Dear Colleagues,

Cardiac Consult has published many stories on complex treatments, advanced technology and basic research on the causes and cures of heart disease. But our real focus is with the patient, and our goal is to give every patient the best outcome and experience. We have a long-standing interest in the patient’s condition after he or she is discharged from the hospital and how we can optimize the post-discharge experience.

The Miller Family Heart & Vascular Institute at Cleveland Clinic is involved in programs and research projects that cover the full spectrum of post-discharge issues — from home monitoring of heart failure patients to fine-grained analyses of nationwide readmissions data. This issue of Cardiac Consult highlights some of these projects, including our comprehensive Heart Care at Home post-discharge follow-up program.

Among everyone’s post-discharge concerns is the risk of stroke, which accompanies many aspects of cardiovascular treatment. This issue of Cardiac Consult also highlights (p. 11) some of our stroke research, including the latest findings by Joseph Sabik, MD, chair of Thoracic and Cardiovascular Surgery, on the incidence of stroke after coronary artery bypass grafting. In an accompanying feature (p. 12) you can also read about how the Miller Family Heart & Vascular Institute addresses potential and actual stroke through advanced interventional procedures, from carotid stenting to surgery.

From an acute care standpoint, we hope you’ll read the case study from Steven Nissen, MD, chair of Cardiovascular Medicine (p. 9). It literally “takes off” from the earliest point of contact, highlighting the capabilities of our Critical Care Transport Team and its fleet of “mobile ICUs.” It all adds up to total engagement through the whole continuum of admission, treatment, discharge and beyond — up to and including the patient’s return to the referring physician’s care.

Thank you for picking up this copy of Cardiac Consult. On behalf of all our colleagues in the Miller Family Heart & Vascular Institute, we wish you a pleasant and productive spring 2011.

Sincerely,

Christopher Bajzer, MD  
Associate Director, Peripheral Intervention  
Interventional Cardiology

Sean Lyden, MD  
Staff Surgeon,  
Vascular Surgery

A. Marc Gillinov, MD  
The Judith Dion Pyle Chair in Heart Valve Research  
Thoracic and Cardiovascular Surgery
Rethinking Readmissions

The Center for Medicaid and Medicare Services (CMS) has made hospital readmissions a metric for quality, putting new focus on post-discharge care. Are caregivers providing patients with the information and follow-up they need to achieve the best outcomes after hospitalization? Which devices and monitoring technologies are best for post-discharge care? Are readmissions, as they are now evaluated, an accurate measure of hospital quality?

The Miller Family Heart & Vascular Institute is addressing these issues through research and new clinical programs. The goal is to gather more information, test new ideas, and enlarge the discussion and practice of post-discharge care. This issue of Cardiac Consult offers several articles that are pertinent to the questions above. From them, we can see that patients can benefit from more research in this area. The more we know, the better we can improve outcomes, reduce costs and assure that every patient has the best post-discharge experience.

Hospital readmissions are in the news. The New York Times wrote, “It is one of the biggest avoidable costs on the nation’s medical bill…One in five Medicare patients, for example, returns to the hospital within 30 days. Overall, readmissions cost the federal government an estimated $17 billion a year.”

Readmission rates are generally used as a barometer for quality of care during index hospitalization, as well as quality of processes that occur within the first few weeks after discharge. The Centers for Medicare and Medicaid Services (CMS) is posting readmission rates for all to see on its Hospital Compare website. The federal government’s Affordable Healthcare Act requires the Secretary of Health and Human Services to track readmission rates for heart failure and other high-cost conditions. And as of fall 2012, Medicare payments will be reduced to hospitals with high readmission rates.

*continued on next page ➔*
A group of researchers from the Miller Family Heart & Vascular Institute at Cleveland Clinic is suggesting that there may be more to the readmissions story than meets the eye. After analyzing hospital readmission rates for patients with heart failure from hospitals nationwide, they conclude that readmission may not always mean poor care. In fact, it could be a sentinel for quality.

