Northwestern University for medical school, and then completed her pediatric residency and pediatric cardiology fellowships at Children's National. During her fourth year fellowship, she was involved in research comparing cardiac development in murine and human fetuses at the National Heart, Lung, and Blood Institute of the NIH. Her research interests include fetal effects of maternal lupus and other connective tissue diseases as well as neurodevelopmental outcomes of neonates with congenital heart defects. Her clinical practice focuses on fetal cardiology, transthoracic and transesophageal echocardiography, and inpatient and outpatient care.



**Karen S. Kuehl, M.D., M.P.H.**

Dr. Kuehl is director of the Washington Adult Congenital Heart program. Dr. Kuehl has been in practice for over 25 years, returning to Children's in February 1998. She is board certified in pediatric cardiology and a fellow of the American Academy of Pediatrics and the American College of Cardiology. She received her training in pediatric cardiology at the Children's National Medical Center with subsequent post-doctoral training in preventive cardiology and lipoprotein metabolism from the Albert Einstein College of Medicine and the University of Virginia respectively. Dr. Kuehl's primary interests include adult congenital heart disease, the epidemiology of developmental malformations with respect to environmental risks, and the relationship of sociodemographic factors to physician behavior in case management for congenital heart disease. Dr. Kuehl is a leader in numerous advocacy efforts for adults with congenital heart disease and leads mind-body workshops for her patients.



**Linda Leatherbury, M.D.**

Dr. Leatherbury returned to Children's National Medical Center in October 2001 after 16 years on the faculty at the Medical College of Georgia. She is board certified in pediatric cardiology. Dr. Leatherbury completed her residency and fellowship at Children's National and was recognized for excellence in teaching during her time here. Her primary interests are inpatient and outpatient care, clinical and basic science education, and basic science research. Dr. Leatherbury has mentored numerous undergraduates, post-doctoral fellows, and cardiology fellows in the Laboratory of Developmental Biology at the NIH and is active in research investigating genetic mutations in mouse models of congenital heart disease.



**Gerard R. Martin, M.D.**

Dr. Martin has been in practice at Children's National Medical Center since 1986. He is the Senior Vice President for the Center for Heart, Lung and Kidney Disease at Children's National; the C. Richard Beyda Professor of Cardiology; Professor of Pediatrics at The George Washington University School of Medicine; and the Co-Director of the Children's National Heart Institute. He has previously served as Chief of the Division of Cardiology, director of the Echocardiography Laboratory, and director of the Cardiology Fellowship Training Program. He earned his bachelor's degree in biology from Syracuse University and his M.D. from SUNY-Upstate Medical Center. Dr. Martin completed his residency in pediatrics at Rhode Island Hospital in Providence. Subsequently, he completed his cardiology fellowship at the University of California, San Francisco. He is board certified in pediatric cardiology, a fellow of the American Academy of Pediatrics and the American College of Cardiology, and a member of the Society for Pediatric Research, American Pediatric Society, the American Heart Association's Council on Cardiovascular Disease in the Young. Dr. Martin has also served on the American Board of Pediatrics Sub-Board in Pediatric Cardiology and as a member of the National Heart, Lung, and Blood Institute's Cardiology Data and Safety Monitoring Board. He is currently the Chair of the American College of Cardiology's Adult Congenital and Pediatric Cardiology Section. He Martin has more than 85 publications in the field of pediatric cardiology. He is an invited speaker nationally and internationally and is an acknowledged expert in the area of pediatric echocardiography. Dr. Martin is a national leader in the role of pulse oximetry in screening for congenital heart disease and has presented this work at many regional and national meetings as well as to state legislatures.



**Michele Mietus-Snyder, M.D.**

Dr. Mietus-Snyder is co-director of the Obesity Institute after practicing in the UCSF Departments of Pediatric Medicine and Physiological Nursing. She received her undergraduate and M.D. degrees from the University of California, San Diego and did her pediatric residency and cardiology fellowship training at Children's Hospital Boston. Her interest in the molecular pathways responsible for early preclinical atherogenesis led her to pursue basic science research in lipoprotein gene regulation at Harvard and at the Gladstone Institute for Cardiovascular Disease Research. Her studies of redox-sensitive genes important in early heart disease impressed upon her how many cardiovascular risk factors function via common metabolic pathways that promote vascular oxidative stress, including dyslipidemia, unhealthy diet, sedentary lifestyle, hypertension, and psychological stress. Her clinical practice focuses on preventive cardiology.



