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Cardiac Consult

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Dear Colleagues,

“Integration” is the talk of medicine. It refers to the seamless alignment of specialists, services and information technology to provide the most comprehensive treatment for every patient. This issue of Cardiac Consult illustrates several aspects of integration at the Miller Family Heart & Vascular Institute and the Cleveland Clinic system.

One of the most singular features of the Cleveland Clinic is our systemic alignment over a broad geographic grid. This is made possible by our Critical Care Transport Team (CCT). This highly coordinated team has a motto: “No patient is too sick or too far.” They bring Cleveland Clinic physicians and protocols to patients the moment they arrive and are able to bring even the most complex cases to our facilities with exquisite care.

Vascular Surgery is an integral part of the Miller Family Heart & Vascular Institute.

In moving to new quarters, Vascular Surgery was able to design its patient care area from scratch. Prior to this, the CT scanner was located far from the patient waiting rooms and examination rooms. In this new configuration, a new scanner and imaging lab have been placed right in the middle of the patient care area. Imaging has been fully integrated into the Vascular Surgery patient care experience.

Clinical Investigations and clinical trials also are integral to the life of the Miller Family Heart & Vascular Institute. The article on pages 10-11 describes the distinctions between the two, and reports on how clinical investigations enhance the work of our caregivers.

The Miller Family Heart & Vascular Institute itself integrates the work of Thoracic and Cardiovascular Surgery, Cardiovascular Medicine, Vascular Surgery and their related disciplines and support functions into a powerful and effective force for the treatment and study of heart and vascular disease. We hope you will consider referring your patients to our care.

Thank you for picking up this issue of Cardiac Consult. The Miller Family Heart & Vascular Institute, with its integrated system of patient care, stands ready to help you and your patients achieve the best possible outcomes.

Sincerely,

Christopher Bajzer, MD
Associate Director, Peripheral Intervention
Interventional Cardiology

Sean Lyden, MD
Staff Surgeon
Vascular Surgery

A. Marc Gillinov, MD
The Judith Dean Pyle Chair in Heart Valve Research
Thoracic and Cardiovascular Surgery
People who live with fibromuscular dysplasia (FMD) are often frustrated and misunderstood. Many people with FMD do not present with symptoms, and there is little information available for the general public. “Many doctors have never heard of FMD or will never see FMD,” says Heather Gornik, MD, a vascular medicine specialist and cardiologist in Cleveland Clinic’s Robert and Suzanne Tomich Department of Cardiovascular Medicine. “It is often misdiagnosed. Patients become very anxious.”

FMD is a rare disorder characterized by abnormal cellular growth in the walls of medium and large arteries. It can lead to aneurysms and narrowing and tears in the arteries. It is most common in women between ages 30 and 50, but also may occur in children and the elderly, as well as in men. While it appears to be an inherited disorder in some families, researchers have yet to identify an FMD gene, Dr. Gornik says. The cause is unknown and there is no cure.

Because it is so rare, physicians often mistake FMD for essential hypertension, migraine headaches, or emotional or anxiety problems because patients with carotid FMD may hear a “swishing” sound in their ears.

Dr. Gornik has long had an interest in FMD, as has Cleveland Clinic, where some of the original FMD research done under the microscope was conducted in the 1950s. In 2008, Dr. Gornik was introduced to the Fibromuscular Dysplasia Clinic at Cleveland Clinic, believed to be the first of its kind. Since opening in 2009, the clinic has grown from seeing only a few patients a month to seeing approximately 200 by the end of the year. Patients are generally seen on Fridays, and they have come from Northeast Ohio, around the country and as far away as South Africa.

The clinic allows physicians to spend more time with FMD patients and provide special patient education material focused on the disorder. A medical genetics counselor also is available to see patients with FMD, arterial dissections and aneurysms, if needed.

“It is wonderful for patients to have a place where there is experience in caring for FMD,” Dr. Gornik maintains. “They have told me it is their first encounter with a doctor who has treated more than one [FMD] patient.”

