2013 Research Annual Report
Cardiology

Division Details

Division Data Summary

**RESEARCH AND TRAINING DETAILS**

- Number of Faculty: 44
- Number of Joint Appointment Faculty: 2
- Number of Research Fellows: 4
- Number of Support Personnel: 156
- Direct Annual Grant Support: $1,135,130
- Direct Annual Industry Support: $32,236
- Peer Reviewed Publications: 121

**CLINICAL ACTIVITIES AND TRAINING**

- Number of Clinical Staff: 2
- Number of Clinical Fellows: 14
- Inpatient Encounters: 1,469
- Outpatient Encounters: 16,765

Division Photo

No Photo information has been entered yet.

Significant Publications


This article is the largest report ever published on left ventricular noncompaction (LVNC) in children. The frequency of this diagnosis is increasing the importance of defining risk factors for morbidity and mortality. Our publication delineates specific clinical criteria that are predictive of poor outcome. These criteria offer clinicians around the world guidance for management of children with LVNC. Furthermore, this study fills a void in the existing literature regarding this disease and will contribute to the substrate for cardiomyopathy guidelines in the future.

Division Publications

4. Anderson JB, Czosek RJ, Knilans TK, Marino BS. The effect of paediatric syncope on health-related


Faculty, Staff, and Trainees

Faculty Members
Jeffrey A. Towbin, MD, FAAP, FACC, FAHA, Professor
  Leadership Executive Co-Director, The Heart Institute; Director and Chief, Division of Cardiology
  Research Interests Cardiomyopathy and genetics

Jeffrey B. Anderson, MD, MPH, Assistant Professor
  Leadership Director, Value Delivery
  Research Interests Syncope, nutritional failure in congenital heart disease, quality improvement

Robert H. Beekman, III, MD, Professor
  Research Interests Cardiac catheterization and intervention, quality improvement

D. Woodrow Benson, MD, PhD, Adjunct
  Research Interests Cardiovascular genetics

Castleberry Chesney, MD, Assistant Professor
  Research Interests Immune deficiencies after and responses to cardiac transplantation

Clifford Chin, MD, Professor
  Leadership Medical Director, Pediatric Heart Transplant Service
  Research Interests Cardiomyopathy, heart failure, and cardiac transplantation

James F. Cnota, MD, Associate Professor
  Leadership Director, Neonatal Cardiology
  Research Interests Fetal cardiology, multicenter clinical trials

David S. Cooper, MD, MPH, Assistant Professor
  Leadership Associate Medical Director, Cardiac Intensive Care Unit; Director, Cardiac ECMO Program
  Research Interests Acute kidney injury in critical cardiac disease, anticoagulation on extracorporeal support, outcomes research

Richard J. Czosek, MD, Assistant Professor
  Leadership Director, Cardiac Rhythm Device Management
  Research Interests Cardiac pacing device and arrhythmia management in pediatric patients with congenital heart disease and cardiomyopathy

Allison Divanovic, MD, Assistant Professor
  Research Interests Fetal echocardiography

Paula Goldenberg, MD, MSCE, MSW, FAAP, FACMG, Assistant Professor
  Research Interests Cardiovascular genetics

Bryan H. Goldstein, MD, Assistant Professor
  Research Interests Cardiac catheterization & intervention, hybrid therapies for congenital heart disease, single ventricle outcomes

Michelle Grenier, MD, Associate Professor
  Leadership Director, 3 Dimensional Echocardiography
  Research Interests Cardiomyopathy, heart failure, 3 Dimensional echocardiography, athletic screening in sudden cardiac death

Haleh Heydarian, MD, Assistant Professor
  Leadership Medical Director, Heart Institute Single Ventricle Clinic
**Research Interests** Echocardiography Synchrony/Strain Imaging and Quality Improvement

