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Cardiology

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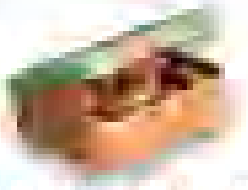
Telemedicine:
Making Medicine More Mobile



SIZING UP THE

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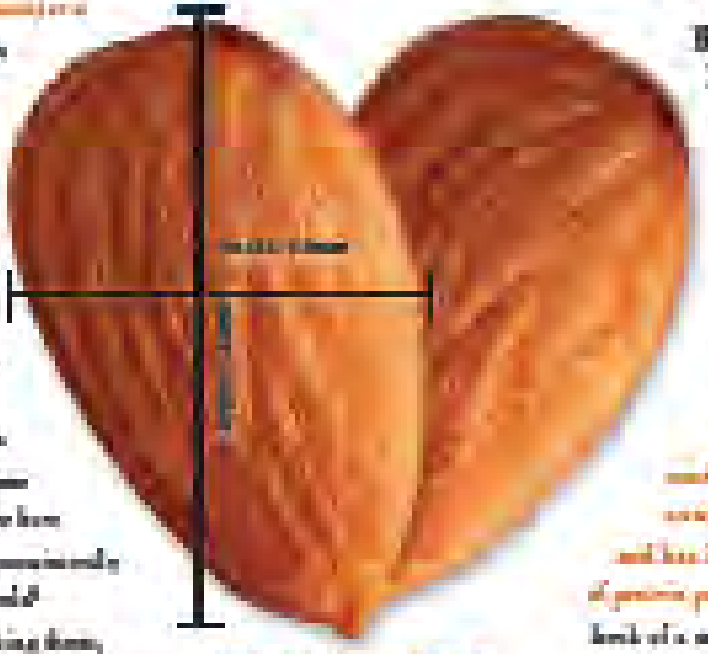

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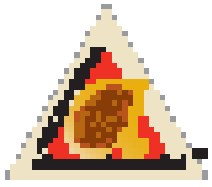


Riding the Wave of Change with Flexibility and Creativity

This will be the final month for me to produce this column. It has been a spectacular year for the College. I am very enthused about the changes we have made in ACC.09 and i2 Summit. We have made some great enhancements such as the increased opportunities for maintenance of certification, expanded venue for our international members and content for general cardiologists in i2 Summit 2009. I am also pleased with all the progress we have made this year in improving the College's collaboration with other international cardiac societies.

We are at the table in this time of change — now let's lead and not be led

But most of all, I hope I have improved our membership's awareness of the pending wave of health care reform. Some may perceive it as a tsunami that will do a lot of damage. However, most see it as a necessary shift in the ocean's tidal processes that will reshape the shoreline of health care. Fixing health care will not be quick or easy. The complex, interwoven issues for the currently insured and the uninsured — and for the insurers, hospitals, physicians and payment — are a lot to take on in a single bill. We also don't know the answer as to what will work, so any movement has to include flexibility and the ability to try various measures.

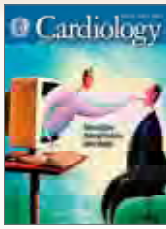
As you know, the ACC, with its wonderful staff and many of its members, has worked hard to be a part of the reform discussions taking place in Washington. Our goal has been to ensure that quality of care is front and center in reform. We have the ability to lead in this area and to teach others. We need help in the support of health IT and demonstration projects to show that by using electronic decision support and point of care measures, we can markedly reduce the variability in procedure utilization and adherence to guidelines and appropriate use criteria. In his recent *New England Journal of Medicine* paper, Elliott Fisher points out that if we could reduce the variability of utilization by a third, in a few years we would have a surplus and not a deficit in Medicare expenditures. We also know that our current system disproportionately rewards facility fees over evaluation and management and have included payment reform as part of our efforts. We have to move from pay for what you do to pay for what you achieve.

Health information technology (HIT) is a major infrastructure improvement and investment. Electronics are part of the escalating costs in health care; however, they are also a key to decreasing costs and ensuring quality. We strongly believe in an interoperable medical record and also endorse a voluntary single patient identifier — one that allows access to patient information wherever the patient is encountered but also includes the opportunity to opt out for those concerned about privacy of the information.

Use of electronics is the subject of several articles in this issue of *Cardiology*; however, two of the articles introduce a different angle that focuses on helping patients who live in more rural areas. These articles portray a creative and patient-centered use of electronics. In "Telemedicine, Making Medicine More Mobile,"

continued on page 4

Inside this Issue



March 2009

Telemedicine: Making Medicine More Mobile

By Stephen Halpern, M.D., F.A.C.C.

In the early 1990s, Bill Gates forecast that advances in computer technology and portability would influence the practice of medicine by enlarging the scope of where and when medical care could be delivered. He envisioned delivery of care beyond the hospital and doctor's office, to include the home and other venues, making medicine truly a portable commodity.

Excited about the prospect of getting involved in this technology, in 1995, several physicians in northern California formed MedStream Telecommunications to deliver remote care to medically underserved, geographically isolated areas. We formed a partnership with a provider of telemedicine diagnostic tools that included stethoscopes, scales and dermatology cameras. Data provided by these tools and videoconferencing technology used to examine and interview patients remotely allowed us to provide medical care to clinics in northern California. This endeavor — which included consultations in behavioral health, dermatology, orthopedics and rheumatology — was financed by a federal grant obtained with our clinical partner, Santa Rosa Memorial Hospital. Over the course of several years, we conducted more than 1,400 patient examinations.

Moving to a Chronic Disease Focus

We eventually realized that many of our remote patient exams and interviews were driven by the need to address complications and ramifications of chronic diseases. In an attempt to identify and treat these complications prior to the need for hospitalization, MedStream elected to shift its core business to management of chronic diseases in the home.

This model shift to home-based telemedicine required a change in technology. Whereas clinic-based telemedicine requires broadband connectivity and complex technical equipment operated by trained medical personnel, home-based systems need to be operated by relatively unskilled patients with access often only to a telephone line.

For this reason, we helped develop software that was easy to use, that didn't require computer knowledge or use of a keyboard and that incorporated tutorials and help screens with video and audio

instruction. We used a simple desktop computer and video camera that required connections only to an electrical wall outlet and telephone receptacle. All medical tools were connected to the terminal through cabling.

Since congestive heart failure (CHF) is the largest single component of national health care costs (about $40 billion annually) and it afflicts 10 percent of the population over 65, we chose to make CHF our initial disease target. For that, we customized our medical peripherals to include a scale, blood-pressure cuff, heart-rate monitor and pulse oximeter. Our software also included a database application that allowed patients to record information on a daily basis provided by these peripherals. Individually tailored alerts notified us immediately of any changes in allowable parameters, such as a more than two-pound weight gain or a reduction in FIO2 to below 90 percent.

Setting Process, Assessing Cost-effectiveness

To demonstrate the cost-effectiveness of our model, we conducted a feasibility study with an at-risk health plan, identifying patients with class III and IV heart failure with at least one index hospitalization within the previous year. Over the course of two years, we managed 30 patients, many of whom had never used a computer, most of whom had co-morbid chronic diseases and some of whom had multiple hospitalizations for their disease.

Each patient had at least one and often two or more initial visits from our nursing and management staff to install the system and train them in its use. This training included demonstrations of how to turn the system on and off, how to use and enter data from the medical peripherals and how to initiate a videoconference. Each patient entered data on a daily basis and engaged in weekly videoconferences with a nurse and monthly videoconferences with a physician. Additional video engagements were possible on an as-needed basis.

Improved video compression technology allowed these videoconferences to be transmitted over plain telephone lines. Images were not quite real time but were good enough to identify facial expressions and patient movement. Every patient was able to operate the system on a regular basis after initial training sessions. At each video visit, the patient was asked a series of symptom-generated standardized questions, with previous responses available for comparison. These responses, along with graphic displays of each patient's database information, allowed us to identify clinical decompensation prior to the need for hospitalization. Despite our patients' lack of technological sophistication, we had a 90 percent retention rate in this feasibility study.

Over an average monitoring period of 12 months, we were able to reduce emergency department visits by 38 percent and hospitalization days by 28 percent. To extrapolate these data, we assumed a national average hospitalization rate of 2.2 times per year for all classes of CHF patients (per Centers for Medicare and Medicaid Services data) and a conservative average cost per hospital stay of $15,293 (per AHRQ 2002). After allowing for the cost of the MedStream service, we projected a net annual cost savings of almost $12,000 per patient.

We also observed non-economic benefits during this study. Patients became much more active and engaged in their own disease management. Most looked forward to seeing graphic time displays of their weight, blood pressure and other data. They also learned to recognize the relationship between bad decisions — such as eating potato chips or fast food hamburgers — and the subsequent increase in blood pressure or decrease in blood oxygen level. Many of our patients had limited social interactions and therefore looked forward to the video visits, taking comfort in having someone "close by" to look after them.