Doctors see patients with documented and suspected FMD, cases in which the disease is one of multiple possibilities for a patient’s symptoms (carotid dissection, for example), second opinions, or who want to be followed by a Cleveland Clinic physician, Dr. Gornik says.

The clinic takes a multidisciplinary approach to treating patients. Dr. Gornik and her vascular medicine colleagues John R. Bartholomew, MD, Section Head of Vascular Medicine, and Soo Hyan (Kathy) Kim, MD, are able to consult with specialists in interventional cardiology, vascular surgery, nephrology, genetics and neurology. The specialists all have an interest in FMD and have experience in treating patients with the disorder. Beginning this spring, clinic patients have the opportunity to visit Leo Pozzuoli, MD, FACP, Section Head of Consultation Psychiatry, to discuss quality of life issues.

“We have a whole team of specialists because FMD is a complicated disorder,” Dr. Gornik says. “The team works on behalf of the patient.”

Patients can receive effective treatments, including medications to control blood pressure and prevent blood clots, and balloon angioplasty to treat narrowed arteries using intravascular ultrasound to guide the procedure. Surgical reconstruction also is available in the most severe cases of FMD where angioplasty has failed.

“We have a sense of what the best practices are in terms of managing patients,” Dr. Gornik notes. “The main thing is to make sure that if an FMD patient needs an intervention, it is done appropriately.”

There also is a research arm of the FMD Clinic. Cleveland Clinic is one of nine sites worldwide participating in an FMD registry, sponsored by FMD Society of America. Patients began enrolling in 2009. The purpose is to collect enough clinical information on enough patients to be able to identify clinical factors, tests and/or treatments that lead to best outcomes.

The goal is to gain more knowledge on the natural history of the disease, giving physicians a better idea what to expect in the future, and to better inform them about what testing and/or procedures have been beneficial in the past.

Dr. Gornik, the principal investigator for Cleveland Clinic’s site, which has the highest number of enrollees of any site, says patients are offered the opportunity to sign up for the registry during their first appointment.

Between participation in the registry and its own work, Dr. Gornik believes the clinic will play an important role in FMD research. “It’s important to have a clinic where there are a large number of patients to advance research in an uncommon disease,” she points out.

The fact that FMD is uncommon led Dr. Gornik to devote a portion of her career to studying the disorder. “This is a disease where I can have an impact,” she stresses. “I realized that I could at least help in some small way, to do research into the disease, to help raise awareness among other healthcare providers and to get FMD patients better medical care.”

Along the way, she believes the clinic brings hope to FMD patients. “They finally have answers to questions they have long had about their disorder.”

Contact Dr. Gornik at gornikh@ccf.org. To refer a patient to the FMD Clinic, call 216.444.3689.

FMD Clinic Helps Patients who Have Difficulty Getting the Right Diagnosis

The classic “beads on a string” appearance is typical of medial fibroplasia, the most common type of FMD. In this case, there is mild to moderate narrowing of the artery.

Fibromuscular dysplasia of the right renal artery. The smooth, concentric narrowing (arrow) has the typical appearance of medial fibroplasia. In this case, there is severe narrowing of the artery, and the patient was treated with balloon angioplasty.
On New Year’s Eve in 2008, a physician in Florida was having trouble finding a tertiary hospital in the area to admit and treat his patient with a life-threatening aortic dissection. Because the window of time for surgical intervention was closing for the patient, the physician called Cleveland Clinic. In a matter of a few hours, Cleveland Clinic’s Critical Care Transport team transported the critically ill patient who underwent successful emergency surgery at Cleveland Clinic before the New Year.

“What really matters is not how far away the patients are, but how quickly patients can be transported to Cleveland Clinic to undergo appropriate interventions that can save their lives,” says Venugopal Menon, MD, Cleveland Clinic cardiologist in the Department of Cardiovascular Medicine, who helped develop Cleveland Clinic’s Critical Care Transport (CCT) program.