**Robert B. Hinton, MD**, Associate Professor

**Leadership** Director, Heart Institute BioRepository

**Research Interests** Cardiovascular genetics and developmental biology

**Russel Hirsch, MD**, Associate Professor

**Leadership** Director, Pulmonary Hypertension Service; Director, Cardiac Cath and Intervention

**Research Interests** Cardiac Catheterization & Intervention, Device Development

**Kan Hor, MD**, Assistant Professor

**Research Interests** MRI technology to diagnose and follow heart disease, in particular DMD cardiomyopathy

**Ilias Iliopoulos, MD**, Assistant Professor

**Research Interests** Hemodynamic management and use of inotropes in cardiac intensive care

**Holly M. Ippisch, MD, MS, FAAP**, Assistant Professor

**Research Interests** Cardiovascular effects of pediatric obesity; cardiovascular effects of exercise; non-invasive cardiac imaging

**John Lynn Jefferies, MD, MPH, FACC, FAAP**, Associate Professor

**Leadership** Director, Advanced Heart Failure & Cardiomyopathy; Co-Director, CV Genetics

**Research Interests** Cardiomyopathy, Heart Failure, Cardiovascular Genetics and drug trials

**Thomas R. Kimball, MD**, Professor

**Leadership** Medical Director, Heart Institute

**Research Interests** Echocardiography, ventricular function, cardiovascular effects of obesity and type II diabetes

**Shelley Kirk, PhD, RD, LD**, Associate Professor

**Research Interests** The efficacy, safety and feasibility of interventions for the management of pediatric overweight and obesity

**Timothy Knilans, MD**, Professor

**Leadership** Director, Clinical Cardiac Electrophysiology; Director, Pediatric Cardiac Electrophysiology Fellowship; Director, Cardiac Exercise Laboratory

**Research Interests** Identification and risk stratification of causes of sudden death

**Catherine Krawczeski, MD**, Associate Professor

**Leadership** Director, Heart Institute Quality Improvement and Clinical Effectiveness; Co-Director, Center for Acute Care Nephrology

**Research Interests** Cardiac surgery-associated acute kidney injury, cardiorenal syndromes, biomarkers, quality improvement

**Christopher Learn, MD**, Assistant Professor

**Leadership** Co-Director, Adolescent and Adult Congenital Cardiology Fellowship Program

**Research Interests** Non-invasive imaging in congenital heart disease; adolescent/young adult transition care for persons with congenital heart disease; heart disease in pregnancy

**Cong Liu, PhD**, Assistant Professor

**Leadership** Associate Director of HIDL
Research Interests Genetic etiology of cardiomyopathy, congenital heart disease and cardiovascular diseases. New technology development in clinical genetic testing and clinical viral testing

Angela Lorts, MD, Assistant Professor

Leadership Director, Ventricular Assist Device Program

Research Interests Heart failure and myocardial remodeling

Madsen Nicolas, MD, Assistant Professor

Peace Madueme, MD, MS, Assistant Professor

Research Interests 3D Heart Modeling; Echo/MRI Quantification

Bradley S. Marino, MD, MPP, MSCE, Associate Professor

Leadership Director, Heart Institute Research Core; Director, Heart Institute Neurodevelopmental Clinic

Research Interests Outcomes Research

Erik Michelfelder, MD, Associate Professor

Leadership Co-Director, Heart Institute Imaging Service; Director, Fetal Heart Program

Research Interests Fetal cardiology and echocardiography

David Nelson, MD, PhD, Professor

Leadership Medical Director, CICU

Research Interests Inflammatory injury after cardiac surgery, endocrine dysfunction in critical illness

Enkhsaikhan Purevjav, MD, PhD, Assistant Professor

Research Interests Genetics of Cardiovascular Disease

Pirouz Shamszad, MD, Assistant Professor

Research Interests Patient outcomes and quality improvement in pediatric cardiac intensive care

Robert Siegel, MD, Professor

Leadership Medical Director, The Center for Better Health and Nutrition

David Spar, MD, Assistant Professor

Research Interests Pediatric and congenital electrophysiology

Joshua James Sticka, MD, Assistant Professor

Leadership Co-Director, Heart Institute Resident & Medical Student Education

Research Interests Non-invasive cardiac imaging; myocardial mechanics

Arnold Strauss, MD, Professor

Leadership BK Rachford Professor and Chair, Department of Pediatrics, University of Cincinnati College of Medicine; Director, Cincinnati Children's Research Foundation; Chief Medical Officer, Cincinnati Children's Hospital Medical Center

