

THE Sanger Report

FROM CAROLINAS HEALTHCARE SYSTEM'S
SANGER HEART & VASCULAR INSTITUTE

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A Congenital Heart Program for Our Region



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Chief, Pediatric and Adult Congenital Cardiac Surgery



In this issue of The Sanger Report, we're providing an overview of the Adult and Pediatric Congenital Heart Program at Levine Children's Hospital and Sanger Heart & Vascular Institute. In coming months, we'll provide detailed information about the services, physicians and teams that define us. We will share with you outcomes data and education on emerging technologies and introduce you to newly hired specialists who can care for your patients, should they need our services. As you consider our program and wish to learn more, contact me at benjamin.peeler@carolinashealthcare.org or 704-381-3916.

AS THE CARDIAC COMMUNITY WELL KNOWS, INCREDIBLE ADVANCES IN THE TREATMENT

of congenital heart disease (CHD) over the last half-century have resulted in an emerging patient population—adults with CHD. Since the year 2000, adults with CHD are outnumbering those younger than 18 years of age. This population is increasing at a rate of 5 percent per year. "It's not that young children don't survive," says Joseph A. Paolillo Jr., MD, director, Pediatric Cardiac Catheterization Program. "It's that adults are surviving too—and looking for treatments to help them thrive."

With 90 percent of children

with CHD surviving into adulthood, Carolinas HealthCare System (CHS), in partnership with Levine Children's Hospital and Sanger, recognized the need to develop a comprehensive adult and children's congenital heart program to serve the region. That's how our story began. However, we quickly realized that CHS is home to some of the nation's most talented physicians and clinical staff. With the team's collective talents, ambition and dedication aligned, we expanded our vision to become a national leader in congenital heart care.

Five years later, Levine Children's Hospital provides a full scope of

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Call **877-999-SHVI (7484)** to find the right specialist or the nearest Sanger office location for your patient.

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Sanger Heart & Vascular Institute



A Culture of Excellence

WHEN ASKED TO DESCRIBE OUR CULTURE, SEVERAL PHYSICIANS CHARACTERIZE SANGER HEART & VASCULAR INSTITUTE AS A CULTURE OF EXCELLENCE.

We practice in a unique environment comprised of the most talented cardiovascular specialists integrated into one team spanning across the region. Expertise is the foundation of our camaraderie. It's the expertise of our physicians and our extended care team that have created the niche programs and care pathways that deliver the right care to all of our patients.

The Congenital Heart Center at Levine Children's Hospital, led by **Benjamin B. Peeler, MD**, is developing into a premier program, recognized by *U.S. News & World Report* for pediatric cardiology and heart surgery. The Center provides children and adults from all over the Southeast—even around the nation—access to the most intricate procedures performed by a world-class team.

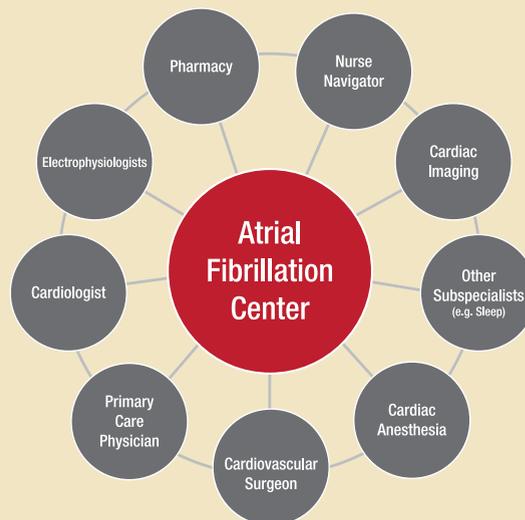
Glen J. Kowalchuk, MD, discusses our involvement in **RENEW**, a clinical trial, investigating stem-cell therapy for the treatment of chronic angina. Carolinas Medical Center is one of 50 centers nationwide selected to enroll for the trial. Our own **Charles R. Bridges, MD, ScD**, has also pioneered research around gene therapy and stem-cell treatment.

This summer, our physicians partnered with the International Medical Outreach (IMO) program to help perform the first open heart surgery in Belize. **R. Mark Stiegel, MD**, and **Francis Robicsek, MD, PhD**, helped train a local surgeon so that patients in Belize will have access to cardiac care for years to come.