**Jeffrey P. Moak, M.D.**

Dr. Moak is director of Electrophysiology and Pacing at Children's National. Dr. Moak has been in practice for over 20 years, joining the staff here in 1992 after serving as an attending at Texas Children's Hospital. He received his training in pediatric cardiology at the Columbia University College of Physicians followed by a fellowship in cellular electrophysiology at the same institution. He is board certified in pediatric cardiology and a fellow of the American Academy of Pediatrics and the American College of Cardiology. Dr. Moak's primary interests include sudden cardiac death, neurally mediated cardiac syncope, and pacemakers and cardiac function. His clinical practice includes inpatient and outpatient electrophysiology as well as the full spectrum of interventional electrophysiologic procedures.



**Jai K. Nahar, M.D.**

Dr. Nahar joined the division of cardiology in July 2006 after completing his training at Children's National Medical Center. After his pediatric postgraduate training in India, he finished his pediatric residency at Sinai Hospital of Baltimore. Prior to joining the cardiology fellowship, Dr. Nahar worked as a primary care pediatrician in Hagerstown, MD. His primary focus is outpatient cardiology.

**Laura J. Olivieri, M.D.**

Dr. Olivieri splits her time between Children's National and the National Heart, Lung, and Blood Institute of the National Institutes of Health. She received her undergraduate degree at Worcester Polytechnic institute and her medical degree at the University of Chicago. Following her pediatric residency and chief residency at Hasbro Children's Hospital and Brown University, she completed her pediatric cardiology fellowship at Children's National and a senior fellowship in advanced cardiac imaging and cardiac MRI at Children's National and the NIH. Dr. Olivieri's research has included computational models of flow dynamics. Her clinical practice includes inpatient and outpatient care, echocardiography, and cardiac MRI.



**Gail D. Pearson, M.D., Sc.D.**

Dr. Pearson is the Chief of the Heart Development and Structural Diseases Branch of the National Heart, Lung, and Blood Institute, NIH. In this capacity, she leads the multi-center Pediatric Heart Network and oversees multiple clinical research protocols. Other responsibilities include developing clinical research policy and programs for NHLBI, consultation to the FDA and other NIH Institutes on topics pertaining to pediatric cardiology, and overseeing an extramural research grant portfolio focused on heart development, congenital heart disease, cardiac inflammation, and valvular disease. Dr. Pearson is a part-time Children's National faculty member, focusing on outpatient cardiology, echocardiography, and training the cardiology fellows. She is board-certified in pediatric cardiology, and is a fellow of the American Academy of Pediatrics, the American College of Cardiology, and the American Heart Association. Dr. Pearson represents the NHLBI on the AHA's Cardiovascular Disease in the Young Leadership Council. Her interests include clinical research and echocardiography. She serves as the faculty mentor for the cardiology fellows' core book club conference.

**Jodi I. Pike, M.D.**

Dr. Pike joined the faculty in July 2011. She received her undergraduate degree from Cornell University and her medical degree from Robert Wood Johnson Medical School. Dr. Pike completed her pediatric residency, pediatric cardiology fellowship, and advanced imaging fellowship at Children's National. Her main interests are echocardiography, fetal cardiology, and inpatient and outpatient care. Her clinical practice is focused in northern Virginia and Delaware.



**Kanishka Ratnayaka, M.D.**

Dr. Ratnayaka splits his time between Children's National and the National Heart, Lung, and Blood Institute of the National Institutes of Health. Dr. Ratnayaka's primary responsibilities include diagnostic and interventional cardiac catheterization as well as serving as a liaison for the joint CNMC-NIH interventional cardiac MRI project. He completed his undergraduate study at Brown University, with a B.A. *magna cum laude* in political science and his medical education at Emory University School of Medicine. Dr. Ratnayaka completed his pediatric residency, chief residency, pediatric cardiology fellowship, and pediatric interventional cardiology fellowship at Children's National Medical Center. His research emphasis is interventional pediatric cardiology and interventional cardiac MRI. He co-founded the 501(c)3 non-profit World Children's Initiative, which has led "Project Peds: Sri Lanka" and has resulted in the construction of a children's hospital. The WCI is set to open a new cardiac catheterization laboratory in conjunction with the congenital heart program at the Uganda Heart Institute.