Michael Taylor, MD, PhD, Assistant Professor

Leadership Director of Advanced Imaging Innovation and Cardiac MRI (CMR); Co-Director, The Heart Institute Imaging Service

Research Interests Non-invasive study of cardiovascular physiology and metabolism; Pre-clinical imaging of cardiomyopathy models with cardiac MR and positron emission tomography

Elaine Urbina, MD, MS, Associate Professor

Leadership Director, Preventive Cardiology
Research Interests Non-invasive assessment of vascular structure and function and relationship to CV risk factors, obesity, diabetes, renal disease and sleep disorders. Treatment of high blood pressure and cholesterol.

Gruschen Veldtman, MBChB, FRCP, Professor
Leadership Associate Director, AACHD Program; Inpatient Medical Director, AACHD Program
Research Interests The Fontan circulation and end-organ damage; risk stratification in high-risk pregnancy; pulmonary hypertension.

Gary Webb, MD, FRCP(C), FACC, FAHA, Professor
Leadership Director, Adolescent and Adult Congenital Heart Disease Program
Research Interests Adolescent and adult congenital heart disease.

Ivan Wilmot, MD, Assistant Professor
Research Interests Quality of life in children with heart failure, transplant, and those requiring mechanical circulatory support.

Wenyong Zhang, MD, PhD, FACMG, Assistant Professor
Leadership Associate Director, Heart Institute Diagnostic Laboratory
Research Interests Clinical molecular genetics; molecular genetic diagnosis of heritable cardiovascular disease; molecular diagnosis of viral infection of the heart.

Joint Appointment Faculty Members

Jeanne James, MD, Associate Professor (Molecular Cardiovascular Biology)
Research Interests Manifestations and etiologies of misfolded protein response and echocardiography.

Stephanie Ware, MD, Associate Professor (Molecular Cardiovascular Biology)
Research Interests Cardiovascular Genetics.

Clinical Staff Members

Lisa Lee, MD
Chad Connor, MD

Trainees

Catherine Allen, MD, PL4, A.I. duPont Children's
Konstantin Averin, MD, PL4, Cincinnati Children's Hospital/University of Cincinnati
Joshua Daily, MD, PL4, Cincinnati Children's Hospital/University of Cincinnati
Karine Guerrier, DO, PL4, Cleveland Clinic
Sam Hanke, MD, PL7, Cincinnati Children's Hospital/University of Cincinnati
Anne-Cecile Huby, PhD, Pierre and Marie Curie University, France
Varun Krishnamurthy, BS, University of Cincinnati
David Kwiatkowski, MD, PL5, Cincinnati Children's Hospital/University of Cincinnati
Benjamin Landis, MD, PL5, Columbia University
Sarkies Ruben Mattheus Martherus, PhD, Maastricht University, The Netherlands
Ryan Moore, MD, PL5, Cincinnati Children's Hospital/University of Cincinnati
Charu Munjal, PhD, University of Louisville
Thomas Ryan, MD, PhD, PL7, Cincinnati Children's Hospital/University of Cincinnati
Division Collaboration

Adolescent Medicine  »  Laurie A. Mitan, MD
We explored QT prolongation in adolescent patients admitted with eating disorders. We analyzed associated factors leading to QT prolongation as well as QT prolongation as a prognostic indicator of outcome and disease severity.

Allergy & Immunology  »  Kimberly A. Risma, MD, PhD
Studying immune profiling, especially thymic markers, in patients who have received cardiac transplants and correlation with rates of infection, rejection, and death.

Behavioral Medicine & Clinical Psychology; Center for Adherence & Self-Management  »  Dean W. Beebe, PhD and Dennis D. Drotar, PhD
Studying the impact of neurodevelopmental outcomes on quality of life on complex CHC survivors.

Behavioral Medicine & Clinical Psychology  »  Michelle M. Ernst, PhD and Carrie Piazza-Waggoner, PhD
Studying psychosocial factors that predict quality of life in congenital heart disease surgical survivors.