CCT includes a fleet of three jets and three helicopters, which has transported thousands of critically ill patients from 35 states and 12 nations from Central America to Asia. In addition, CCT operates three ground ambulances that transport critically ill adults and children within a 75-mile radius of Cleveland Clinic’s main campus. Highly skilled and trained nurse practitioners, registered nurses and paramedics staff the aircraft and ground ambulances.

Saving time, saving lives

“Two of the most common emergency issues we encounter are when patients experience a ST-segment elevation myocardial infarction (STEMI) or an acute aortic dissection,” Dr. Menon says. “The mortality rate for these critically ill patients is highly dependent on time to definitive treatment. By expediting transfer to our campus we ensure that our patients and referring physicians have 24/7 access to potentially life-saving interventions.”

To save even more time, CCT recently created a new dedicated line for acute transfers. Hospitals with STEMI patients and other acute cases can make one call to this dedicated line, which immediately launches a transport – with no delay-causing dispatch protocols.

What’s more, CCT has been crucial in saving the lives of patients with aortic dissections and other aneurysms.

“Aortic dissection surgery is a complex procedure and not many hospitals have the capabilities or resources to perform this surgery,” explains Eric Roselli, MD, a Cleveland Clinic cardiothoracic surgeon. “Without treatment, 90 percent of patients with proximal aortic dissections die within two days. With medical therapy alone, the average surgical mortality rate is about 50 percent. At Cleveland Clinic, our mortality rate is approximately 5 percent.”

continued on next page

Cleveland Clinic Critical Care Transport team provides critically ill patients with more vital time to undergo lifesaving procedures
In the 1990s, Cleveland Clinic cardiothoracic surgeons were performing about 10 aortic dissection surgeries a year. Over the last five years, however, surgeons have been performing approximately 60 aortic procedures annually. Dr. Roselli says the number of aortic procedures has increased, in part, because of the CCT program, and because there is a growing awareness of aortic disease, which kills 40,000 Americans every year.

A portable cardiac ICU

“CCT is a portable version of Cleveland Clinic’s Cardiac Intensive Care Unit,” Dr. Roselli explains. “Our skilled CCT team members deliver the first line of therapy, which is aggressive medical management. For a patient with a critical aorta issue, for example, the CCT team aggressively manages the patient’s blood pressure and heart rate, which reduces the blood flow forces on the fragile aorta. This also stabilizes the patient for transport to Cleveland Clinic for definitive interventional therapy.”

In addition to a lead nurse practitioner manager and a nurse manager, the adult CCT team includes 10 acute care nurse practitioners, 14 registered nurses and five paramedics, says Damon Kralovic, DO, Medical Director of the adult CCT team. Daniel Lebovits, MD, is Medical Director of the pediatric critical care transport team, which is staffed by a nurse manager, eight registered nurses and 10 paramedics.

The nurse practitioners, registered nurses and paramedics have extensive experience and skills in emergency medicine as well as specialty training in acute and critical care. They also are required to complete a 400-hour orientation process in which they receive specialized training and mentoring.

“Our crew model is based on acute care nurse practitioners who can diagnose any health issue at hand and prescribe the appropriate interventions,” says Dr. Kralovic. “Our program is about having the means and resources to bring Cleveland Clinic’s expertise and reputation to the patient’s bedside anytime and anywhere in the world.”

Available 24 hours a day, seven days a week, the medical crew for helicopters and airplanes usually includes an acute care nurse practitioner, an acute care nurse and a paramedic. However, for short flights – 250 miles round trip – an acute care nurse and a paramedic are sufficient to take care of the patient’s needs during a transport. For international trips, the medical crew includes a physician, an acute care nurse practitioner and an acute care nurse. A critical care nurse and a paramedic usually staff the ground ambulances. During the transport, however, the critical care nurse can consult via mobile phone with an acute care nurse.