The analysis was described in a letter published in the *New England Journal of Medicine*, July 15, 2010, signed by Eiran Z. Gorodeski, MD, Randall C. Starling, MD, and Eugene H. Blackstone, MD. The authors observed that hospitals whose 30-day readmission rate was higher than that of other hospitals also had an associated lower 30-day inpatient mortality. They wondered if there was any connection between these two facts.

They analyzed data from 3,857 hospitals in the CMS Hospital Compare database. They examined the association between risk-adjusted admission and risk-adjusted death within 30 days after hospitalization for heart failure. They found that a higher occurrence of readmissions for heart failure patients was associated with lower risk-adjusted 30-day mortality.

More readmissions = lower mortality. Why should this be? They suspected that the readmissions were being affected by a competing risk of death. In other words, a patient who dies soon after discharge can never be readmitted. So it would be that a hospital whose patients survive longer after discharge will have more patients eligible for readmission.

Another possibility may be that appropriately planned readmissions for certain procedures may reduce risk of death at the expense of a higher readmission rate.

Taken together, the data suggest that a higher readmission rate may, to some extent, be a consequence of successful care. The findings are consistent with a recent study of some 4,000 Medicare beneficiaries hospitalized for heart failure in California. This study found that hospitals that used more resources had lower mortality rates.

Readmissions is an issue that will be getting even more attention as time goes on and the nation continues to confront the complexities of healthcare costs. The Cleveland Clinic researchers call for CMS to take a more nuanced view of readmissions in the overall scheme of things. As Dr. Gorodeski told *HealthDay News*, “The message to patients and the general public is that they should be wary of seemingly simple measures of quality of care. One simple measure is not enough.”

“It is one of the biggest avoidable costs on the nation’s medical bill...One in five Medicare patients, for example, returns to the hospital within 30 days. Overall, readmissions cost the federal government an estimated $17 billion a year.” – New York Times
The development of remote-monitored ICDs promises to reduce the need for in-office assessment. These devices generate a continuous stream of data over the Internet. Remote monitoring has considerable cost- and time-saving potential. But before that potential can be realized, remote monitoring itself has needed to be assessed in comparison to remote monitoring. Now, a major groundbreaking study trial led by Niraj Varma, MD, of the Department of Electrophysiology and Pacing in the Miller Family Heart & Vascular Institute, has made that comparison and answers many of the questions surrounding remote monitoring.

Who can you TRUST?

Millions of people have received implantable cardioverter-defibrillators (ICDs) over the past two decades in response to several studies indicating their survival benefit. These devices are growing more complex in response to a wider range of indications. Regular office visits have been part of the management of ICD patients traditionally. Patients are expected to have their devices checked three or four times annually. Recent years have seen a drastic increase in both patient volume and device complexity, making office visits more of an onerous necessity.
The study is known as TRUST (Lumax-T/Lumos-T Safely Reduces Routine Office Device Follow-up). TRUST followed 1,339 randomized patients at 102 sites in the United States, checking patients at three, six, nine, 12 and 15 months after implantation. It demonstrated that remote monitoring had significant benefits in the early detection of ICD generator and lead performance, even if problems are silent and asymptomatic. Remote monitoring has also been shown to extend the time between routine in-person follow-ups without compromising patient safety.

“Remote monitoring can alert caregivers to lead fracture and other potentially life-threatening complications, well before they generate gross symptoms.”