It's programs like these that truly define our culture of excellence.

Sincerely,

Paul G. Colavita, MD, FACC
President
Sanger Heart & Vascular Institute



Sanger's Center for Atrial Fibrillation

THE ATRIAL FIBRILLATION CENTER PROVIDES STATE-

of-the-art care to patients who have been diagnosed with atrial fibrillation (AF).

AF is a common cardiac arrhythmia, affecting more than 2.2 million people in the United States. Symptoms vary among individuals and the best treatment for AF will depend on the patient's needs. Treatment options range from anticoagulation therapy with aspirin to more complex procedures such as catheter-based left atrial fibrillation or surgical ablation.

Our physician team includes four board-certified clinical cardiac electrophysiologists, two cardiothoracic surgeons, an imaging cardiologist, a cardiac anesthesiologist, a sleep medicine specialist and an anticoagulation specialist. This highly skilled team collaborates to determine the best treatment option for each patient. ■

Patient Benefits

Patients have access to multiple benefits and services, including:

- ▶ access to a multidisciplinary care team
- ▶ new therapies and investigational drugs
- ▶ catheter-based ablation for atrial fibrillation, atrial flutter (primary) and atrial flutter secondary to medical therapy
- ▶ surgical ablation as an adjunct to valve or bypass surgery
- ▶ minimally invasive surgical ablation
- ▶ combined surgical and catheter ablation
- ▶ management of high rates refractory to medical therapy
- ▶ permanent pacing as an adjunct to medical therapy with or without AV junction ablation
- ▶ associated sleep disorder care

Our Providers

- ▶ **J. Warren Holshouser, MD, FACC**
Director, Cardiac Electrophysiology
- ▶ **Rohit Mehta, MD, FACC, FHRS**
Cardiac Electrophysiology
- ▶ **Brian D. Powell, MD, FACC, FHRS**
Cardiac Electrophysiology
- ▶ **Sherry J. Saxonhouse, MD, FACC, FHRS**
Cardiac Electrophysiology
- ▶ **Charles R. Bridges, MD, ScD, FACC, FAHA**
Chair, Thoracic and Cardiovascular Surgery
- ▶ **Eric R. Skipper, MD, FACS**
Chief, Cardiothoracic Surgery

REFER A PATIENT

To refer a patient, please call
704-373-0212.



Glen J. Kowalchuk, MD, FACC
Interventional Cardiologist and Principle Investigator

Investigational Stem-Cell Therapy to Treat Chronic Angina

CAROLINAS MEDICAL CENTER IS ONE OF ONLY 50 CENTERS NATIONWIDE SELECTED TO ENROLL FOR THE RENEW TRIAL,

investigating the efficacy of stem cells for the treatment of chronic myocardial ischemia (CMI). This is an exciting study and one of a few exploring regenerative medicine for the advancement of cardiovascular care. Stem cells have shown promise in several therapeutic areas. We're committed to investigating new therapies and technologies for patients with limited treatment options.

CMI is classified by recurrent angina, chest pain or tightness that can't be controlled with medication or surgical intervention. Patients with chronic angina are often forced to drastically reduce physical exercise to avoid symptoms. A simple walk to the mailbox can become challenging. This is not only frustrating for the patient, but opens the door to a host of risks associated with a sedentary lifestyle. These patients are generally healthy aside from the angina.

STUDY CRITERIA

The basis of the study involves removing adult autologous CD34+ cells from the patient's blood through apheresis. Electromechanical mapping technology identifies the area of the heart experiencing reduced blood flow thus triggering angina. The CD34+ cells are injected into the problematic part of the heart. The injected cells develop into new blood cells to restore oxygen-rich blood flow.

Patients are randomized into three groups:

ENROLL A PATIENT

For more information about this study, the full list of inclusion and exclusion criteria or to refer a patient, call our Clinical Research department at **704-355-4794**.



- 1 Treatment with the patient's own autologous CD34+ stem cells
- 2 Treatment with placebo
- 3 Unblinded standard of care

After treatment, patients keep a diary to record the occurrence and severity of subsequent angina episodes. It's hoped that this stem-cell therapy will show promise in enhancing blood flow to the heart, decrease chest pain and increase exercise tolerance.