The air and ground ambulances are equipped with ECG monitors with hands-free/pacer/defibrillator, transport ventilators and backup ventilator, infusion pumps, handheld blood analyzer, intra aortic balloon pump, ECMO, fetal heart monitor, Toco monitor, custom stretcher and base, and neonatal equipment.

Transporting ECMO patients

“One of the huge capabilities of our CCT team is that we have the ability to transport patients on extracorporeal membrane oxygenation (ECMO),” says Dr. Kralovic. “We have moved patients on ECMO on all three modes of transport.”

Transporting a critically ill patient on ECMO is almost unheard of and is undertaken by very few U.S. medical centers. Cleveland Clinic’s CCT team transports an ECMO patient every month. The portable ECMO apparatus has a specially adapted configuration. Because transporting an ECMO patient is a very delicate and difficult procedure, every ECMO transport mission is carefully planned to meet the specific needs of each patient and to increase survivability.

“The first step we take is to make a full evaluation of the patient’s condition,” explains Christopher Manacci, MSN, lead nurse practitioner of the CCT program. “Then we stabilize the patient’s physiological condition by maximizing every therapy. For example, if the patient’s volume status is low, we maximize his volume or we may administer medications to improve the patient’s blood pressure.”

After the team connects the patient to the portable ECMO apparatus from the hospital’s ECMO, the team carefully moves the patient from the hospital’s bed to the critical transport stretcher. The patient’s condition is evaluated again, and any necessary therapy adjustments are made. Once the patient is at maximum stability, the team slowly moves the critical transport stretcher to the awaiting ambulance while continuously monitoring the patient’s condition.

Before departing on an ambulance helicopter or jet, pilots create a flight plan to avoid possible pockets of turbulence. During the flight, cabin pressure is optimized to maintain the patient’s stability.

Providing a level of assurance

Cleveland Clinic’s CCT program also provides a level of assurance for patients who have been diagnosed with aortic disease or an aneurysm. While they are not currently surgical candidates, they are at a higher risk for having an acute event in the future.

“These patients are given a card with CCT’s number on it that they carry in their wallets,” Dr. Roselli says. “So when patients arrive at a local emergency room, they can inform their physician who can expedite the transport to Cleveland Clinic.”

In addition, the CCT program offers a Global Care program that provides medical transport services for individuals and families who travel more than 150 miles from home.

In just five years, Cleveland Clinic’s CCT program has experienced extraordinary growth. In February 2005, the program began transporting critically ill children from Northeast Ohio for treatment at Cleveland Clinic. As demand grew, a second ambulance was dedicated in 2007 to transport critically ill adults throughout Greater Cleveland. In 2008, CCT added two ambulance helicopters and jets. A third jet is used to transport international patients.

To transfer a patient, call 216.444.8302 or 800.533.5056. For acute care transfers, call 877.379.CODE (2633).
The data are recorded into our Cardiovascular Information Registry (CVIR), a database launched in 1972 by cardiac surgeons Floyd Loop, MD, and colleagues Royton Lewis, MD, and William C. Sheldon, MD. Subsequently, registries were established for all interventional settings. These registries are used extensively for quality assessment and clinical cohort studies for long-term patient outcomes. They form the foundation of generating new knowledge from a large number of studies of clinical cohorts.

An important mandate for collecting patient data is to produce and distribute internal outcome reports to surgeons and physicians so they can improve patient care from feedback they receive on actual outcomes. For example, in cardiovascular surgery, monthly reports are prepared for the chairman, quality officer and each staff physician. These reports facilitate our continuous improvement efforts for patient care.

In addition to collecting data on patient treatments within the hospital setting, we follow many of our patients for up to 25 years, which provides us with an enormous amount of useful information about how patients do over the long term.

As part of the registry activity, we have professionals who monitor the quality of the data to ensure its accuracy. This is important because we report our data to outside agencies such as the Society for Thoracic Surgery and the American College of Cardiology. We also report it to quality monitoring groups, insurers, and state and federal agencies.