The primary goal of Heart Care at Home is to give every patient the best outcome and experience. Data show that post-discharge monitoring and home care can reduce readmissions, lower costs and improve patient satisfaction. Heart Care at Home allows the Miller Family Heart & Vascular Institute to continue giving patients at home the same kind of high-focus attention they get at the hospital. Heart Care at Home will be a permanent part of the Miller Family Heart & Vascular Institute’s continuum of care.
“Remote monitoring was superior to conventional, in-person, scheduled hospital checks,” says Dr. Varma. It was especially beneficial in the early detection of ICD generator and lead performance, and asymptomatic arrhythmias. At the same time, this group of patients also required significantly fewer (45 percent) office visits. Remote monitoring enhanced the discovery of asymptomatic system issues and enabled prompt clinical decisions regarding conservative versus surgical management. There was no difference in adverse events between the two groups.

“While the study reaffirmed the reliability of implantable devices, it also showed that remote monitoring enables prompt physician intervention when something goes wrong or when a patient’s cardiac medications need to be changed,” says Dr. Varma.

Unlike other devices that require the patient to manually initiate reading over phone lines, remotely-monitored ICDs using an Internet platform do not require the patient to manually initiate monitoring. The patient maintains normal mobility throughout the day. The data provided by the continuous signal can be used to understand long-term trends in lead and device performance as well as in the patient’s condition.

Remote monitoring can alert caregivers to lead fracture and other potentially life-threatening complications, well before they generate gross symptoms. Clinically significant changes in heart rhythm trigger an alert message. Decision-critical information, including high-definition intracardiac electrocardiograms, can be accessed over the Internet by designated physicians from anywhere in the world.

Most patients implanted with cardioverter-defibrillators at the Miller Family Heart & Vascular Institute receive remote-monitored devices. These patients are seen once yearly in person, versus three or four times a year with conventional devices. When monitoring detects any unusual events, the patient is contacted – sometimes to the patient’s surprise, because remote monitoring picks up events the patient may not be aware of. “As a result of all this,” says Dr. Varma, “we only see patients when necessary.” A measure of patient confidence in this method is that when the study ended, 98 percent of the participants elected to stay with remotely monitored devices instead of reverting to conventional follow-up methods.

The results of TRUST appeared in the July 27, 2010 issue of *Circulation* and in October 13, 2010 issue of *Circulation Arrhythmia and Electrophysiology.*

continued on next page ➔
“Compliance is essential. The patient needs to be wearing the device and to have been instructed in its proper use. That’s why it was reassuring to find that WCD was worn with good compliance by most patients.” – Mina Chung, MD

Wearable vs. Implantable?

Does it make a difference whether a cardioverter-defibrillator is an implantable cardioverter-defibrillator (ICD) or a wearable cardioverter-defibrillator (WCD)?

Mina Chung, MD, Section of Pacing and Electrophysiology, Miller Family Heart & Vascular Institute at Cleveland Clinic, recently compared the two types.

She found that patients are compliant in wearing the WCDs and that these vests are nearly as effective for monitoring heart rhythms and delivering electric shocks to disrupt potentially dangerous arrhythmias as the implantable alternative, at least for short-term use.

“Compliance is essential,” says Dr. Chung. “The patient needs to be wearing the device and to have been instructed in its proper use,” says Dr. Chung. “That’s why it was reassuring to find that WCD was worn with good compliance by most patients.” (Previous studies found less compliance with older, bulkier versions of the WCD. The current wearable product is 40 percent lighter.)

The study, published in the Journal of the American College of Cardiology, concludes that “The long-term survival data comparing WCD and ICD survival are reassuring that WCD therapy may be comparable to ICD therapy, rationalizing the use of the WCD as an acceptable temporary alternative or a bridge to long-term ICD implantation.”
Case Study: Ventricular Fibrillation Arrest

By Steven Nissen, MD

Cleveland Clinic Critical Care Transport team provides critically ill patients with more vital time to undergo lifesaving procedures.

Presentation
A 59-year-old man was at home with his wife, vacuuming around the house, when he collapsed, appearing cyanotic. His wife called EMS and started CPR. When paramedics arrived, they defibrillated him once. He was intubated and given lidocaine and heparin.