We eventually realized that many of our remote patient exams and interviews were driven by the need to address complications and ramifications of chronic diseases.

In our feasibility study we found broad acceptance of the technology by primary care physicians. We worked closely with each physician of record, offering one of three levels for MedStream intervention in case of patient decompensation —

Level I: notify only

Level II: notify and adjust currently prescribed medications

Level III: notify, adjust currently prescribed medications and prescribe new medications as needed

Well into our trial, virtually all physicians opted for level III, confirming MedStream's service as an adjunct-to, rather than a replacement for their care.

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What the Future Holds

Unfortunately, there remain impediments to the acceptance of telemedicine as a standard model for health care delivery. Medicare continues to limit reimbursement for this service to federally qualified or geographically isolated areas, and private health plans have not yet embraced the technology. Furthermore, adjudication of malpractice standards of care is still pending, especially with regard to interstate commerce.

At some point in the future, the home may become the primary location of basic health care delivery. Improvements in video and audio compression technology, wireless access and peripheral tools will increase accessibility and scope. Virtually all video and audio patient information is now available via remote peripheral tools. We anticipate that nanosensors will allow for collection of other data, such as blood, urine and wound analysis. Further development of haptic or force-feedback technology will allow collection of tactile data, both static and pulsatile.

Much of the seminal work and technological advances in telemedicine have come from the armed forces. Ten years ago in Washington, D.C., a micro-electro-mechanical engineer who worked for a company engaged by the Defense Advanced Research Projects Agency, a development organization for the Department of Defense, shared a document delineating the outfitting of the foot soldier of the future. The soldier's uniform would incorporate nanosensors and actuators to detect and treat biological and chemical insults, as well as common diseases and injuries. As a model for future health care delivery, it is truly remarkable how close to reality this technology has come.

Halpern is with North Bay Cardiology, Inc., Santa Rosa, Calif., and MedStream.

From the President

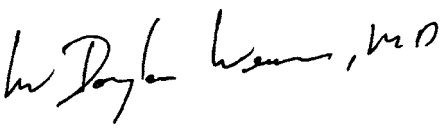
continued from page 1

Stephen Halpern, M.D., F.A.C.C., writes about the system that he and several other physicians developed to deliver care to patients who live in remote, medically underserved areas in northern California. **Raju Ailiani, M.D., F.A.C.C.,** in Onalaska, Wis., also offers some advice based on his practice's experiences in "What We Have Found Using Telemedicine."

Finding ways to care for the underserved motivated these physicians. The same was true with the physician volunteers in the February *Cardiology*. Perhaps their work and purposes can re-inspire all of us as we face the challenges ahead. If we falter, we can look to the profile of **Henry McIntosh, M.D., M.A.C.C.,** written by **Rick Chazal, M.D., F.A.C.C.,** in this issue. Henry gave so much of himself in so many ways to his family, his patients, his country and the world. His saga epitomizes "Man Helping Man," the statue that stands in front of Heart House, Washington.

My work with and for you and the ACC will not stop at the end of my year as President. There is still much to do to make our profession and our organization an even more effective one for patients. I encourage you to get and stay involved in these discussions as health care reform moves forward. The ACC leadership needs your input; please continue to provide it by e-mailing *president@acc.org* or writing a letter or article for *Cardiology* (*adees@acc.org*) or e-mailing me anytime (*wweaver1@hfhs.org*).

We are at the table in this time of change — now let's lead and not be led, or — as Jack Lewin says — we will be on the menu. Thank you all for your help and support.



W. Douglas Weaver, M.D., F.A.C.C.
ACC President

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What We Have Found Using Telemedicine

By Raju Ailiani, M.D., F.A.C.C.

Telemedicine: *the evaluation of patients remotely with the help of audiovisual communication equipment, which enables a limited, technically feasible physical examination.*

In the Gunderson Lutheran Health System, we use telemedicine in several specialty areas including cardiology and cardiovascular surgery. Within our cardiology practice, we believe telemedicine is suitable for follow-up visits related to the discussion of test results and medication adjustment.

Occasionally, we have used it for first-time consultations in which the physical examination is expected to contribute little to the overall clinical picture. During these visits, the provider can ascertain a detailed history and perform a limited physical examination encompassing vitals, skin inspection, volume assessment, cardiac auscultation, lung auscultation, ECG review and include a review of home blood pressure records. Face-to-face discussions with patients about their individual management plans can also be conducted remotely.

Of course, for patients with complex, valvular or congenital heart disease and those with advanced congestive heart failure, telemedicine is not really suitable.

Telemedicine offers advantages for both patients and providers. Patients — or providers, for that matter — avoid having to travel long distances, which saves time and money. Patients will also have improved access to their physicians because the schedule for telemedicine visits can be more flexible.

Providers, who are located at the main medical center in our telemedicine system, have immediate access to additional patient information, such as previous ECGs and catheterization films, and are able to review the data while they are "seeing" the patient. If they were seeing the patient at a remote clinic, the clinic would need to install expensive viewing workstations to enable that kind of access.

Problem Areas Do Exist

Again, complex and hemodynamically fragile patients are not good candidates for telemedicine. We have also found that some patients and providers are apprehensive about using telemedicine. However, by visiting referring providers to explain how the system works and inviting them to conduct trial runs, we have usually been able to ease their apprehensions. Likewise, patients who are prepared for their visit ahead of time are more comfortable with being seen remotely. Some patients seem to really enjoy seeing themselves in the picture-in-picture format on their remote screens. In many circumstances, patient preparation may be nothing more than obtaining a patient's verbal consent during a prior visit, particularly if it is going to be a follow-up visit.

Any perceived disadvantages that stem from the lack of personal touch can be outweighed by greater flexibility in scheduling and the other advantages we have cited. Patients appreciate not having to wait two weeks until a provider can return to the outreach location for an appointment, and we have seen patient anxieties decrease after a successful and satisfying first telemedicine visit.

Housekeeping Details

When you are setting up a telemedicine practice, availability of space and acquisition of appropriate equipment are key considerations. We use custom-built carts with peripherals, including a stethoscope, a patient examination camera and an otoscope. In the five years that we have used this equipment, we have been satisfied with its cost and reliability. Before setting anything up, we recommend that you conduct careful research of systems and that you visit established telemedicine programs.

In our experience, telemedicine visits can be billed as "limited physical exam" and "time spent in counseling," just like any other outpatient visit. However, we recommend that you meet with local payers to determine the prevailing billing requirements before venturing into telemedicine.

Offering telemedicine services has been very successful at our institution. We believe the keys to our success have centered on a robust equipment selection, extensive staff education, patient preparation and immediate access to information systems personnel at both ends for troubleshooting. Efforts to improve our system are ongoing, and we conduct patient and referral provider satisfaction surveys periodically for feedback and suggestions.

I would like to thank these members of our team for their technical assistance and guidance in preparing this article — Vicki McHugh, M.S.; Umang Patel, M.D.; Debra Kabat, A.P.N.P.; Diane Larson, R.N.; Cathy Thompson, R.N.; Elaine Sperbeck, R.N.; Judy Rothlisberger, R.N.; Deb Watson, R.N.; Claire Shannon-Klann, M.S.; John Sake, B.S.; Pam Chenier, A.D.; Beth Sauer, A.D., and Paul Fisch, A.D.

Ailiani is with Gundersen Lutheran Health System, Onalaska, Wis.

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Interoperability Key to Coordination of Care

The majority of patients in the United States receive their health care from more than one provider, which under the current health care system often results in errors, duplication and lack of coordination across sources and sites of care. The adoption and use of health information technology (HIT) is increasingly viewed as key to improving this coordination, while also contributing to cost reductions and increased quality.

With new government initiatives and funding going to support HIT, discussions about interoperability and what is needed to make it happen in the near future are expected to be fast-tracked in the coming months. According to the Certification Commission for Health Care Technology (CCHIT), "achieving interoperability means setting standards so one system can talk to another and exchange data accurately, efficiently and securely."

Doing this well will not only provide payers, providers and other stakeholders with the data necessary to accurately measure cost and quality, it will ensure patients are getting the right care at the right time. It will also enable patients to have better and more complete information on their health — empowering them to become more involved in decisions about their health.

"Without interoperability and health information exchange, health information will remain in proprietary silos in which the health care enterprise hopes to gain comparative advantage by imposing high costs on consumer switchover and by exercising market leverage over small-niche players such as solo physicians and community hospitals," said David Brailer, the former national HIT coordinator in the U.S. Department of Health and Human Services in a 2005 *Health Affairs* article.

Even more important, without interoperability, the true potential of electronic health records (EHRs) will not be reached. Interoperability could allow for decision support tools at the point of care, improved monitoring of patient adherence to medications, timely distribution of patient education materials and/or FDA warnings about drug or device recalls and much more. "The future of interoperability is to bind together a wide network of real-time, life-critical data that not only transform health care but become health care," says Brailer.