Regenerative medicine using stem cells is an exciting advancement, but not without controversy. The difference between controversial studies and the **RENEW** study is the source of the stem cells. In this study, stem cells are taken from the patient's own blood instead of a stem-cell bank. Infusing one's own cells back into the body reduces the risk of cell rejection and is generally perceived as a safer method.

We're actively recruiting patients for the **RENEW** study. To be eligible, participants must be:

- ▶ between 21 and 80 years of age
- ▶ diagnosed with class III or class IV chronic refractory angina
- ▶ actively taking the maximum medical therapy for chronic angina without evidence of improved symptoms

Patients who have had a stent or open heart surgery within 60 days of enrolling in the study are excluded. ■

A Congenital Heart Program for Our Region

Continued from page 1

services, integrated care and industry-leading outcomes that's changing the landscape for CHD patients in our backyard—and across the nation.

A TEAM UNITED

Sanger's Pediatric Cardiac Program has long been involved in the treatment of congenital heart disease. Francis Robicsek, MD, a true pioneer and innovator in cardiothoracic surgery, was among the first to introduce many of the operations we commonly perform today.

In 2007, CHS opened Levine Children's Hospital and invested in developing the region's preeminent congenital heart program.

Immediately, we recognized the talent within and began recruiting experts from around the country (see [Meet the Team](#) on page 5). Staff members include cardiac surgeons, cardiologists and intensive-care providers.

In coming months, the team will be rounded out with pediatric heart transplant, heart failure and adult congenital heart specialists.

Collaboration is at the heart of our approach to patient care. During weekly patient management conferences with

participation from providers from across the state, we discuss upcoming cases, vet new ideas and call on expertise from around the table to develop unique treatment plans.

It's common for children to need staged treatments, which require both surgical and nonsurgical procedures, as well as close intercurrent monitoring. We work side-by-side in our clinic, cath lab, ICU and operating rooms. The spirit of team work at Levine Children's Hospital is by far one of the program's differentiating traits and it's at the core of our culture.

BIG SUCCESSSES, SHORT TIMELINE

Although Levine Children's Hospital and the CHD program have only been in operation for five years, we've experienced incredible results and are ranked by *U.S. News & World Report* as a top hospital for pediatric cardiology and cardiac surgery. In 2011, we performed 302 congenital cardiothoracic surgeries with a mortality rate of 2.4 percent, which is lower than the national STS average of 3.2 percent. For neonatal patients (younger than 30 days old), our mortality rates were 3.6 percent compared with the 2011 national average of 9.6 percent.

Our drive to build quality is exemplified in our improved results for patients at the high end of the complexity spectrum. For example, our results for the Norwood procedure to treat hypoplastic left heart syndrome (HLHS), show less than 3 percent mortality versus the national average of 18 percent clearly setting the standard for results across the nation.

We attribute our outcomes to a disciplined focus on quality and best practices. The congenital heart program has developed its own quality committee and task forces, led by Kshitij P. Mistry, MD, MS, medical director of the pediatric CVICU, has formal training and a background in quality implementation and management. As the program grows and our breadth of services deepens, we expect outcomes to continue to be a point of pride.

A GLIMPSE INTO THE FUTURE

In 2011, CHS experienced 8,900 pediatric-cardiology visits, and interventional and surgical volume is expected to grow 25 to 50 percent over the next five years. Funding from charitable donors will add talent and resources to the program in the future.

Levine Children's Hospital recently received close to \$2.5 million in local funding to support pediatric cardiovascular services and the pediatric congenital heart program. These significant commitments came through the Partnership for Pediatric Hearts, a group of individuals and businesses dedicated to supporting pediatric care in the community.

The Partnership was established earlier this year by an initial gift of \$1 million from NASCAR and automotive business owner Rick Hendrick and his family. Two additional \$500,000 pledges—one from the Tansukh Ganatra Family and the other from the Dreamcatcher Society; a recent \$300,000 pledge from Showmars in honor of their 30th anniversary in business; and a matching commitment from Carolinas HealthCare Foundation brings the total amount pledged for Levine Children's Hospital cardiac programs to almost \$5 million.

The hospital has also committed to invest substantial resources in this initiative. Partnership funding has initially been allocated to develop an in-hospital echocardiography lab with an additional 3-D echocardiography machine. It's also being directed to provide pilot funding for expanded subspecialty care, such as fetal echocardiography.