Examination
Upon arrival at Medina Hospital in suburban Cleveland, the patient was seizing with posturing. He had no history of seizure and was not on any new medications. He was administered Ativan® (lorazepam). The patient was stabilized and the attending emergency department physician at the hospital (a member of the Cleveland Clinic health system) initiated a transfer to Cleveland Clinic’s main campus. While being transferred to the helicopter, the patient again needed defibrillation.

Treatment
Upon arriving at Cleveland Clinic post-ventricular fibrillation arrest, the patient was taken directly to the cath lab, where a coronary angiogram revealed one-vessel obstructive coronary atherosclerosis. He underwent insertion of a bare metal stent to the right coronary artery.

The patient was then moved to the coronary intensive care unit, where the hospital’s cooling protocol was rapidly initiated. Neurology was consulted and the patient was placed on phenytoin. An EEG revealed encephalopathy that improved on serial EEGs. No epileptic activity was noted.

An initial ECG revealed normal sinus rhythm. The patient developed complete right bundle branch block (CRBBB) and T wave changes. His maximum CPK was 777, CK-MB of 16.1 and CK-MB% of 2.1. His neurological status improved and a transthoracic echocardiogram revealed mild LVH with normal LV size and overall normal systolic function EF = 50-55%, suggesting distal apical hypokinesis.

The patient had no chest pain, SOB or arrhythmias. Electrophysiology was consulted and maximization of beta blocker was recommended, with no ICD needed. The patient was transferred to the stepdown intensive care unit. CPK trended downward.

continued on next page...
Outcome

By the end of a week, the patient had nearly complete recovery of neurological function. A head CT performed prior to arrival was negative for acute intracranial abnormalities. Phenytoin was stopped as seizures were likely due to receiving lidocaine. He had a normal EF by echo. He was started on lisinopril for his hypertension, holding on the enalapril that he was on at home, to be reinitiated when appropriate. He also was started on atorvastatin to lower his cholesterol (goal < 130). The patient was discharged five days following his heart catheterization, with a plan for routine post-MI care.

Follow-up

At a one-month follow-up, the patient has continued with routine care and has been well – walking twice a day for about a mile. He experienced one brief episode of chest pain since, which has not recurred. He underwent an EKG and troponin and CK-MB, all which were negative for a recent event. He was found to be slightly orthostatic and had his enalapril decreased to 2.5 mg from 5 mg.

Discussion

This case is a dramatic example of how Cleveland Clinic’s Critical Care Transport system is designed to make once impossible outcomes, in fact, possible. Had any of these aspects not been in place, this patient would not be alive and well today.

Hypothermia therapy is critical for cardiac arrest patients to increase oxygen supply and reduce oxygen consumption in the brain, to improve neurological function upon survival. That’s why it was so important to have had transport available in this case.

Our autolaunch protocol makes it possible to launch a medical helicopter en route to the transferring hospital when the hospital is placed on standby instead of waiting for a formal launch request. This also saves precious minutes. Further saving time, our helicopter was sitting on the pad in Medina, which enabled very rapid transport to the cath lab and CCU at main campus.

There is no doubt that time is of the essence in critical cases. But had there been a delay anywhere along the line in this case – if the EMS had been delayed three or four minutes, or if the patient had been transported by ground – our outcome here would not be the same.

Our critical care transport is a portable version of Cleveland Clinic’s cardiac intensive care unit. This means our skilled CCT team members deliver the first line of therapy, which is aggressive medical management, stabilizing the patient for transport to Cleveland Clinic for definitive interventional therapy.

While this particular patient was from Northeast Ohio, our entire critical care transport system 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 – with the end goal of improving the quality of life in critical care patients. These are the cases that truly warm our hearts and keep us striving to find innovative ways to further improve care in the future.

Dr. Nissen is Chairman of the Department of Cardiovascular Medicine at Cleveland Clinic. He can be reached at 216.445.6852 or nissens@ccf.org.