The American College of Cardiology (ACC) is working to support interoperability efforts in a number of ways, including involvement with CCHIT. CCHIT has developed a set of testing criteria for ambulatory EHRs that focuses on the functionality desired for the primary setting and that span the areas of functionality, security and interoperability. The benefit of CCHIT is that you know the application will meet certain standards. In addition, the College's new IC^3 Program® is currently working with several EHR vendors to meet the data collection standards and export requirements of the program. Key IC^3 objectives include facilitating coordination of care across multiple providers and providing real-time reporting of performance measures and clinical guideline recommendations.

For more information on HIT, visit *www.acc.org/healthit*. For more on the IC^3 Program, go to: *www.ncdr.com*. In addition, ACC Informatics Committee Co-Chair **James Tcheng, M.D., F.A.C.C.,** discusses the role of HIT in improving clinical quality and the tools and resources available to ACC members interested in implementing HIT in a recent Cardiosource Video News (CVN) segment available at *www.cardiosource.com/cvn/*.

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1949 Helen Faith Reichert, wife of Founder Philip Reichert, M.D., F.A.C.C., becomes unofficial secretary of the fledgling ACC. She takes notes while the founders meet around her dining room table and keeps them in a box behind the drapes when the College is not meeting.

Finding Lifelong Learning at ACC.09

By Henry E. Kim, M.D., F.A.C.C.

Significant numbers of cardiologists currently hold time-limited American Board of Internal Medicine (ABIM) board certification in cardiovascular diseases, interventional cardiology and clinical cardiac electrophysiology and will be required to go through the Maintenance of Certification (MOC) process. Cardiologists going through MOC in interventional or cardiac electrophysiology will be required to maintain current certification in general cardiovascular diseases as well.

Recognizing the number of members going through the MOC process and in response to attendee feedback asking for more sessions that cover core clinical topics in cardiology, the ACC.09 Program Committee launched a new program promoting lifelong learning. The ACC.09 Lifelong Learning Program comprises two components — MOC and clinical core curriculum.

Meeting MOC Needs

First, sessions dedicated to MOC for both general cardiovascular disease and interventional cardiology will be held each day of ACC.09. Expert session leaders will guide attendees through an interactive learning experience using ABIM MOC multiple-choice modules and an audience-response system. At the end of each session, participants will be able to obtain 10 MOC points for each unique module at nearby computer workstations by taking the post-test. Space is very limited, and participants must already be enrolled in the ABIM MOC process. As an added benefit to ACC.09 attendees, there is no additional cost, but participants must pre-register for these MOC-learning sessions.

Participation in sessions for the four unique modules will enable attendees to obtain up to 40 of the necessary 100 points required as partial fulfillment of the MOC process. ABIM representatives will be on site to assist with registration for the ABIM MOC program and to answer any questions.

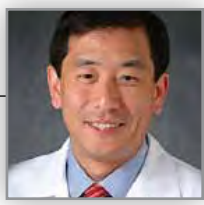
Addressing Core Curriculum Request

Second, recognizing the explosive growth that has taken place in the cardiology knowledge base, the Program committee incorporated a new Lifelong Learning Core Curriculum in the ACC.09 program.

These Core Curriculum sessions, which take place Monday, March 30, and Tuesday, March 31, will provide didactics in more fundamental core-curriculum topics essential to the practice of clinical cardiology. In addition, this program may also serve as partial preparation for the ABIM board examination in cardiovascular disease.

The Core Curriculum Program has 11 general sessions of 90 minutes each. The sessions encompass the broad spectrum of cardiovascular disease and will also include "Read with the Experts" panels in nuclear cardiology and cardiac echocardiography. One additional session is dedicated to a review of multiple-choice questions from ACCSAP 7. Speakers for the didactic sessions will integrate two to three multiple-choice questions in ABIM examination format to be used with an audience-response system, thus enhancing the interactive educational experience.

All sessions that are part of the Lifelong Learning Program will be held in a geographically unique Lifelong Learning Educational Pavilion throughout the meeting. Both the MOC and Core Curriculum sessions — part of the Lifelong Learning program — continue ACC's great tradition as a leader in education and in promoting professionalism in the field of cardiology.



Kim is the program topic coordinator for Clinical Skills/ Certification Maintenance.

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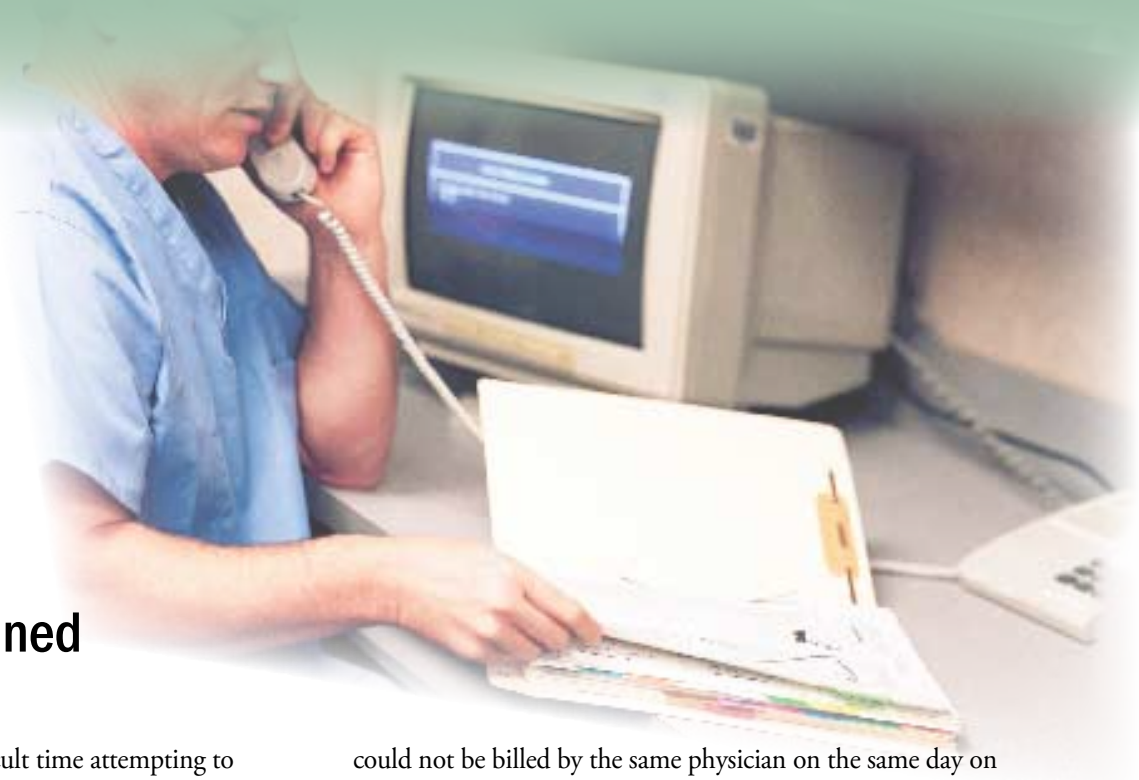

Understanding Unpaid Claims: The NCCI Explained

Patients often have a difficult time attempting to translate the explanation of benefits that they receive following medical care, whether for a simple physician visit or a long hospital stay.

Unfortunately, this information is not always more understandable to many physicians. Unpaid claims can be confusing, and there are a number of reasons why a Common Procedural Terminology (CPT) code submitted to Medicare or a private insurer may not be paid. One of the ways claims are denied is through edits under the National Correct Coding Initiative (NCCI).

The NCCI was launched in 1996 in the Medicare program. The initiative created combinations of codes that could not be billed by the same physician on the same day on the same patient. If such code combinations were billed, one of the codes would be rejected and not paid. Typically, edits are based on either instruction in the CPT book (e.g., do not report 93320 with 93306), standards of CPT coding (e.g., only report one office visit in a day) or standards of medical practice.

The ACC is given the opportunity to comment on Correct Coding Initiative (CCI) edits and request changes if it believes them to be inappropriate. For example, as part of a number of new cardiac device monitoring codes for 2009, a CCI edit was put in place that prohibited the billing of codes 93294 and 93295 with code 93296. Codes 93294 and 93295 are used to report the interrogation of pacemakers and implantable cardioverter-defibrillator systems and 93296 is used to report the technical support of these interrogations. With this edit in place, physicians who provided both services were not paid for 93296. Based on input from the ACC, CMS agreed to remove the edit on April 1, retroactive to Jan. 1. This would allow physicians to resubmit or hold claims in order to be paid for services provided to Medicare patients between Jan. 1 and April 1.

In some cases, edits may be overridden through the use of a modifier, particularly modifier 59, which is used to report a distinct procedural service, and modifier 25, which is used to report a significant and separate evaluation and management visit on the same day as a procedure. Modifiers should not be used routinely to bypass edits, but may be appropriate when the two services reported are independent of one another.