Significant progress has been made in establishing the congenital heart center at Levine Children's Hospital. Our goal is to provide elite level care in a family centered environment. Frankly, our patients, our community and our region deserve it. We appreciate the support we have within CHS and among our community, which is critical to our continued growth and success. ■

Congenital Heart Disease Services

- ▶ Pediatric Cardiology
- ▶ Advanced Diagnostics
- ▶ Pediatric Cardiothoracic Surgery
- ▶ Pediatric Heart Transplant
- ▶ Cardiac Catheterization and Intervention
- ▶ Cardiac Intensive Care Unit
- ▶ Fetal Cardiology
- ▶ Adult Congenital Care
- ▶ Echocardiography
- ▶ Cardiac Electrophysiology Care

Pediatric Cardiac Catheterization



Joseph A. Paolillo Jr., MD, wasn't planning on moving from Gainesville, Fla., and his position with the University of Florida and Shands HealthCare when he received a call from René Herlong, MD, medical director of pediatric cardiology at Levine Children's Hospital. "When you're comfortable in your job, an opportunity to join another program has to measure up to or exceed your expectations," he says. Dr. Paolillo

saw a strong alignment between physicians and administration, with a vision to build a renowned comprehensive adult and pediatric congenital heart program. That, in combination with a commitment to support his clinical research interests, made him leave Florida to join the Levine Children's Hospital team as director of the Pediatric Cardiac Catheterization Program. "I wanted to be a part of this exciting opportunity."

Currently, the program offers patients, from infancy to adulthood, access to technology, staff and expertise on par with other leading national programs. Dr. Paolillo believes the patient experience at Levine Children's Hospital is what sets the program apart. "Considering the stress involved with invasive procedures, we put extra thought into making the entire experience as pleasant as possible for patients and their families. From our scheduling process, to the procedure day, through hospital discharge, patients and families come first."

Seventy-five percent of cath lab cases involve alternative therapies to open heart surgery, including device closure to repair holes in the heart or abnormal blood vessels, enlargement of narrow valves and vessels with balloons or stents, and in some cases, valve replacement. The majority of the remaining procedures involve gathering information prior to surgery, to assist the team in planning more complex, staged surgical repairs. The high quality of our Echocardiography Program makes the days of true "diagnostic" heart catheterization a thing of the past.

A unique component of the Pediatric Cardiac Cath Program is the support from Sanger Heart & Vascular Institute's Clinical Research Program. Dr. Paolillo explains, "We're currently part of two national investigations. Sanger's reputation in clinical research has helped secure our position in another trial, involving a new device to close holes in the heart. Only 10 pediatric interventional cardiology programs in the country will be allowed to participate in the initial phase of this exciting new technology."

Finally, an area of growth for the Pediatric Cardiac Cath Program is the increasing number of adults with congenital heart disease (CHD). There are more adults with CHD alive who are older than age 18 than younger, thanks to increased survival of our adult patient population. "We're partnering with primary care providers to recapture the growing population of adults who had surgery as children and may have been lost to follow-up. There's also a population of adult patients with previously undiagnosed CHD. Many of them are in poor health and don't realize there are transcatheter and surgical options that can improve their quality of life. Our program offers them hope," Dr. Paolillo concludes.

To contact Dr. Paolillo, call **704-373-1813** or email joseph.paolillo@carolinashealthcare.org.

Meet the Team



Benjamin B. Peeler, MD, FACS
Chief, Pediatric and Adult
Congenital Cardiac Surgery

► **Medical School:** Vanderbilt University

► **Residency:** Vanderbilt University (General Surgery)

► **Fellowship:** University of Virginia Health Sciences Center (Thoracic and Cardiovascular Surgery), Emory University (Pediatric Cardiac Surgery)

► **Board Certified:** Surgery, Peripheral Vascular Surgery, Thoracic Surgery, Congenital Heart Surgery

► **Clinical Interests:** Complex neonatal repair; treatment of single ventricle defects, simple and complex atrioventricular canal; aortic valve repair and replacement, including mitral valve repair; arterial switch operation for transposition of the great arteries; ventricular septal defect; atrial septal defect; aortic coarctation; aortic arch reconstruction; Ebstein's anomaly in children and adults; heart transplantation