In the Patient’s Own Words

Donald Cernanec, of Medina, Ohio, is grateful for the critical care system that saved his life after a near-fatal heart attack in July 2010.

“Every day, I learn something more about what has happened to me, and I realize how close to dying I was and how very fortunate I am,” Mr. Cernanec says.

“I have been back to see the ICU nurses and, of course, Dr. Nissen, and they explained to me that if one of the systems that are put in place to transport critical care patients was not in place or had faltered in any way, it could have been catastrophic; it would have been life-threatening, without a doubt.”
**Strokes Decline in CABG-treated Patients**

Tailoring surgical care may reduce stroke risk, similar to that of PCI

A study of patients undergoing coronary artery bypass surgery (CABG) at Cleveland Clinic over the past 30 years finds that the occurrence of stroke declined despite an increasing patient risk profile.

"We found that most strokes in coronary surgery occur postoperatively," says study co-author Joseph F. Sabik, MD, Chairman of Cleveland Clinic’s Department of Thoracic & Cardiovascular Surgery. “And very importantly, what we found is that what influences stroke are patient risk factors, such as age and whether or not they have atherosclerosis.”

The prospective study, which was published in the Jan. 26, 2011 issue of *JAMA*, reviewed the cases of more than 45,000 people who had isolated primary or reoperative CABG surgery between 1982 and 2009. Strokes occurring following CABG were recorded prospectively and classified as having occurred intraoperatively or postoperatively. Complications and survival after stroke were assessed in propensity-matched groups.

The purposes of the study were to examine prevalence and timing of perioperative stroke, identify patient and surgical factors associated with stroke and its timing, and assess association of stroke with hospital mortality and morbidity and long-term survival.

Among the people in the study, 705 (1.6 percent) experienced a stroke. But results show the number of people suffering a stroke peaked at 2.6 percent in 1988, then slowly declined 4.69 percent per year (p=0.04), despite increasing patient comorbidity. Overall, 279 strokes occurred intraoperatively and 409 occurred postoperatively. Postoperative stroke risk peaked at 40 hours, decreasing to 0.055 percent/d by day 6. Risk factors for both intraoperative and postoperative stroke included older age and variables representing arteriosclerotic burden.

Intraoperative stroke rates were lowest in off-pump CABG (0.14 percent) and on-pump beating-hearting CABG (0 percent), intermediate with on-pump arrested-heart CABG, and highest with on-pump CABG with hypothermic circulatory arrest (5.3 percent). Stroke patients had worse adjusted hospital outcomes, longer intensive care and postoperative stays, and worse long-term (or late) survival.

The authors conclude that in patients at high risk of intraoperative stroke, such as the elderly or those with aortic arteriosclerosis, off-pump CABG or on-pump beating-heart CABG with no or minimal aortic manipulation may be best. However, in patients at low risk of stroke, such as those without aortic arteriosclerosis and minimal arteriosclerotic burden, on-pump CABG is likely the best option to provide optimal surgical revascularization and minimal risk of stroke.

An unanticipated finding of the study was that there was no increased risk of stroke with new-onset postoperative atrial fibrillation. In fact, new-onset A-fib was associated with a lower risk of postoperative stroke. Patients with new-onset A-fib are initially treated with early medical conversion or electroconversion and, if recurrent or persistent, rate control and anticoagulation. This strategy appears to be associated not only with preventing an anticipated risk of postoperative stroke, but also perhaps with actually lowering the risk.

More studies are needed, Dr. Sabik says, but the decrease may be attributed to tailoring the surgical technique to the patient – which includes better preoperative assessments, surgical techniques and postoperative care.

"Really, it's across the board," he notes. “We have to look at our preoperative care, our anesthesia care, our intensive care unit (ICU) care, our postoperative care. All of those have dramatically influenced the risk of stroke as well.”