Biostatistics & Epidemiology  »  Jessica Woo, MHSA, PhD
This collaboration stems from shared interests in growth as a measure of health in the pediatric population. Specifically, we identified growth abnormalities in the fetus with hypoplastic left heart. The project was novel by utilizing fetal ultrasound measurement to understand growth trajectory.

Biostatistics & Epidemiology  »  Jessica Woo, MHSA, PhD
Studying cardiovascular morbidity and mortality after 40 years follow-up in international cohorts.

Bone Marrow Transplantation & Immune Deficiency  »  Stella M. Davies, MBBS, PhD, MRCP
This collaboration focuses on the detection of chem-induced cardiotoxicity in the BMT population as well as those exposed to anthracyclines. We are seeing all patients in referral as well as performing novel imaging to detect cardiac involvement.

Center for Acute Nephrology  »  Stuart Goldstein, MD and Prasad Devarajan, MD
Collaboration on studies of acute kidney injury in cardiac patients, including patients with heart failure, cardiorenal syndrome, and following cardiopulmonary bypass.

Center for Acute Nephrology  »  Stuart Goldstein, MD
Studying the impact of hybrid procedure for HLHS on AKI and the incidence of CKD in patients experiencing AKI after CPB.

Center for Acute Nephrology  »  Stuart Goldstein, MD
Studying the association of biomarkers and cardiac output in Fontan survivors.

Critical Care Medicine  »  Derek Wheeler, MD
Impedance pressure regulatory device. A novel study in pediatric critical care medicine: basic science and clinical evidence.

Endocrinology  »  Lawrence M. Dolan, MD and Amy Shah, MD
We are investigating the effects of diabetes on the cardiovascular system, specifically the progression of atherosclerosis in youth with obesity and T2DM and arterial stiffness in T1DM.

**Endocrinology » Lawrence M. Dolan, MD**
Studying Vitamin D levels and arterial stiffness.

**Endocrinology » Philippe F. Backeljauw, MD and Sarah Lawson, MD**
Studying arterial stiffness in Turner syndrome.

**Endocrinology » Amy Shah, MD**
Studying arterial stiffness & HDL proteomics, as well as cerebrovascular and arterial change in T2DM.

**Endocrinology » Nancy A. Crimmins, MD**
We are researching the incidence of elevated left ventricular mass in severely obese toddlers and preschoolers.

**Experimental Hematology and Cancer Biology-Molecular Genetics » Punam Malik, MD**
Studying cardiovascular complications in sickle cell disease.

**Fetal Care Center » Mounira Habli, MD**
This collaboration stems from the multidisciplinary team that provides clinical care in the FCC. Specifically, we looked at the use of fetal echocardiography to guide clinical decision making in patients with high output cardiac lesions.

**Gastroenterology, Hepatology & Nutrition » Stavra A. Xanthakos, MD, MS and Maisam A. Abu-El-Haija, MD**
We are researching the presentation and management of hypertriglyceridemia-induced pancreatitis in children at Cincinnati Children's.

**Gastroenterology, Hepatology & Nutrition » Kathleen M. Campbell, MD**
Magnetic resonance elastography of the liver in patients post-Fontan procedure: feasibility and preliminary results.

**Gastroenterology, Hepatology & Nutrition » John C. Bucuvalas, MD and James E. Heubi, MD**
This is a clinical research study investigating cirrhotic cardiomyopathy in ESLD and liver transplantation.

**Hematology » Ralph A. Gruppo, MD**
This collaboration focuses on evaluating predictors of BT shunt occlusion assessing for hematologic predictors.

**Hematology; Pharmacy; Pediatric Surgery » Joseph S. Palumbo, MD, Alexander A. Vinks, PharmD, PhD, FCP, and Jason S. Frischer, MD**
We studied the effect of Antithrombin 3 on anticoagulation during mechanical circulatory support.

**Human Genetics » Nancy Doan Leslie, MD**
Studying outcomes of patients with fatty acid oxidation disorders.

**Human Genetics » Gregory A. Grabowski, MD and Robert J. Hopkin, MD**
This collaboration focuses on clinical investigation of patients with MPS and related cardiovascular disease characterization and treatment strategies.