J. René Herlong, MD

Director of Pediatric Cardiology

► **Medical School:** Duke University

► **Residency:** Baylor College of Medicine (Pediatrics)

► **Fellowship:** Duke University Medical Center (Pediatric Cardiology)

► **Board Certified:** Pediatrics, Pediatric Cardiology

► **Clinical Interests:** Noninvasive cardiac imaging; complex congenital heart disease; and congenital coronary artery anomalies



Kshitij P. Mistry, MD, MS
Medical Director, Pediatric
Cardiovascular ICU

Pediatric Critical Care Medicine

► **Medical School:** Wake Forest University

► **Residency:** Tufts-New England Medical Center (Pediatrics)

► **Fellowship:** Children's Hospital Boston (Pediatric Critical Care Medicine)

► **Board Certified:** Pediatrics, Pediatric Critical Care

► **Clinical Interests:** Pediatric cardiac critical care; quality improvement; intensive monitoring; life support; ventilator support; ECMO (extracorporeal membrane oxygenation)



Thomas S. Maxey, MD

Pediatric Cardiothoracic Surgeon

► **Medical School:** Eastern Virginia Medical School

► **Residency:** University of South Florida (General Surgery)

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Meet the Team

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- ▶ **Fellowship:** Emory University (Thoracic and Cardiovascular Surgery), Emory University (Pediatric Cardiac Surgery)
- ▶ **Board Certified:** Surgery, Thoracic Surgery, Congenital Heart Surgery
- ▶ **Clinical Interests:** Pediatric cardiac surgery; adult congenital heart surgery; heart transplantation



A. Resai Bengur, MD, FACC **Pediatric Cardiologist**

- ▶ **Medical School:** Medical University of South Carolina
- ▶ **Residency:** Rainbow Babies and Children's Hospital (Pediatrics)
- ▶ **Fellowship:** University of Michigan C.S. Mott Children's Hospital (Pediatric Cardiology)

- ▶ **Board Certified:** Pediatrics, Pediatric Cardiology
- ▶ **Clinical Interests:** Congenital cardiac defects; heart murmurs; echocardiography



Andrew S. Bensky MD, FACC **Pediatric Cardiologist**

- ▶ **Medical School:** State University of New York (SUNY) Health Science Center
- ▶ **Residency:** SUNY Health Science Center (Pediatrics)
- ▶ **Fellowship:** Cincinnati Children's Hospital Medical Center (Pediatric Cardiology)
- ▶ **Board Certified:** Pediatrics, Pediatric

Cardiology

- ▶ **Clinical Interests:** Fetal echocardiography; adult echocardiography; 3-D echocardiography; transesophageal echocardiography



Joseph A. Paolillo Jr., MD **Pediatric Cardiologist**

- ▶ **Medical School:** University of Connecticut School of Medicine
- ▶ **Residency:** St. Christopher's Hospital for Children (Pediatrics)
- ▶ **Fellowship:** Children's Hospital of Pittsburgh (Pediatric Cardiology), Children's Hospital of Philadelphia (Interventional

Pediatric Cardiac Catheterization)

- ▶ **Board Certified:** Pediatrics, Pediatric Cardiology
- ▶ **Clinical Interests:** Diagnostic and interventional cardiac catheterization; new transcatheter therapies for congenital heart defects



Richard T. Smith, MD, FACC, FAAP **Pediatric Cardiologist**

- ▶ **Medical School:** University of Florida
- ▶ **Residency:** Medical University of South Carolina (Pediatrics)
- ▶ **Fellowship:** Texas Children's Hospital (Pediatric Cardiology)
- ▶ **Board Certified:** Pediatrics, Pediatric Cardiology

- ▶ **Clinical Interests:** Catheter ablation; defibrillator implantation electrophysiology; interventional cardiology; pacemaker implantation; pediatric cardiology; heart transplantation