Dr. Sabik says the fact that the stroke rate for surgery can be brought down to that similar to PCI is very exciting. “The feeling out there is that if you have surgery, you’re going to have a risk of stroke that is higher than PCI, but that’s not always true anymore.”

Dr. Sabik can be contacted at 216.444.6788 or sabikj@ccf.org.
Stroke Prevention

Cleveland Clinic Heart & Vascular Institute is dedicated to better understanding and reducing stroke risk. Here is a look at just a few of our latest efforts:

Gillinov-Cosgrove Clip for Reduced Risk of Stroke in Patients With A-Fib

The Gillinov-Cosgrove Clip (Atricure Inc.), developed at Cleveland Clinic, helps reduce the formation of clots in the left atrial appendage during atrial fibrillation that could lead to stroke, by safely and permanently occluding the left atrial appendage from outside the heart. The device recently received approval from the U.S. FDA.

Preventing and Treating A-Fib and Associated Stroke Risk

Mina Chung, MD, Cardiovascular Medicine and Molecular Cardiology, and her translational research team at Cleveland Clinic Lerner Research Institute focuses on A-fib genetics, with the goal of understanding the mechanisms of A-fib pathogenesis and potentially developing personalized, gene-specific diagnostic tests and drugs that will aid in predicting, preventing and treating A-fib and its associated risk for stroke. Genome-wide genetic and clinical data from biorepositories of human samples have helped identify several loci significantly associated with A-fib. Further studies include sequencing and functional examination of these loci, as well as genetic-genomic studies using human atrial tissue.

Study Finds PFOs Should Not Always Be Closed

Because patent foramen ovales (PFOs) are associated with some comorbidities, heart surgeons will usually close a PFO if they discover one in the midst of surgery for an unrelated problem. This may not be such a good idea, according to a retrospective study led by Richard A. Krasuski, MD, Director of Adult Congenital Heart Disease Services. Dr. Krasuski found that closing PFOs did not affect the patients’ long-term mortality, but more than doubled their in-hospital stroke risk. The suggestion is the surgeon should talk with the patient before deciding to close an incidentally discovered, non-symptomatic PFO.

Neuroprotection During Carotid Artery Stenting

Each of the embolic protection devices used in carotid artery stenting (CAS) has advantages and disadvantages. The prospective, multicenter, single-arm EMPIRE Clinical Study, led by national co-PI Daniel Clair, Chairman, Department of Vascular Surgery at Cleveland Clinic, investigated a proximally placed device (GORE Flow Reversal System) that provides distal neuroprotection during CAS by reversing blood flow in the internal carotid artery, thereby directing emboli away from the brain. A study in February 2011 in Catheterization and Cardiovascular Interventions concludes that the EMPIRE study provides the most definitive evidence of the safety and efficacy of the GORE Flow Reversal System thus far. The study outcomes included a low overall death and stroke rate of 2.9 percent and promising results in symptomatic and octogenarian patients. Studies comparing other EPDs with this system — perhaps trials that include surrogate endpoints such as the results of transcranial Doppler ultrasonography and diffusion-weighted MRI evaluations — are warranted to further elucidate the potential benefits of flow reversal in CAS.

Attacking Thrombosis at Molecular and Genetic Levels

A multi-investigator effort is under way to establish an NIH-funded Specialized Center for Clinically Oriented Research (SCCOR) in Thrombosis. Thrombosis is the proximate cause of heart attacks, stroke, limb loss from peripheral vascular disease, phlebitis and pulmonary embolism and as such represents a major public health problem. The SCCOR is a coordinated translational research effort by basic and clinical scientists to attack this problem at the molecular and genetic levels. Lead participants include Roy Silverstein, MD, Chair, Cell Biology; Edward Plow, PhD, Chair, Molecular Cardiology; Thomas McIntyre, PhD, Cell Biology; Qing Wang, PhD, Molecular Cardiology; Marc Penn, MD, PhD, Cell Biology; Jerry Bartholomew, MD, Cardiovascular Medicine; Kandice Kotte-Marchant, MD, PhD, Chair, Pathology and Laboratory Medicine Institute; and Keith McCrae, MD, Division of Hematology at the Case Western Reserve University School of Medicine.
New Link Between Choline in Diet and Heart Disease