**James M. Anderson Center for Health Systems Excellence » Carole Lannon, MD, MPH**
The National Pediatric Cardiology Quality Improvement Collaborative is a Learning Network of 50 pediatric cardiology centers working together and with families to improve the quality of life for children with complex congenital heart disease.

**Neonatology and Pulmonary Biology » Christina J. Valentine, MD**
Studying fish oil supplementation in pregnancy.
Neonatology and Pulmonary Biology » Henry T. Akinbi, MD
A case report of neonatal long QT interval in a child with a metabolic syndrome.

Nephrology » Mark M. Mitsnefes, MD
We are investigating the effects of chronic kidney disease on the cardiovascular system, specifically arterial stiffness in CKD.

Nephrology » David K. Hooper, MD, MS
Studying blood pressure in CKD.

Nephrology » Jens W. Goebel, MD
Assessing the prevalence of aortopathy in end stage renal disease.

Nephrology » Jens W. Goebel, MD and David K. Hooper, MD, MS
Assessing impact of kidney transplantation on aortopathy.

Neurology » Brenda Wong, MD, MBBS
This collaboration focuses on the DMD population, specifically the development of a multidisciplinary clinic as well as ongoing clinical trials.

Neurology » Andrew D. Hershey, MD, PhD, FAHS
CHAMP (Childhood and Adolescent Migraine Prevention) Study. The study is a multicenter study with up to 40 centers enrolling 675 participants. We are reading all of the electrocardiograms for the study and providing cardiology support.

Pediatric Radiology » Janaka P. Wansapura, PhD
Studying cardiac MRI imaging and phenotype correlation in animal models of cardiomyopathies.

Pediatric Radiology » Patrick Winter, PhD
Studying the utilization of novel experimental MRI contrast agent to non-invasively detect apoptotic cells in the heart.

Pediatric Radiology; Gastroenterology, Hepatology & Nutrition » Daniel J. Podberesky, MD, Daniel B. Wallihan, MD, and Kathleen M. Campbell, MD
Studying the association of magnetic resonance elastography-determined liver stiffness with cardiac function after Fontan palliation.

Pediatric Surgery » Thomas H. Inge, MD, PhD
Conducting a comprehensive follow-up study of adolescent bariatric surgery at 5+ years post-operatively. The goal is to compare the long-term medical and psychosocial outcomes of surgical and non-surgical management of adolescents with severe obesity. This long-term is designed to provide the first systematic prospective data collection for a cohort of severely obese adolescents over a 5+ year period.

Pediatric Surgery » Jason S. Frischer, MD
We studied the outcome of multi-run ECMO.

Pharmacy; Center for Acute Nephrology » Alexander A. Vinks, PharmD, PhD, FCP and Stuart Goldstein, MD
Studying the effect of AKI on milrinone pharmacokinetics.

Pulmonary Medicine » Raouf S. Amin, MD
Studying arterial structure function in sleep apnea.

Pulmonary Medicine » Hemant Sawnani, MD
This collaboration focuses on the development of an integrated neuromuscular program as well as clinical research activities characterizing cardio-pulmonary interactions in DMD.
## Grants, Contracts, and Industry Agreements

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<th>Grant and Contract Awards</th>
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<td>U10 HL 109673</td>
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<td><strong>The Relationship of Family Factors to Developmental and Psychosocial Outcomes in Children with Hypoplastic Left Heart Syndrome</strong></td>
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<td><strong>Effects of Dietary Fat and Exercise Challenges in Obese Children</strong></td>
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<td><strong>Understanding Mechanisms of Fontan Failure and Key Predictors for Patient Outcome</strong></td>
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<td>Hypoplastic Left Heart Syndrome: Expression of RHD in the Fetus</td>
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<td>Quantitative Non-Invasive Assessment of Right Ventricular Function Using Global Longitudinal Strain and TAPSE in a Pre-Clinical Setting</td>
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<td>The Health Effects of a Blueberry Enriched Diet on Obese Children: A Feasibility Study</td>
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<td>Biomarkers in Pediatric Cardiomyopathy</td>
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<td>Accelerated CV Aging in Youth Related to CV Risk Factor Clusters</td>
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| Current Year Direct Receipts | $32,236 |

| Total | $1,167,366 |

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