Codes that are affected by CCI edits will be marked with claim adjustment codes that will state a portion of the service has been paid or that the service is not paid separately. A complete list of CCI edits can be found at *www.cms.hhs.gov/NationalCorrectCodInitEd/01_overview.asp#TopOfPage*

Recovery Act Signed into Law

President Barack Obama on Feb. 17 signed into law the "American Recovery and Reinvestment Act of 2009" (ARRA). The new law contains $1 billion in funding for prevention and wellness programs, $10 billion in research funding for National Institutes of Health and $1.1 billion in comparative effectiveness research (CER) funding. The law also contains $19 billion in incentives for "meaningful users" of health information technology (IT).

ARRA authorizes incentives for health IT adoption for physicians equal to 75 percent of their allowable Medicare Part B charges, subject to caps. Physicians can receive payments of up to $18,000 for implementing certified health IT in 2011 or 2012. In subsequent years, this incentive payment drops to $12,000; $8,000; $4,000 and finally $2,000. However, physicians who do not adopt a certified health IT system are subject to penalties starting at -1 percent in 2015, -2 percent in 2016 and -3 percent in 2017.

"The ACC is excited about the passage of the Recovery Act because of its funding for prevention and wellness, research and health IT," says ACC President **Douglas Weaver, M.D., F.A.C.C.** "The development of specific regulations regarding health IT provides an opportunity to develop a 'business case' for medical providers to make the time and monetary investment in implementing an EHR."

Comparative Confusion

Significant confusion was created regarding the ARRA section on CER. Specifically, some were concerned that a new Federal Coordinating Council for CER created by the Act would be able to limit access to health care items or services due to cost. However, the final language states that funds are to be used only to conduct CER research and are not intended "to be used to mandate coverage, reimbursement, or other policies for any public or private payer."

The ACC supported the health provisions of ARRA, including the final CER language, in a letter to conferees on Feb. 11. The letter states, "ACC believes the goal of comparative clinical effectiveness research should be to provide the data necessary to better inform physician/patient decision making in the future, and the final provision must not contain recommendations establishing national clinical guidelines nor contain national coverage recommendations." The letter is available at *qualityfirst.acc.org*.

Recommendations

Given the many benefits of using health IT, including reduced administrative cost and medical errors, the ACC highly encourages members to take advantage of the federal funding available to implement health IT.

The ACC recommends that members who do not currently use an EHR begin the process of adoption in 2009 and implement a system no later than 2010 in order to receive the maximum bonuses available. Practices interested in implementing EHR systems should be sure that vendors provide a guaranteed upgrade path that ensures their products will meet certification criteria as established by the Department of Health and Human Services (HHS). Including this requirement will also benefit practices interested in purchasing and implementing systems in 2009.

The ACC will provide updates on the program as they become available from HHS. Visit *acc.org/healthit* for an FAQ on the health IT incentives, and EHR tools and resources.

Corrections to the ACC Coding Guide

In the February issue of *Cardiology*, the ACC included a special "Guide to 2009 Cardiology Coding and Payment Changes." This included several improperly-numbered edits. On page 4, "remote services – codes 93294-93297 are billed once every 90-day period," should read 93294-93296. On the same page, "a physician/practice may not report 93294-93297 if the service is less than 30 days," should read 93294-93296. In the Remote Codes table on page 5, the final two codes should be 93297 and 93298, not 93296 and 93297. A corrected copy of the guide is available on *acc.org*, in the Advocacy section.

ACC Hosts Largest MDI Strategy Roundtable

The ACC last month hosted the first Medical Directors' Institute (MDI) Strategy Roundtable of 2009 at Heart House in Washington, D.C. The all-day meeting had its largest attendance of 80 participants including 15 health plans and Centers for Medicare and Medicaid Services' medical directors. The attendees divided into four breakout groups: Merging Administrative and Clinical Datasets; Cardiovascular Practice Recognition Program (CVRP); CCTA: Assessing Quality and Value; and Physician Measurement and Reporting. The sessions provided an opportunity for ACC members, medical directors and stakeholders to discuss and give feedback on the various topics. MDI Chair **Paul Casale, M.D., F.A.C.C.,** will use the work from this roundtable to continue the interactions between medical directors and FACCs.


Casale

House, Senate Reintroduce HEART Act

Sens. Debbie Stabenow (D-Mich.) and Lisa Murkowski (R-Alaska) and Reps. Lois Capps (D-Calif.) and Mary Bono Mack (R-Calif.) in February re-introduced the "HEART for Women Act" (H.R. 1032/S. 422). The bill would:

- Provide for programs to educate health care providers and women about the prevalence, warning signs and treatment of heart disease in women
- Authorize Medicare to conduct an awareness campaign for older women
- Expand the WISEWOMAN (Well-Integrated Screening and Evaluation for Women Across the Nation) to improve heart disease and stroke screening for low-income women to all 50 states
- Require the FDA to report health data by gender, race and ethnicity in order to shed new light on how drugs work among specific populations

The ACC signed on to a joint letter in support of the bill. The letter states the need for "cardiovascular research focused on gender-specific disease indicators to shape guidelines for women, which should improve care and treatment." The ACC encourages members to contact their representatives and urge them to co-sponsor the bill. Dial the Capitol Switchboard at (202) 224-3121 to be connected to your representatives.

Advocacy Briefs

Obama Recommits to Reform, Releases Budget

President Barack Obama last month released his $3.55 trillion fiscal year 2010 budget proposal. The budget proposal, which serves as a guide to Congress as it creates a 2010 budget, sets aside a reserve fund of $630 billion over 10 years that will be dedicated to financing health reform.

The proposal assumes $329.6 billion in spending to cover Medicare physician payment reform over 10 years. It recommends reforming the physician payment system to give physicians incentives to improve quality and efficiency. It also recommends instituting prior authorization for imaging services and addressing physician ownership in specialty hospitals.

Overall, the ACC strongly supports President Obama's commitment to reforming the nation's health care system. However, the ACC supports physician-owned specialty hospitals and prefers other methods of addressing imaging utilization than the use of radiology benefit managers. As Congress prepares the budget and further considers health care reform, ACC members are encouraged to convey these important messages to their members of Congress. To get involved, go to: *www.capitolconnect.com/cardiology/alert_detail.aspx?AlertID=263*. For an ACC Summary, go to: *qualityfirst.acc.org*.

Pfizer to Disclose Physician Payments

Pfizer on Feb. 9 announced that by early 2010 it will disclose most of the payments it makes to physicians and other health care professionals, "to boost trust in its products and collaborations," Reuters reports. The payments for consulting, speaking engagement and all phases of clinical trials will appear on the company's Web site. However, the disclosures will not include payments to contributors to medical journal articles, such as technical medical writers. However, in some cases, compensation for these writers will be acknowledged within the article, but will not include specific payment details, according to the company.

Supporting Research for Guidelines Crucial, *JAMA* Article States

The *Journal of the American Medical Association* on Feb. 24 released an article by Tricoci, et al., on the importance of funding clinical research, including comparative effectiveness research, to determine the best ways to diagnose and treat heart disease. The paper is an important message to the new Administration, Congress and the nation about the need to invest more in science, medical evidence and clinical comparative effectiveness. However, accompanying the article is an editorial that suggests that ACC/American Heart Association clinical practice guidelines lack critical evidence support and are "cookbooks" to practicing medicine. ACC President Douglas Weaver says, "… [T]o remove clinical practice guidelines based on the best available evidence would add even greater variability with medical mistakes and inadequate value for the dollars spent." Go to *lewinreport.acc.org* for more.

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Puerto Rico Chapter Earns Top Distinction

Because of its teamwork, passion and dedication, the Puerto Rico Chapter of the ACC earned the College's top distinction for 2008, the HERO ("Heroic Efforts creating Results and Opportunities") award. The award is given to the three chapters that show the most promise in upholding the ideals and mission of the ACC: education, advocacy and quality.

The Puerto Rico Chapter has a unique set of challenges to overcome. As a territory of the US, Puerto Rico has no voting member in the US Congress. This makes it difficult to participate in health care reform discussions on a national level because of the lack of a national representative to champion their cause.

Lack of representation and status as a territory leads to another unique challenge — health care professionals receive 20 percent less in reimbursement under Medicare. This can make it difficult for providers to meet their overhead costs and can limit access for patients.

Despite these challenges, the Chapter thrives. Its annual meeting is extremely popular and has a high participation rate by members. "These meetings bring together the best of the great universities into a single package," says **Chapter President José Rivera del Rio**. In addition, they also feature leaders in cardiovascular education. The 2009 meeting was attended by 10 former national ACC leaders.

Patient education is also a strong focus of the Puerto Rico Chapter. For the past 10 years, the Chapter has hosted one-day public health symposia that feature lectures on heart health and include entertainment. Continuing this successful venture, the 2009 "Communitarian Convention" will be held in four towns simultaneously. It will feature FIT and CCA lecturers, and potentially a patient speaker. The topic will be management of congestive heart failure.