Donald A. Riopel, MD, FACC **Pediatric Cardiologist**

- ▶ **Medical School:** University of Florida
- ▶ **Residency:** Columbus Children's Hospital (Pediatrics)
- ▶ **Fellowship:** Baylor College of Medicine (Pediatric Cardiology)
- ▶ **Board Certified:** Pediatrics, Pediatric Cardiology
- ▶ **Clinical Interests:** Congenital heart defects;

pediatric cardiology; preventive cardiology; adult congenital heart disease



Nicholas B. Sliz, MD, FACC **Pediatric Cardiologist**

- ▶ **Medical School:** University of North Carolina
- ▶ **Residency:** Carolinas Medical Center (Pediatrics)
- ▶ **Fellowship:** Vanderbilt University Medical Center (Pediatric Cardiology)
- ▶ **Board Certified:** Pediatrics, Pediatric Cardiology
- ▶ **Clinical Interests:** Congenital heart defects; echocardiography; preventive cardiology;

exercise physiology



Amanda L. Cook, MD **Pediatric Cardiologist**

- ▶ **Medical School:** Wake Forest University
- ▶ **Residency:** Wake Forest University (Pediatrics)
- ▶ **Fellowship:** Duke University Medical Center (Pediatric Cardiology)
- ▶ **Board Certified:** Pediatrics, Pediatric Cardiology
- ▶ **Clinical Interests:** Congenital heart defects; pediatric echocardiography; fetal echocardiography



David M. Drossner, MD **Pediatric Cardiologist**

- ▶ **Medical School:** Florida State University College of Medicine
- ▶ **Residency:** Emory University School of Medicine Affiliated Hospitals Program (Pediatric Cardiology)
- ▶ **Fellowship:** Sibley Heart Center at Children's Healthcare of Atlanta (Pediatric Cardiology)
- ▶ **Board Certified:** Pediatrics

- ▶ **Clinical Interests:** Pediatric cardiology; fetal echocardiography; Kawasaki's disease; pulmonary vein stenosis; pediatric chest pain management



K. Anitha Jayakumar, MD **Pediatric Cardiologist**

- ▶ **Medical School:** University of Madras, India
- ▶ **Residency:** University of Connecticut (Pediatrics), Royal College of Physicians, London, UK
- ▶ **Fellowship:** Columbia University (Pediatric Cardiology), Boston Children's Hospital
- ▶ **Board Certified:** Pediatrics, Pediatric Cardiology
- ▶ **Clinical Interests:** Pediatric and fetal cardiology;

adult congenital heart disease; clinical research; double-outlet right ventricle; ventricular septal defect; cardiac catheterization

Helping Perform Belize's First Open Heart Surgery

ON JULY 16, PHYSICIANS FROM THE KARL HEUSNER MEMORIAL Hospital (KHMH), in Belize City, Belize, and Carolinas HealthCare System's (CHS) Sanger Heart & Vascular Institute performed the country's first open heart surgery.

Francis Robicsek, MD, PhD, FACS, Chairman Emeritus of the Department of Thoracic and Cardiovascular Surgery and R. Mark Stiegel, MD, a cardiothoracic surgeon with Sanger, assisted Adrian Coyle, MD, director of medical services at KHMH, with performing a coronary artery bypass graft on a 72-year-old Belizean man. The next day, the surgeons performed a mitral valve replacement on a 56-year-old Belizean woman.

SUPPORTING PHYSICIANS, IMPROVING PATIENT CARE

Although heart disease is the second-leading cause of death in Belize, the country lacked a modern cardiovascular diagnostic and interventional facility up until 2011, when CHS's International

Medical Outreach (IMO) Program began providing support. Before that time, patients would either not receive treatment or would travel to neighboring countries for cardiac services. Today, due to ongoing support from the IMO Program, KHMH has the equipment and medical expertise necessary to diagnose and treat patients with heart ailments in the country.

Under the direction of Francis Robicsek, MD, PhD, FACS, the IMO Program donated and installed the country's first fully equipped cardiac catheterization laboratory in February 2011, at KHMH, one of only two major hospitals in Belize. The laboratory, also equipped with diagnostic imaging equipment, modernized cardiac care by 30 years.

Since October 2011, the IMO Program has sent cardiology teams from Sanger to perform catheterizations in Belize each month and will continue to send teams until the interventional cardiologist at KHMH is trained to perform

catheterizations alone. The procedures performed in the laboratory have helped identify several patients in need of open heart surgery. Now, KHMH can provide a continuum of cardiac care for patients in need of open heart surgery.

The ultimate goal is to build and promote sustainable healthcare programs in these communities. Training health providers to perform procedures on their own is the key to building a cardiac program that can help patients for years to come. On the horizon, Sanger Heart & Vascular Institute and the IMO Program look forward to bringing modernized cardiac care to more countries and help even more patients live longer, healthier lives. ■

REACHING OUT ACROSS BORDERS

To learn more about the International Medical Outreach Program, visit carolinashealthcare.org/imo.