A new study by Stanley Hazen, MD, PhD, departments of Cardiovascular Medicine and Cell Biology, appearing in the journal *Nature* finds that gut flora can influence cardiovascular disease by metabolizing a dietary phospholipid. His team used a metabolomics approach to generate unbiased small-molecule metabolic profiles in plasma that predict risk for CVD. Three metabolites of the dietary lipid phosphatidylcholine – choline, trimethylamine N-oxide (TMAO) and betaine – were identified and then shown to predict risk for CVD in an independent large clinical cohort. Dietary supplementation of mice with choline, TMAO or betaine promoted upregulation of multiple macrophage scavenger receptors linked to atherosclerosis, and supplementation with choline or TMAO promoted atherosclerosis.


PAD and Progression of Coronary Atherosclerosis

Patients with concomitant PAD harbor more extensive and calcified coronary atherosclerosis, constrictive arterial remodeling and greater disease progression than do those without peripheral disease, according to a recent article in the *Journal of the American College of Cardiology* by lead investigator Stephen Nicholls, MD, Department of Cardiovascular Medicine.

The article, based on an analysis of seven trials with nearly 3,500 CAD patients using serial intravascular ultrasound imaging, concludes that these changes are likely to contribute to adverse cardiovascular outcomes. The authors say the benefit for all patients achieving low levels of low-density lipoprotein cholesterol supports the need for intensive lipid lowering in patients with PAD.

Dr. Wang Named AAAS Fellow

Cleveland Clinic researcher Kenneth Wang, PhD, Molecular Cardiology, was recently recognized for his meritorious efforts to advance science or its applications. Dr. Wang was among those officially named as Fellows of the American Association for the Advancement of Science (AAAS) on Feb. 19, 2011, during the AAAS Annual Meeting in Washington, D.C.

Dr. Wang was recognized for discovering the first gene for the lethal heart rhythm disorder Brugada syndrome, identifying mechanisms of channelopathies (diseases of subcellular structures called ion channels) and for making fundamental contributions to the field of arrhythmias, seizures and sudden death. “We have identified nine genes that cause various cardiovascular and neurological diseases,” said Dr. Wang, who is also Professor of Molecular Medicine at Cleveland Clinic Lerner College of Medicine and Professor of Genetics at Case Western Reserve University.
# Shaping the Future of Cardiovascular Care: Progress and Controversies

**Oct. 5-7, 2011 | InterContinental Hotel and Conference Center | Cleveland Clinic**

Hosted by the Miller Family Heart & Vascular Institute at Cleveland Clinic, this program connects you with the leading experts and primary investigators of the latest trials and the science-and-technology breakthroughs that are transforming our specialties. Enhance your knowledge of the costs, benefits and the appropriateness of these new therapies while strengthening your practice at the crossroads of cardiovascular discovery.

### Cleveland Clinic Course Directors:
- Bruce W. Lytle, MD
- Stephen J. Nicholls, MD, PhD
- Steven Nissen, MD
- Katherine J. Hoercher, RN
- Joseph F. Sabik, MD

### Guest Faculty include:
- Cary W. Akins, MD  
  Massachusetts General Hospital
- Joseph Bavaria, MD  
  University of Pennsylvania
- Roger S. Blumenthal, MD  
  Johns Hopkins
- Matthew Budoff, MD  
  Harbor-UCLA LA BioMed CT Reading Center