**Joanna B. Rosenthal, M.D.**

Dr. Rosenthal joined the faculty after working in private practice in the Washington, DC region. She completed her undergraduate studies at the University of Pennsylvania with a B.A. *magna cum laude* in biological basis of behavior and a minor in mathematics and psychology. She completed her medical education at the University of Pennsylvania School of Medicine and her residency in pediatrics at the Children's Hospital of New York Presbyterian, Columbia University. Her fellowship training in pediatric cardiology was completed at the University of California, San Francisco. Dr. Rosenthal is director of the Inpatient Consult Service and her areas of interest include inpatient and outpatient care as well as transthoracic and fetal echocardiography.



**Roger N. Ruckman, M.D.**

Dr. Ruckman is longest tenured member of the cardiology faculty at Children's National. His primary interest is in outpatient cardiology. He is board certified in pediatric cardiology, a fellow of the American Academy of Pediatrics and the American College of Cardiology, and a member of the Society for Pediatric Research. He received his training in pediatric cardiology at the Children's Hospital of Boston. He practices throughout the Washington, DC metropolitan region including northern Virginia, Delaware, and the eastern shore of Maryland.



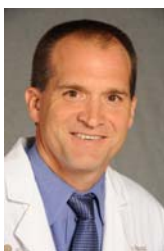
**George Ruiz, M.D.**

Dr. Ruiz joined the Division of Cardiology in July 2005 in the Adult Congenital Heart disease program. In 2006, he took a leave of absence to serve as a White House Fellow and worked as a special assistant to the Secretary of Veteran Affairs. He splits his time between the Washington Adult Congenital Heart (WACH) program and the Washington Hospital Center as an attending physician in the Advanced Cardiac Support and Pulmonary Hypertension Unit. Dr. Ruiz completed his undergraduate study at Brown University and received a doctor of medicine in 1998 from Albert Einstein College of Medicine. He completed his residency in internal medicine and his adult cardiology fellowship at the Brigham and Women's Hospital, Harvard Medical School. He was also a clinical and research fellow at Boston Adult Congenital Heart service. Prior to his appointment at the Hospital Center, Dr. Ruiz was active at Brigham and Women's Hospital, where he founded the Minority Medical House Staff Association and was instrumental in developing Brigham's Office of Minority Career Development. Dr. Ruiz mentors medical students and speaks nationally about success strategies for medical school and residency. Dr. Ruiz helps empower the Latino community by appearing regularly on Spanish-language television broadcasts to discuss cardiovascular health.



**Craig A. Sable, M.D.**

Dr. Sable is the director of the Echocardiography Laboratory for the Division of Cardiology and the director of Telemedicine for Children's National. He has previously served as director of the Fellowship Training Program. Dr. Sable has been in practice since 1995, joining the staff at Children's National in November 1997 after attending at Tulane University. He received his undergraduate education at Northwestern University, his medical education at the University of Chicago, and his pediatric residency and pediatric cardiology fellowship training at Children's National. He is chairman of the Sub-Board of Pediatric Cardiology of the American Academy of Pediatrics and is editor of the journal *Pediatric Cardiology*. He is board certified in pediatric cardiology and is a fellow of the American College of Cardiology and the American Academy of Pediatrics. He is a member of the Society of Pediatric Research, the Congenital Cardiac Defect Committee of the American Heart Association. Dr. Sable's primary research interests include telemedicine, three-dimensional echocardiography, and miniaturized echocardiography. He has a strong interest in international medicine, having made over a dozen medical missions to Africa. Dr. Sable leads the teaching of fellows in the echocardiography laboratory and directs the weekly echocardiography conference.



**Christopher F. Spurney, M.D.**

Dr. Spurney joined the division of cardiology in July 2004 after completing his pediatric residency at Columbia and in pediatric cardiology fellowship at Children's National Medical Center. Dr. Spurney obtained a B.A. in biology at Cornell University and completed his medical degree at New York Medical College. He performs research at the Center for Genetic Medicine, investigating non-invasive imaging of small animals and molecular mechanisms of cardiomyopathy. His clinical interests include inpatient cardiology and echocardiography.