Generating new knowledge

Our second activity involves using the CVIR data as the foundation for generating new knowledge from a large number of studies of clinical cohorts. Many of these studies relate not just to in-hospital events, but the longterm safety and clinical effectiveness of therapy. Unfortunately, gathering long-term data on patients is importantly constrained by current HIPAA regulations.

Patients assume that when they are discharged from the hospital following a major procedure, it will help them over the long term. Our long-term cohort studies include following the long-term outcomes for patients who undergo a wide range of cardiovascular surgeries, which helps us determine the efficacy of our procedures over time. However, conducting this type of research is complicated by privacy and confidentiality regulations, in part because a longitudinal patient health record from birth to death is not available yet in the U.S. Nevertheless, our clinical cohort studies provide reports of important findings that we share with the medical community in presentations and in scientific publications. In 2009, more than 100 peer-reviewed articles were published by the cardiovascular surgery faculty.

Developing Web technology

The third activity of Clinical Investigations relates to how we store data. We have a large informatics research and development arm internally supported by Cleveland Clinic. Since 1993 at the University of Alabama at Birmingham, and continuing at Cleveland Clinic, I have led a team of computer scientists in developing SemanticDB, a novel approach to data storage and use. SemanticDB uses emerging semantic web technology to integrate disparate types of data into a single population-centric database. Semantic technology permits unlimited future extensibility as medicine advances. We have applied enormous amounts of artificial intelligence to this semantic form, enabling English language queries of the database by investigators in a fashion similar to that proposed for the Semantic Web (Cleveland Clinic is one of approximately 400 members of the World Wide Web Consortium, the standards body for the Internet).

Improving data analysis

Our fourth activity is developing the next generation of methodology to help us better analyze patient data. For example, the Clinical Investigations group maintains and is expanding Hazard Function Technology, which is useful in assessing risk factors for time-related events, and temporal decomposition for longitudinal data. We are participating in an intramural program for the National Heart, Lung, and Blood Institute (NHLBI), developing cutting-edge statistical models to draw new inferences to improve patient care. We are using these new methods to answer questions that are often asked by investigators about patients, but which cannot be answered by existing statistical methods. That is, rather than just asking questions we know how to answer, we are asking questions and developing methods to answer them.

Fostering the new generation

Our fifth activity is clinical research education. To ensure that we are educating and training the next generation of researchers, we engage numerous medical students, residents and fellows in faculty-sponsored and mentored research projects. NHLBI sponsors formal clinical research education studies for two scholars. Residents, fellows and medical students participate in a Research Day each year, with two dozen presentations and lively discussions. The mentorship extends to faculty with multiple research planning and writing sessions each week.

For more information about Clinical Investigations, please visit my.clevelandclinic.org/heart/research/clinical.
In Brief

Randall C. Starling, MD, MPH, to Serve on UNOS Board of Directors

Randall C. Starling, MD, MPH, Cleveland Clinic’s Section Head of Heart Failure & Cardiac Transplant Medicine, has been elected to the Board of Directors of the national United Network for Organ Sharing (UNOS).

Dr. Starling will serve as the Heart Transplant Representative on the UNOS Board of Directors. His two-year term will begin June 22, 2010.

UNOS manages the Organ Procurement and Transplantation Network (OPTN), which brings together medical professionals, transplant recipients and donor families to develop national organ transplantation policy. The organizations operate under contract with the U.S. Department of Health and Human Services, Health Resources and Services Administration, Division of Transplantation.

According to UNOS, more than 105,000 patients are awaiting an organ transplant in the United States.

The UNOS Board of Directors also serves as the Board of Directors for OPTN.

Metabolic Syndrome: Its Component Risk Factors and Progression of Coronary Artery Disease

A new intravascular ultrasonography (IVUS) study has found that the metabolic syndrome is associated with accelerated plaque progression, but this is attributed to the individual component risk factors rather than the presence of the syndrome itself.