Moving forward, the Puerto Rico Chapter plans to build on its strengths. In 2009 alone, the Chapter will hold two new symposia on intervention and non-invasive cardiology, as well as monthly conferences at which FACCs and CCAs can earn continuing medical education credits. The Chapter is also working with its new governor on Medicare reimbursement issues, as well as local legislation and health issues.

For more information on the Puerto Rico Chapter, visit: www.*acc.org/chapters*.

States Hold Legislative, Heart Healthy Days

Several ACC chapters in February held legislative and heart healthy days. In Arizona, the Chapter held its first-ever legislative day in Phoenix. Chapter President-elect **Kris Vijay, M.D., F.A.C.C.,** and several other chapter members met with 15 state lawmakers to discuss issues of importance to the cardiovascular community, including imaging, automated external defibrillators and access to care. Although the legislative climate in Arizona is tense, the day was a great opportunity for members to meet their own legislators and those in key positions.

In Indianapolis, 25 Chapter members met with representatives from the American Heart Association, Indiana State Medical Association, the state Chamber of Commerce and several state lawmakers. The event featured a presentation by Indiana First Lady Cherri Daniels, who discussed her "Heart to Heart" initiative to promote women's heart health and potential partnerships with the Chapter. The following day, the members met with more than 50 elected officials to discuss the passage of a smoke-free bill and how federal dollars for health information technology could be of use to the state.

The Maryland Chapter held its 2nd Annual Heart Healthy Day in Annapolis. Fifty state legislators and their staff participated in screenings delivered by FACCs and CCAs. After an initial blood pressure and body mass index screening, the members accessed Cardiosource from laptops for further consultation. The legislators and staff were impressed that ACC members took the day out of their busy schedules to provide these services and educate them on steps they can take to improve their cardiovascular health. Through the event, the Chapter was able to raise awareness of issues in cardiology outside of typical communication channels and to enhance its reputation with lawmakers.

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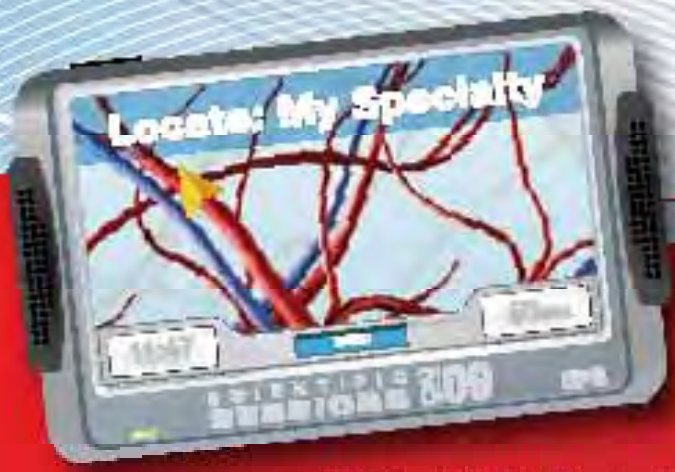

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CV Workforce Report: Success Calls for Change, Innovation

By George P. Rodgers, M.D., F.A.C.C., and Jamie Conti, M.D., F.A.C.C.

In the 1990s several notable health care consultants predicted a major glut of cardiologists. They thought that managed care would largely eliminate the need for specialized cardiovascular services. This led to an across-the-board 20 percent reduction in cardiovascular fellowship positions, and in 1997, the Balanced Budget Act (BBA), which capped funding for fellowship positions, made these alterations permanent. As a result, we emerged in the 21st century with a perceived and actual deficit of cardiologists that is worsening. This story, already familiar to many of us, is well chronicled in the ACC's 2004 35th Bethesda Conference on the cardiovascular workforce.

In 2006, ACC President **Steve Nissen** established a workforce task force to evaluate, quantify and facilitate a solution for this problem. Using open or unfilled cardiology positions as our metric, we surveyed more than 300 private and academic practices in the U.S. We found a deficit of more than 3,500 cardiologists, according to the varied groups and practices that hire them. We contracted with the Lewin Group and the Association of American Medical Colleges to explore the problem further.

We presently have 23,681 practicing cardiologists in the U.S. The majority are Caucasian (64 percent) followed by Asian Indians (30 percent) and African American or Hispanic (6 percent). Of these, only 12 percent are women. Supplying this workforce are 800 fellowship graduates each year.

The Problem is Worsening

The shortage is likely to worsen over the next 15 years. The Baby Boom generation is entering the age at which cardiovascular disease is more prevalent. Although there has been a slight decrease in the prevalence of cigarette smoking, there is a major epidemic of obesity — and the concomitant metabolic syndrome and adult onset diabetes — in this population.

Today's graduates have a different attitude towards life and career and want and seek a more sustainable and enjoyable work environment. This new approach, dubbed "work/life balance," will inevitably lead to fewer hours worked per week per individual cardiologist. In addition, if the changes expected with health care reform succeed, they will lead to coverage of more Americans, which translates into a greater demand for cardiovascular services.

How can we respond to this anticipated shortage? One possibility is to encourage currently practicing cardiologists to remain in the workforce longer. Unfortunately, we found little or no part-time opportunity in most practices. This phenomenon potentially drives early retirement because well-trained and experienced cardiologists may no longer be able or willing to handle full call responsibilities. The absence of part-time opportunities further discourages young women from entering the field.

Another potential solution is to increase the number of fellows trained per year. The 35th Bethesda Conference Report clearly lays out the need for advocacy and innovation. We must pilot and implement a shorter track for training beyond medical school. The current track of general internal medicine and cardiology requires at minimum six years. If we could shorten this to five years, it might help to increase fellowship graduates. We must also advocate for funding of more fellowship positions in general and create incentives to attract more under-represented minorities to the field.

Clearly, these are all long-term solutions. The train has already left the

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1984 The first ACC/AHA clinical guidelines publish. 2009 marks the 25th anniversary.

station, and we cannot possibly run fast enough to catch it. Couple this with uncertain financial times for practices and probably unfounded fears of an over-correction of the workforce supply, and we face challenging issues.

Transforming the Delivery of Care

We need to seek solutions that can help in the near term. In our survey of practices, we found that mid-level providers, such as nurse practitioners and physician assistants, are greatly under-utilized. Still, some practices have successfully integrated mid-level providers into their practices. These groups have found that mid-level providers generate one third of the relative value units of a typical cardiologist, and they generate gross revenues three to four times greater than their incomes. Also, mid-level providers become valuable members of the cardiac care team as they provide additional care and patient education.

We must also recruit the patients themselves as part of the care team. We need to take advantages of resources such as CardioSmart, the College's physician/patient education Web site, to enhance the medical literacy of our patients. Personal health records may also encourage more active participation and self-monitoring by patients.

The College is also working on a team care curriculum to help practices re-engineer the cardiology health care delivery team and has developed curricula for nurse practitioners who wish to become more specialized in cardiovascular care. These efforts improve the training of the expanded delivery team.

Electronic medical records with embedded guidelines may further help to improve the efficiency of delivery of quality care to our patients and facilitate the monitoring that enables continuous improvement to take place.

Practices need to be innovative in developing part-time opportunities because doing so may help prolong the careers of experienced cardiologists and encourage more women to enter the field. Innovation must also take place with regard to call schedules, which many find arduous and disruptive for family life. Medical groups that are hoping to recruit new graduates from fellowship must address the importance of work/life balance issues if they hope to be successful in attracting fellows. Most professional recruiters state that today's graduating cardiology fellows each have at least six good job offers.

Practices need to be innovative in developing part-time opportunities because doing so may help prolong the careers of experienced cardiologists and encourage more women to enter the field.

Finally, we need to work with our colleagues in practice administration, who can teach us how to manage our limited resources and delivery of quality care. This new millennium will not be business as usual. Those practices that succeed will have to continue being innovative. They must keep their eyes on the goal, place the patient at the center of the care environment and develop the processes and team to accomplish the task.

Rodgers

Conti

George P. Rodgers, M.D., F.A.C.C., is chair and Jamie Conti, M.D., F.A.C.C. a member of the Workforce Task Force.

1950s

ACC Founder Franz Groedel demands that all ACC education impart "a chunk of useful knowledge" for practitioners.

FRANZ GROEDEL, M.D.
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ALFRED BOVE, M.D., F.A.C.C.
PRESIDENT, 2009

ACC Then and Now:
60 Years of Quality in Education

Caring, Collaboration, Mentoring and Quality Patient Care

By Melanie T. Gura, M.S.N., R.N., C.N.S.; Eileen Handberg, Ph.D., M.S.R.N.; and Abigail Matos, M.D.

We, as members of the cardiovascular team, must use our skills and resources to care for our patients, collaborate with our colleagues and mentor other CCAs. Those CCAs new to our specialty will require guidance, encouragement and mentoring. Those of us who are veteran practitioners must come to realize that it is our professional responsibility to collaborate and mentor others. Doing this will promote quality patient care, lead the way for research promotion and create the opportunity to network and interact with colleagues across the U.S.