### Cleveland Clinic Course Directors:
- David J. Cohen, MD  
  Saint Luke’s Mid America Heart Institute
- Lawrence Cohn, MD  
  Brigham and Women’s Hospital
- Rory Collins, MBBS  
  University of Oxford
- Joseph S. Coselli, MD  
  Division of Cardiothoracic Surgery  
  Baylor College of Medicine
- James L. Cox, MD  
  Washington University School of Medicine/Barnes-Jewish Hospital
- Gregory Fontana, MD  
  Cedar-Sinai Medical Center
- Michael R. Gold, MD, PhD  
  Medical University of South Carolina
- Howard C. Herrmann, MD  
  Penn Heart and Vascular Center
- Marriel L. Jessup, MD  
  University of Pennsylvania Hospital
- Karl Heinz Kuck, MD  
  Asklepios Klinik Hamburg, Germany
- Peter Libby, MD  
  Brigham and Women’s Hospital
- Michael J. Mack, MD  
  Baylor Healthcare
- Wesley S. Moore, MD  
  UCLA
- Hani Najm, MD  
  King Abdulaziz Medical City Riyadh, Saudi Arabia
- Douglas L. Packer, MD  
  Mayo Clinic/St.Marys
- Daniel J. Rader, MD  
  University of Pennsylvania
- Rita F. Redberg, MD  
  UCSF Medical Center
- Paul Ridker, MD  
  Harvard Medical School
- Marc S. Sabatine, MD, MPH  
  Brigham and Women’s Hospital
- Hartzell V. Schaff, MD  
  Mayo Clinic
- Stephen Ubl  
  Chief Executive Officer  
  AdvaMed
- William S. Weintraub, MD  
  Christiana Care Health System

### Highlights:
- Overcoming Barriers and Challenges in Translational Research
- New Frontiers in Preventive Cardiology: The Promise or the Myth?
- AF Management: Current Status and Future Therapeutic Options
- Structural Heart Disease: Innovations in Intervention
- Innovation in Heart Failure Management
- Utilizing Cardiovascular Imaging to Guide Cost Effective Care
- Minimally Invasive Approaches to Treating CV Disease
- Hot Topics in Aortic and Vascular Disease Management
- Ideal Management of CAD

### CME Calendar | Medical professionals are invited to attend the following upcoming symposia:

<table>
<thead>
<tr>
<th>Event</th>
<th>Dates</th>
<th>Location</th>
</tr>
</thead>
</table>
| **A Primer in Vascular Disease** | Aug. 18-19 | InterContinental Hotel and Bank of America Conference Center  
Cleveland, Ohio |
| **Preceptorship in Carotid Ultrasound Interpretation** | Oct. 3-7 | Cleveland Clinic Heart & Vascular Institute Noninvasive Vascular Laboratory  
Cleveland, Ohio |
| **VEITHsymposium: 38th Annual Symposium on Vascular & Endovascular Issues** | Nov. 16-20 | Hilton  
New York, N.Y. |

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 ccfcme.org.
DrConnect

Make Your Next Report Electronic

DrConnect is an Internet-based service developed to provide our community physician colleagues real-time electronic medical record information about the treatment their patients receive at Cleveland Clinic.

After establishing a DrConnect account with a secure log-in name and password, referring physicians may identify office personnel to receive security rights, allowing DrConnect patient updates to be immediately integrated into a busy medical practice's daily activities and workflow.

A single daily email notification containing the DrConnect Web address (URL) gives you one-click access to all newly released patient-related information, which is presented in easy-to-navigate "What's New" screens for quick access and effective case and time management.

Establishing your own DrConnect account is easy. 1) Log onto drconnect.clevelandclinic.org. 2) Click on the OnLine Signup button. 3) Simply fill out your physician participant information, including choosing a secure password, and submit.
Subscribe Now!

Have the latest cardiovascular health information delivered to your inbox! As a subscriber, you will receive timely and practical cardiovascular information from Cleveland Clinic, including patient care “best practices,” cases studies, our institutional perspective on the stories making the headlines, and more. Log on to clevelandclinic.org/heartphysicianenews and sign up today!