The findings, by Ozgur Bayturan, MD, and colleagues, were reported in the March 8 issue of the Archives of Internal Medicine.

Study performed a systematic review of 3,459 patients who participated in seven clinical trials that monitored coronary atheroma progression with intravascular ultrasonography. Patients with or without MetS were compared with regard to clinical characteristics, coronary atheroma burden at baseline and change on serial evaluations. Relationships between plaque progression (5 percent increase in percent atheroma volume [PAV]), MetS and its component risk factors were investigated.

Vascular Labs Break Record

In December 2009, the Miller Family Heart & Vascular Institute’s Non-Invasive Vascular Lab Services eclipsed the 30,000 study mark.

This is a major achievement for our Non-Invasive Vascular Lab, one which is unmatched by single-site labs in Ohio. It is a milestone for Cleveland Clinic main campus and can easily be recognized as one of the top performing labs nationally. Our labs are among the busiest in the country and are run by knowledgeable and well-trained staff, all of whom are committed to the highest standards of quality patient care and monitoring. The non-invasive labs on main campus and in the region are accredited by ICVAI. All technologists are required to carry an RVT certification signifying their commitment to continuing excellence and education.

Our inference is to continue to recommend and be aggressive about early surgery in asymptomatic patients with severe degenerative mitral-valve disease if we can provide a very high repair rate, greater than 90 percent, and a very low operative risk, well under 1 percent,” he said at the STS meeting.

Laser-assisted Extraction of Implanted Heart Device Leads Becomes Safer

Laser-assisted extraction of implanted heart device leads appears to have become safer and more successful in recent years, according to a new study by Cleveland Clinic electrophysiology staff in the Feb. 9 issue of the Journal of the American College of Cardiology.

The study sought to examine the safety and efficacy of laser-assisted lead extraction and the indications, outcomes and risk factors in a large series of consecutive patients.

It examined consecutive patients undergoing transvenous laser-assisted lead extraction at 13 centers.

It found lead extraction employing laser sheaths is highly successful with a low procedural complication rate. Total mortality is substantially increased with pocket infections or device-related endocarditis, particularly in the setting of diabetes, renal insufficiency or body mass index <25 kg/m².

Centers with smaller case volumes tended to have a lower rate of successful extraction.

Heart & Vascular Institute: New Staff!

David Frid, MD, is one of the newest additions to the sections of Preventive Cardiology and Clinical Cardiology at Cleveland Clinic. Dr. Frid’s specialty interests include primary and secondary prevention of cardiovascular diseases.

Dr. Frid earned his medical degree from the University of Maryland School of Medicine in Baltimore. He completed his residency in internal medicine at the University of Massachusetts Medical Center in Worcester, Mass., where he also completed a fellowship in preventive and behavioral cardiology medicine. He then completed a fellowship in cardiology at Duke University Medical Center in Durham, N.C.

He previously served as the Director of Preventive and Rehabilitative Cardiology at The Ohio State University Medical Center in Columbus, an Associate in Medicine at Duke University Medical Center in Durham, N.C., and most recently as Director, Regional Medical and Research Specialist at Pfizer, Inc.

Contact Dr. Frid at 216.445.2332 or fridd@ccf.org.
New Clinic Serves Anxious ICD Patients

A new study is examining the overall level of anxiety and coping in patients who have received implantable cardioverter defibrillators (ICDs). It is being undertaken by a new multidisciplinary Arrhythmia Behavioral Health Clinic at the Miller Family Heart & Vascular Institute, with funding from the Cleveland Clinic Bakken Heart-Brain Institute.

The Arrhythmia Behavioral Health Clinic is located in the Section of Pacing and Electrophysiology. It combines cardiologists with psychiatrists and psychologists to treat patients with ICD-related anxiety and to conduct research into causes and treatments. The clinic serves as a consultation resource for the cardiologists and patients seen in the Section of Pacing and Electrophysiology.