This year, we had the good fortune to start a collaborative journey with the CCA ACC Puerto Rico Chapter. We were invited to participate as guest speakers at the Cardiac Care Associates meeting during the 20th Annual Scientific Congress of the ACC Puerto Rico Chapter, held Jan. 23 – 25, in San Juan. Approximately 75 CCAs attended the multilingual presentations. In addition to the professional and clinical presentations, one session featured a review of the recently published American Nurses Association Scope and Standards of Cardiovascular Nursing.

The conference reinforced evidence-based practice, and we had the opportunity to learn more about nursing education and the recent development of nurse practitioner training programs in Puerto Rico. We also learned more about nursing in Puerto Rico. For example, according to our hosts, Puerto Rico is not experiencing a nursing shortage because most graduates continue to practice there after completing their formal nursing education.

Patient-Centered CV Health Education

One of the most stimulating aspects of our collaborative endeavor was the opportunity to learn about the patient-centered cardiovascular health education programs conducted by the Puerto Rico Chapter. This past year, the Chapter held their 8th community symposium. The program included lectures, educational programs and clinics organized for the local community and patients with cardiovascular-related medical problems. Spouses, sons, daughters, grandparents and in-laws were invited to attend.

All of the presentations were given by members of the Puerto Rico Chapter. Additional information was provided in a separate program in Spanish specifically designed for the registered patients. Members of the chapter were available before, during and after the seminar to answer questions and clarify specific situations. More than 600 participants attended the program.

This impressive effort was driven by Chapter's desire to provide their patients and the general public with useful health information so that they could become educated partners in their own cardiovascular health care. It was inspiring to hear from **Ana Santana, R.N., M.S.N.; Abigail Matos, M.D.; Miriam Nieto, M.D.; and Rivera del Río, M.D., F.A.C.C.,** about the excitement that surrounded the program. The Chapter plans to continue their efforts to offer additional programs in the upcoming years.

We were also able to network with many of ACC's present and past leaders, including incoming ACC President **Alfred Bove, M.D., Ph.D., F.A.C.C.** He was energized to hear about these patient-focused educational efforts because they parallel his interest in encouraging ACC's patient-centered efforts, such as the CardioSmart patient education Web site. He commented that CCAs play a prominent role in these efforts and encouraged us to think of ways of using the strength of our chapters to have a larger scale, more positive impact on our patients.

The Puerto Rico chapter has set a standard by starting the patient-centered education effort; however, we believe every ACC chapter has the ability to offer equally impressive patient-centered programs. As CCAs, we need to network within our own chapters to assist in the development of these programs.

Gura is director of pacemaker and arrhythmia services, Northeast Ohio Cardiovascular Specialists, Hudson, Ohio. Handberg is assistant professor of medicine, Shands at the University of Florida, Gainesville, Fla. Matos is at the University of Puerto Rico Mayaguez, P.R.

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1965 William D. Nelligan, F.A.C.C., becomes executive director of the ACC. He continues in this role for 27 years, becoming an honorary Fellow and beloved leader.

Remembering Henry McIntosh, M.D., M.A.C.C.

By Richard A. Chazal, M.D., F.A.C.C.

On Dec. 26, 2008, the American College of Cardiology lost a past president and visionary leader; our country lost a patriot and hero; and the world lost a humanitarian whose actions gave meaning to the phrase, "love of fellow man."

Born in Gainesville, Fla., and reared in West Palm Beach, Henry McIntosh, M.D., M.A.C.C., graduated from Davidson College in 1943. He then entered the Army Airborne but was quickly transferred to the OSS (Office of Strategic Services, the forerunner of the CIA).

While with the OSS, he became a member of the Jedburgh, an elite group of World War II commandos. The Jedburgh were three-man teams comprising a US or British officer, a Resistance fighter and a radioman. These teams were parachuted behind Nazi lines in occupied Europe for missions involving reconnaissance, sabotage and guerilla warfare in concert with local resistance fighters. Years later, on the 50th anniversary of D-Day, Henry would return to France to be hailed as a hero by the families of villagers who remembered him as a young officer fighting for their freedom.

After D-Day, the OSS dropped Henry behind Japanese lines in China, where he fought until the end of the war. His wife Harriet once remarked that he was a bigger hero in China than in France.

As the war ended, Henry was recruited to stay with OSS and a group who later formed the CIA, which included eventual CIA director William Colby, himself a Jed. However, he opted to return home and attend medical school at the University of Pennsylvania. A 20-year stint at Duke followed, culminating in the chief of cardiology position from 1966 to1970. He then became chairman of medicine at Baylor from 1970 to 1977. In 1977, he returned to Florida and joined the staff of the Watson Clinic in Lakeland until 1992. He practiced preventive cardiology at St. Joseph's Hospital in Tampa for several more years.

During his tenure in academia, Henry helped pioneer many of the diagnostic and therapeutic modalities now in common use. While his career as a soldier, teacher and physician is dramatic, it was Henry's accomplishments as a leader, humanitarian and voice of social conscience that most marked his life.

He was one of the first vocal critics of the tobacco industry, touting health concerns at a time when such a position was not yet popular. In 1974, he guided the ACC as president at a time when the College was expanding its role. Along with a core group that included names such as Fisch, Dreyfus, Swan and Weinberg, he cultivated involvement and leadership in American cardiology and in ACC.

In 1984, he formed Heartbeat International, an organi-

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1951 *Transactions of the American College of Cardiology* publishes for the first time, including papers presented at the first national meeting. In 1958, Simon Dack becomes editor of the *American Journal of Cardiology*. *The Journal of the American College of Cardiology* does not launch until 1983.

zation devoted to providing advanced cardiac care in underserved parts of the world. His insight led to collaboration with Rotary International, an ongoing philanthropy organization that has benefited countless patients who would not otherwise have had such help.

In 1985 he co-founded the Council on Geriatric Cardiology, now the Society of Geriatric Cardiology. In the same year, Henry and others helped to form the first ACC Chapter in Florida. He continued active participation in the Chapter for 20 years. He continued involvement in ACC and AHA also and was well known to a generation of attendees at scientific sessions for leading daily early morning runs for hundreds of participants — into his mid-70s.

In retirement, McIntosh continued his work with Heartbeat International, as its voice and main fundraiser. Perhaps the most telling example of his humble service to others came late in life. When he was no longer confident in his skills as a clinician, the former Duke chief of cardiology, Baylor chair of medicine and president of ACC volunteered as a receptionist at a clinic for the uninsured in Lakeland. He related his joy in continuing to interact with patients and was particularly enthralled with handing out lollipops to children in the clinic.

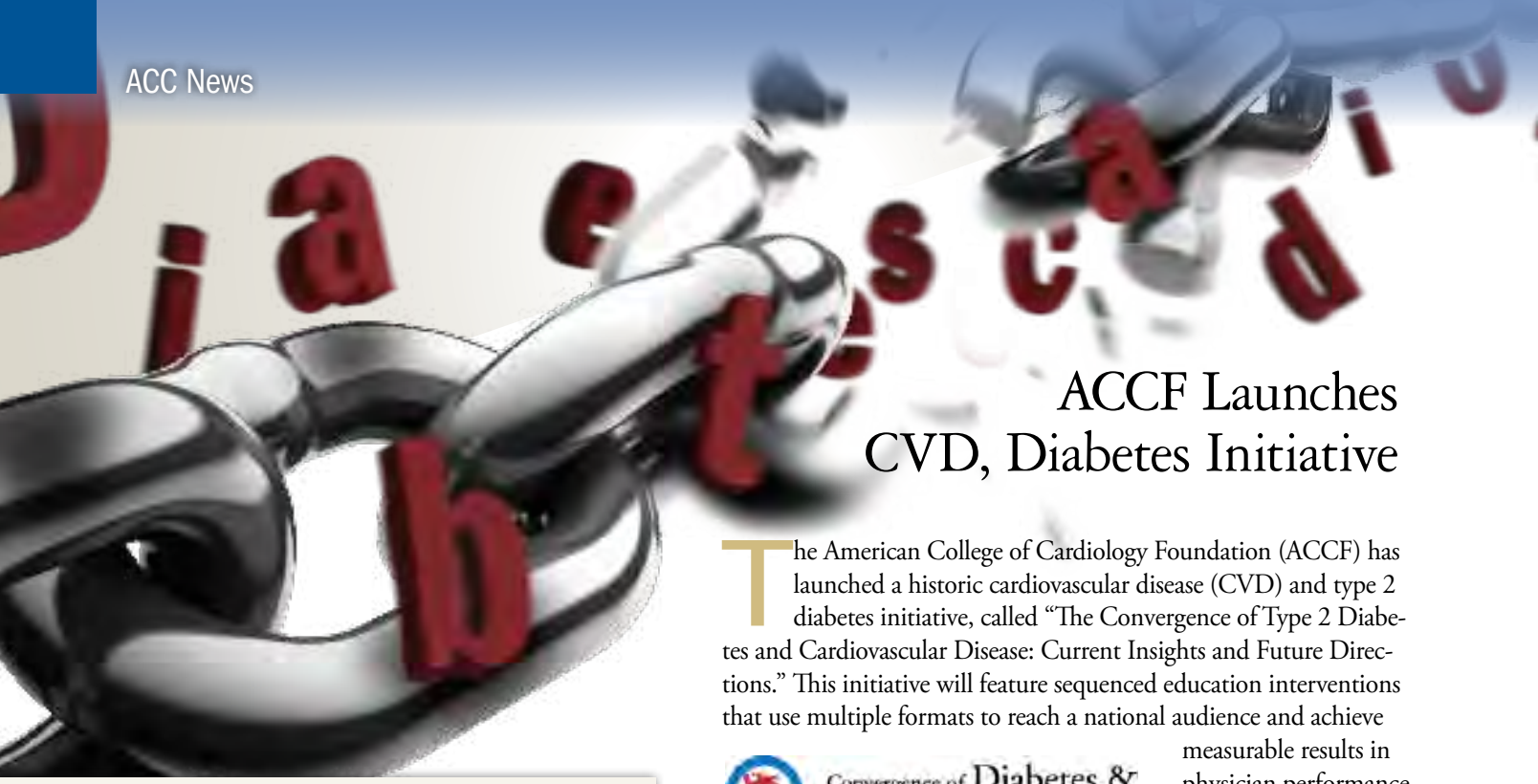
Past President **Dick Conti, M.D., M.A.C.C.,** recalls having been recruited to Baylor by McIntosh. While Conti didn't go to Texas, he remained close to Henry throughout his career. "He was truly a hero both in war and in cardiology," says Conti, "and I have always thought of him as a role model for cardiologists and Americans."