**Michael C. Slack, M.D.**

Dr. Slack joined our staff as Director of Cardiac Catheterization in August 1999 and is the founder and co-director of the Adult Congenital Interventional Program. Dr. Slack previously served as director of Cardiac Catheterization for Arizona Pediatric Cardiology Consultants (1997 – 1999) and Walter Reed Army Medical Center (1992 – 1997). Dr. Slack was trained at Texas Children’s Hospital, including a senior fellowship in interventional catheterization. He is board certified in pediatric cardiology and is a fellow of the American College of Cardiology and the American Academy of Pediatrics. Dr. Slack has been a principal investigator for the AMPLATZER Occluder devices and has done extensive research in the use of intravascular stents, vascular occlusion devices, and balloon angioplasty.



**David L. Wessel, M.D.**

Dr. Wessel joined Children’s National Medical Center in July 2007 as the Executive Vice-President of the Center for Hospital-Based Specialties and the Chief of Critical Care Medicine. Prior to this appointment, he was Professor of Pediatrics at Harvard Medical School and Senior Associate in Cardiology and Anesthesia at Children’s Hospital Boston. Dr. Wessel was educated and trained at Oxford, Yale and Harvard and is board certified in anesthesiology, pediatrics, pediatric cardiology, and pediatric critical care medicine. He is regarded by many as one of the fathers of pediatric cardiac critical care. He was the founding president of the Pediatric Cardiac Intensive Care Society, an international society which honored him with its 2004 award for contributions to improving children’s heart health. While in Boston, he designed a training program for pediatric cardiac intensive care and trained numerous fellows and staff who are now leaders in that field throughout the country.

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**Richard A. Jonas, M.D.**

Dr. Jonas is the Chief of Cardiovascular Surgery at Children's National Medical Center and Co-Director of the Children's National Heart Institute. He joined our staff in July 2004 after spending 20 years at The Children's Hospital Boston, where he was Cardiovascular Surgeon-in-Chief for 10 years. He completed his post-doctoral training in Melbourne, Australia, Auckland, New Zealand, and Boston. His surgical skills in management of all aspects of congenital heart disease are world renowned. He is an international leader in pediatric cardiovascular surgery, caring for patients from all over the world. He has had leadership roles in several professional societies including the Congenital Heart Surgeons Society and the American Association for Thoracic Surgery. He is an author on over 250 peer reviewed manuscripts and 30 book chapters. He has authored 5 textbooks including the "Comprehensive Surgical Management of Congenital Heart Disease." He is principle or co-investigator on 5 active NIH funded grants. His more recent research has focused on the study of support techniques during cardiac surgery to maximize intellectual development and minimize neurological injury.



**Dilip Nath, M.D.**

Dr. Nath joined Children's National Heart Institute at Children's National Medical Center in July 2010. He received a Bachelor of Science in Bioengineering from the University of California, Berkeley in 1995. He obtained a Doctor of Medicine degree from New York University in 1999. He completed his residency in general surgery at the University of Minnesota in 2004. His laboratory research interests include developing cell based purity and viability assessments of islets as well as studying cytoprotective effects of antioxidants in porcine endothelial cells under fatty acid stress.



**Pranava Sinha, M.D.**

Dr. Sinha joined Children's National Heart Institute at Children's National Medical Center in September 2008. He received his Bachelor of Medicine and Surgery from Grant Medical College, University of Mumbai, India. After his cardiothoracic residency there he further trained in the specialty at St. Thomas's Hospital in London, UK, and at Boston Medical Center and Boston University. Dr. Sinha trained in Pediatric Cardiac Surgery at Children's National Medical Center, Washington DC.

**Cardiac Intensive Care Unit  
Attending Staff**

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Craig Futterman, M.D.  
Darren Klugman, M.D.  
Jen Schuette, M.D.  
Jamie Schwartz, M.D.  
Lillian Su, M.D.  
Shankar Venkat, M.D.  
David Wessel, M.D.

**Cardiac Anesthesia  
Attending Staff**

Rick Levy, M.D.  
*Director*  
Nina Deutsch, M.D.  
Juan Ibla, M.D.  
Richard Kaplan, M.D.  
Andy Matisoff, M.D.  
Jamie Schwartz, M.D.  
Karen Thomson, M.D.