The Arrhythmia Behavioral Health Clinic makes it easier for patients to access the services of Cleveland Clinic behavioral health experts. It helps de-stigmatize psychiatric and psychological interventions, and opens the door for patients and clinicians to discuss the emotional side of the illness and the presence of the device.

"Our Arrhythmia Behavioral Health Clinic is a collaborative model of heart-brain medicine," says Dr. Pozuelo. "The beauty of this interface is the ability to network with so many gifted clinicians."

Contact Dr. Pozuelo at 216.445.3583 or pozuell@ccf.org.

The study also will compare cognitive behavioral therapy versus usual care for patients who screen positive for moderate to severe anxiety. The researchers hope to evolve better algorithms for clinical care, effective psychological intervention and better identification of patients at risk for psychiatric comorbidities.

Implantable cardioverter defibrillators (ICDs) were introduced three decades ago to treat patients at risk for sudden cardiac death due to ventricular tachyarrhythmias. Since then, tens of thousands of these devices have been implanted in patients with a variety of rhythm disorders, heart failure and other life-threatening conditions. The Miller Family Heart & Vascular Institute implanted more than 700 in 2008 alone.

Many lives have been saved and prolonged by the timely intervention of the ICD. But some patients are made anxious by the presence of an implantable defibrillator. This anxiety can limit their activities and enjoyment of life.

ICDs are programmed to deliver a powerful electric shock when they detect the onset of a life-threatening rhythm. "Some patients describe it as a ‘kick in the chest,’" says Leo Pozuelo, MD, of the Center for Behavioral Health, who helped found the clinic with electrophysiologist Mina Chung, MD. "Some say ‘Thank God I had this device in me.’ Others are plunged into anxiety."

The study will also compare cognitive behavioral therapy versus usual care for patients who screen positive for moderate to severe anxiety. The researchers hope to evolve better algorithms for clinical care, effective psychological intervention and better identification of patients at risk for psychiatric comorbidities.

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Cardiac Consult

The Sydell and Arnold Miller Family Heart & Vascular Institute at Cleveland Clinic cordially invites you to join us for

**The Cardiovascular Physicians’ Roundtable**

Friday, July 16, 8 a.m. – 5:30 p.m.
Dinner Reception, 6 – 8 p.m.
Saturday, July 17, 8 a.m. – 12:15 p.m.
Bank of America Conference Center, InterContinental Hotel
Cleveland, Ohio 44195

This CME program will bring our physician colleagues from across the region together to share best practices, protocols and metrics for the treatment of cardiovascular disease. Cardiovascular Physicians’ Roundtable will focus on breakthroughs and challenges in the prevention, treatment and management of heart and vascular disease.

**R.S.V.P. by June 28, 2010**
Jamie Belkin  |  216.932.3448  |  jamie@jamiebelkin.com

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**CME Calendar**

Medical professionals are invited to attend the following upcoming symposia:

- **11th Annual Intensive Review of Cardiology**
  Aug. 22-25
  InterContinental Hotel & Bank of America Conference Center
  Cleveland, Ohio

- **Heart-Brain Summit 2010**
  Sept. 23-24
  Ruvo Brain Institute
  Las Vegas, Nevada

- **Preceptorship in Carotid Ultrasound Interpretation**
  Cleveland Clinic, Miller Family Heart & Vascular Institute,
  Noninvasive Vascular Laboratory, Cleveland, Ohio

- **21st Century Treatment of Heart Failure 2010**
  Oct. 21-22
  Intercontinental Hotel & Bank of America Conference Center
  Cleveland, Ohio

- **2010 Medical Innovation Summit: Obesity, Diabetes & the Metabolic Crisis**
  Nov. 1-3
  Cleveland Clinic, Cleveland, Ohio

For more information about the above events, call the Cleveland Clinic Department of Continuing Education at 216.444.5696 or 800.762.8173, or visit ccfcmec.org.