■ Surgical team members of Karl Heusner Memorial Hospital and Sanger Heart & Vascular Institute



■ Karl Heusner Memorial Hospital in Belize City, Belize



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LOCAL NEWS

► *Charlotte Magazine* recognized nine physicians on the 2012 Top Doctors list: **John C. Cedarholm, MD; G. Craig Clinard, MD; Theodore A. Frank, MD; Benjamin B. Peeler, MD; Mark K. Reames, MD; Geoffrey A. Rose, MD; Timothy S. Roush, MD; Eric R. Skipper, MD; and B. Hadley Wilson, MD.**

► **Frank R. Arko, MD**, was recognized as one of the Best Doctors in America by *Best Doctors*.

► **Frank R. Arko, MD**, published four articles that appeared in *The Annals of Thoracic Surgery*, *The Journal of Endovascular Surgery*, *The Annals of Vascular Surgery* and *The Journal of Endovascular Therapy*. Titles included:

- "Hybrid Endovascular Treatment of an Anomalous Right Subclavian Artery Dissection in a Patient with Marfan Syndrome"
- "Interdisciplinary and Translational Innovation: The Endurant Stent Graft ... From Bedside to Benchtop and Back to Bedside"

► **J. Lee Garvey, MD, and B. Hadley Wilson, MD**, co-authored a study "Expansion of a Regional ST-Segment Elevation Myocardial Infarction System to an Entire State," published in *Circulation*, highlighting North Carolina's coordinated, regional approach to heart-attack care.

► The Intersocietal Accreditation of Echocardiography Laboratories (IACEL) recently accredited three of our echocardiography labs.

► **Amanda Sowell, RN**, device clinic nurse in the Shelby office, was selected as a Great 100 Nurse of North Carolina for 2012.

► **Charles R. Bridges, MD, ScD**, published several articles, including:

- "AAV6-βARKct Gene Delivery Mediated by Molecular Cardiac Surgery with Recirculating Delivery (MCARD) in Sheep Results in Robust Gene Expression and Increased Adrenergic Reserve," *Journal of Thoracic and Cardiovascular Surgery*
- "Cardiac Surgery in Jehovah's Witness Patients: 10 Year Experience," *The Annals of Thoracic Surgery*

He also co-authored "2011 ACCF/AHA Guideline for Coronary Artery Bypass Graft Surgery" and "2012 ACCF/AHA Focused Update (on Oral Antiplatelets) of the Guidelines for the Management of Patients with Unstable Angina/Non-ST-Elevation Myocardial Infarction."

Dr. Bridges also received a patent for cardiac targeted delivery of cells.

► **Geoffrey A. Rose, MD**, presented two lectures at the American Society of Echocardiography Scientific Sessions. He co-chaired a session titled "Coding, AUC and Practice Expense Reduction" and also participated on a panel discussion

regarding "Medical Practice Management in the New Healthcare Norm: Evolving Models of Practice."

► **Rohit Mehta, MD**, published "Personalized Strategy for the Management of Cardiac Leads under Advisory" on the *CardioSource* website.

► **Benjamin B. Peeler, MD**, published "Short and Long Term Outcomes for Bi-directional Glenn Procedure Performed With and Without Cardiopulmonary Bypass," in *The Annals of Thoracic Surgery*.

► **Brian Powell, MD**, joined Sanger Heart & Vascular Institute in September. Dr. Powell is a cardiac electrophysiologist specializing in the treatment of atrial fibrillation and complex arrhythmias.

► **K. Anitha Jayakumar, MD**, joined Sanger Heart & Vascular Institute in September. She is a member of the pediatric congenital heart team at Levine Children's Hospital, specializing in fetal echocardiography.

► *Business North Carolina* recognized the following nine physicians on the 2012 Best Doctors list: **William E. Downey, MD; John M. Fedor, MD; Theodore A. Frank, MD; Sanjeev K. Gulati, MD; J. Warren Holshouser, MD; Michael J. Rinaldi, MD; Geoffrey A. Rose, MD; John D. Symanski, MD; and B. Hadley Wilson, MD.**