During his lifetime, Henry's formal accolades were myriad and included the Silver Star, two Bronze Stars, France's Croix de Guerre, Distinguished Fellow of the ACC and Distinguished Service Awards from NASPE (now the Heart Rhythm Society) and the Florida Chapter of ACC. In 1986, President Ronald Reagan presented him with a Presidential Citation in the White House Rose Garden.

While his career as a soldier, teacher and physician is dramatic, it was Henry's accomplishments as a leader, humanitarian and voice of social conscience that most marked his life.

However, as we view Henry's life, perhaps his best legacy lies in the potential for all of us to emulate the spirit he demonstrated — that of *Man Helping Man.*

Chazal, who is a member of the ACC Board of Trustees, is with The Heart Group, Fort Myers, Fla.



ACCF Launches CVD, Diabetes Initiative

The American College of Cardiology Foundation (ACCF) has launched a historic cardiovascular disease (CVD) and type 2 diabetes initiative, called "The Convergence of Type 2 Diabetes and Cardiovascular Disease: Current Insights and Future Directions." This initiative will feature sequenced education interventions that use multiple formats to reach a national audience and achieve measurable results in physician performance improvement and patient outcomes.

Convergence of Diabetes & Cardiovascular Disease

Learn more about this initiative on Cardiosource Video Network. Two education sessions on CVD and Type 2 diabetes are scheduled at ACC.09 on Tuesday, March 31, in Orlando:

1. **Diabetes and Cardiovascular Symposium** (#661) from 8 to 9:30 a.m., Hall WF3, Orange County Convention Center
2. **Meet The Experts Session** (#0233-4) from 11 a.m. to noon, Room W110A, also in the convention center.

ACPC Participates in Lobby Day

The National Congenital Heart Coalitions (NCHC) Lobby Day, which was held Feb. 9 and 10, drew approximately 200 participants from ACC and several other organizations including the Children's Heart Foundation, It's My Heart, Mended Little Hearts, the Adult Congenital Heart Association and the Congenital Heart Information Network. Coalition members went to Capitol Hill to lobby on behalf of the Congenital Heart Futures Act, which requests expansion of current surveillance registries in the Centers for Disease Control to develop a lifelong registry for congenital heart disease patients, as well as increased funding for education and research. The American College of Cardiology's Adult Congenital and Pediatric Cardiology Section supported the coalition's efforts.

Top: Dr. Gerard Martin, chair of ACC's Adult Congenital and Pediatric Cardiology Section with CCA member Disty Pearson, P.A. Bottom: Guests at ACC's Welcome Reception for the National Congenital Heart Disease included Congressional staff and patient advocacy leaders.

Discover the new ACCSAP7

The ACCSAP, or Adult Clinical Cardiology Self-Assessment Program, covers the core curriculum of clinical cardiology and has been an invaluable resource for honing clinical judgment skills. In addition to the substantial program that exists, the new ACCSAP7 includes —

- Convenient study guide with key points from each chapter
- New chapters on genomics, quality and appropriateness, critical care, cardiopulmonary resuscitation, cardiovascular manifestation of systemic disease
- Improved user interface, categorized questions and comparison scoring with the online version

The online version of ACCSAP7 will be available at the end of March. Print and CD versions will be available late Summer 2009.

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Symposium 7:30 PM – 9:30 PM

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This event is not part of the official ACC Annual Scientific Session and/or the ACC's Innovation in Intervention: i2 Summit in Partnership with the Cardiovascular Research Foundation, as planned by their Program Committees.

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Co-Chairs:

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Associate Professor of Medicine
McMaster University
Hamilton, Ontario, Canada

Eric Peterson, MD, MPH
Professor of Medicine
Duke University School of Medicine
Durham, North Carolina

Faculty:

Deepak Bhatt, MD
Chief of Cardiology, VA Boston Healthcare System
Director, Integrated Interventional Cardiovascular Program
Brigham and Women's Hospital and
VA Boston Healthcare System
Senior Investigator, TIMI Study Group
Boston, Massachusetts

Stuart Connolly, MD
Director, Division of Cardiology
McMaster University
Hamilton, Ontario, Canada

*At the conclusion of the symposium, the first 500 attendees submitting a CME evaluation will receive a free USB flash drive.

7:00–7:30 pm	Registration, Dinner, and Case Study
7:30–7:35 pm	Introduction (Co-Chairs: Shamir Mehta, MD, MSc and Eric Peterson, MD, MPH)
7:35–8:00 pm	Dual Antiplatelet Therapy in Medical ACS Patients Speaker: Eric Peterson, MD, MPH Moderator/Discussion: Shamir Mehta, MD, MSc
8:00–8:25 pm	The Evolution of Loading Dual Antiplatelet Therapy Speaker: Shamir Mehta, MD, MSc Moderator/Discussion: Eric Peterson, MD, MPH
8:25–8:50 pm	Dual Antiplatelet Therapy Post-PCI Speaker: Deepak Bhatt, MD Moderator/Discussion: Shamir Mehta, MD, MSc
8:50–9:15 pm	Antiplatelet Therapy in Patients With Atrial Fibrillation Speaker: Stuart Connolly, MD Moderator/Discussion: Eric Peterson, MD, MPH
9:15–9:30 pm	Case Study Discussion (Panel Format) Moderator: Eric Peterson, MD, MPH

This meeting is not part of the official ACC Annual Scientific Session and/or the American College of Cardiology's Innovation in Intervention: i2 Summit in Partnership with the Cardiovascular Research Foundation (CRF), as planned by their Program Committees.

This educational activity is supported by the Bristol-Myers Squibb/Sanofi Pharmaceuticals Partnership.

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AMERICAN COLLEGE OF CARDIOLOGY

No Fellow Left Behind — A New Initiative for FITs

By Michael Emery, M.D.

Along with the Board of Governors (BOG) and **Richard Kovacs, M.D., F.A.C.C.,** who is ACC Governor of Indiana, the Fellows in Training (FIT) Committee has started a new initiative: No Fellow Left Behind. The many facets of this initiative are scheduled to develop over several years.

1: Calling All FITs

Our first goal is to achieve 100 percent FIT enrollment in the ACC. FIT membership is free to all cardiovascular fellows in training, but the respective training program directors have to enroll their fellows. FIT members receive many benefits free or at a heavy discount. The ACC FIT program is designed to provide cardiology fellows in training with educational opportunities and business information needed for advancing their careers, and of course, it offers unique networking opportunities with your peers and leaders of the cardiovascular community. If you are not an ACC FIT member and want to be, contact your program director about signing up now.

We also ask FACC members who are aware of FITs or training programs that may not be enrolled to contact your chapter governor or the program director about signing up with the ACC. To find out more about FIT membership, you can go to *www.acc.org/membership/Fellows/form.htm*

2: Becoming More Actively Engaged

A second facet of the No Fellow Left Behind initiative is to engage more FITs at the chapter and national levels. We have been working with the BOG and the Cardiovascular Leadership Institute to design FIT meetings in conjunction with chapter meetings. Our goal is to provide information to fellows regarding the aspects of training, interviewing, networking and transitioning into practice that FITs may not get in their formal cardiology training.

Many chapters also have positions for FITs on their boards. If you would like to become more involved with your local chapter, contact your respective ACC Chapter governor. You will find contact information at *www.acc.org/about/chapters/chapters_list.htm.*

On a national level, there are FIT representatives on many ACC committees and workgroups in addition to the FIT committee. Applications are taken yearly and are due in the fall. For more information, go to *www.acc.org/membership/fellows/form.htm*

3. Making the Transition to FACC.

A future goal of the No Fellow Left Behind initiative is to enhance the transition from FIT to FACC. It has been the ACC's experience in the past that significant numbers of FITs are lost for about two years after they complete training before they eventually rejoin the ACC. We want to better understand why this may be happening and what we can do to make the transition go more smoothly and quickly. The process to become an FACC has already become easier and quicker. Now, you can apply for FACC status immediately after passing your ABIM Cardiovascular Medicine Boards. For more information go to *www.acc.org/about/join_acc.htm*

Past FIT members have written about the value of their experiences when they became more involved with the ACC, about friendships started by a chance meeting in the FIT Community Room at the Annual Scientific Session or as the result of a committee assignment. Round out your training experience by becoming an ACC FIT member.

Emery is chair of the FIT Committee.

Attending ACC.09 ? Special for FITs . . .

Sunday - Tuesday
FIT Community Room, Convention Center Room 204A

Sunday, March 29
FITs: What You Need to Know in Starting a Cardiology Career
12 to 2 p.m.
Convention Center Room W303
** Free boxed lunch available to first 150*

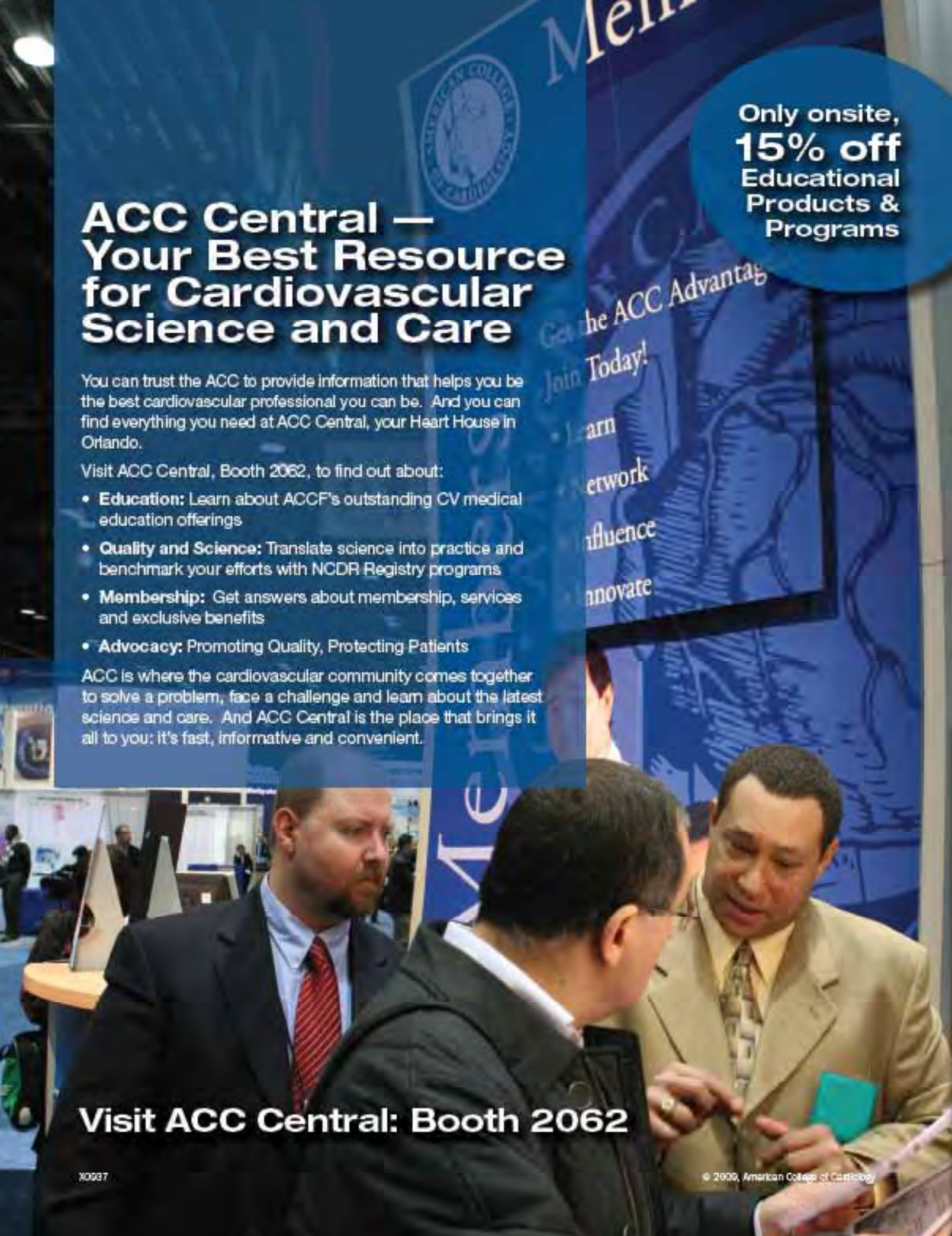
FITs: Career Options in Pediatric Cardiology Session and Luncheon
12 to 2 p.m.
Convention Center Room W106

FIT/ACCIS: Essentials of Cardiovascular Care in Older Adults
3 to 5 p.m.
Convention Center Room W303

Monday, March 30
FIT Forum: Stimulating Options 2009
12 to 2 p.m.
Convention Center Room W303
** Free boxed lunch available to first 150*

Tuesday, March 31
Fellows Imaging Bootcamp
8:30 a.m. to 2 p.m.

Interventional Fellows Bootcamp
8:30 a.m. to 4 p.m.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• Advocacy: Promoting Quality, Protecting Patients
ACC is where the cardiovascular community comes together to solve a problem, face a challenge and learn about the latest science and care. And ACC Central is the place that brings it all to you: it's fast, informative and convenient.
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WOMEN IN CARDIOLOGY
Member Section
American College of Cardiology

Front row, l. to r.: Vidya Nadig, Victoria Zysek, Riem Hawi
Back row, l. to r.: Yamini Levitzky, Emelia Benjamin, Sridevi Ramamurthy,

WIC Mentoring Experiences: Personal Notes from a Recipient

By Vidya Nadig, M.D.

I was very excited to receive an invitation from the ACC Women in Cardiology (WIC) Council to attend a networking breakfast for women residents considering careers in cardiology. The WIC Council was holding the breakfast in collaboration with the Heart & Vascular Center at MetroHealth/Case Western University in Cleveland, Ohio. I must admit I was a little intimidated with meeting a "big gun" like Emelia Benjamin, M.D., F.A.C.C., but the opportunity was too good to pass up. I hoped to have a frank and open discussion on the pros and cons of being a woman cardiologist and balancing professional and personal lives.

When I arrived at the breakfast, I found a small, friendly group of women chatting. Dr. Benjamin was warm and welcoming as she introduced herself. Then she began discussing the challenges and joys of being an academician and a cardiologist. She recounted the days when women had to work twice as hard to prove their mettle, which may still be the case. However, she noted that times have certainly changed, and women are more accepted and even sought after as cardiologists. Despite that, she feels that there still is a hint of discrimination. She gave us good advice, too, sometimes candidly recounting personal experiences, how she reacted at the time, and the difference in how she would have reacted today.

I discussed with her the uphill road I had to traverse as a resident seeking a fellowship in cardiology in an academic institute. Her lucid advice about choosing the right mentor resonated with us. She emphasized that no matter how well-published the mentor is, it is critically important to have the right chemistry between you and your mentor. Equally important is that the mentor has the time for and interest in nurturing your career.

Surprisingly, we were well into the meal before we talked about the balancing act women must perform to maintain a successful career and a sane personal life. It was encouraging to learn that Dr. Benjamin has two children with whom she has a close relationship. She shared that she was able to maintain the pace of her career because she willingly delegated and outsourced many household tasks.

Meeting with such an eminent professor in cardiology — a woman who had accomplished so much — was like a dream. I left the breakfast with a strengthened resolve to pursue a career in cardiology. What I had previously perceived as downfalls in the life of a cardiologist, I now viewed as challenges that would only make success sweeter. This mentoring experience was so valuable that I hope the ACC WIC Council will continue to collaborate with local institutions to produce future programs.

Nadig is an internal medicine resident at the Cleveland Clinic. Benjamin is professor of medicine, Boston University and a clinical cardiologist at Boston Medical. She also serves as director of the echocardiography and vascular function laboratories at the Framingham Heart Study, is a member of the Executive Committee and has been a principal investigator for portions of the most recent study.

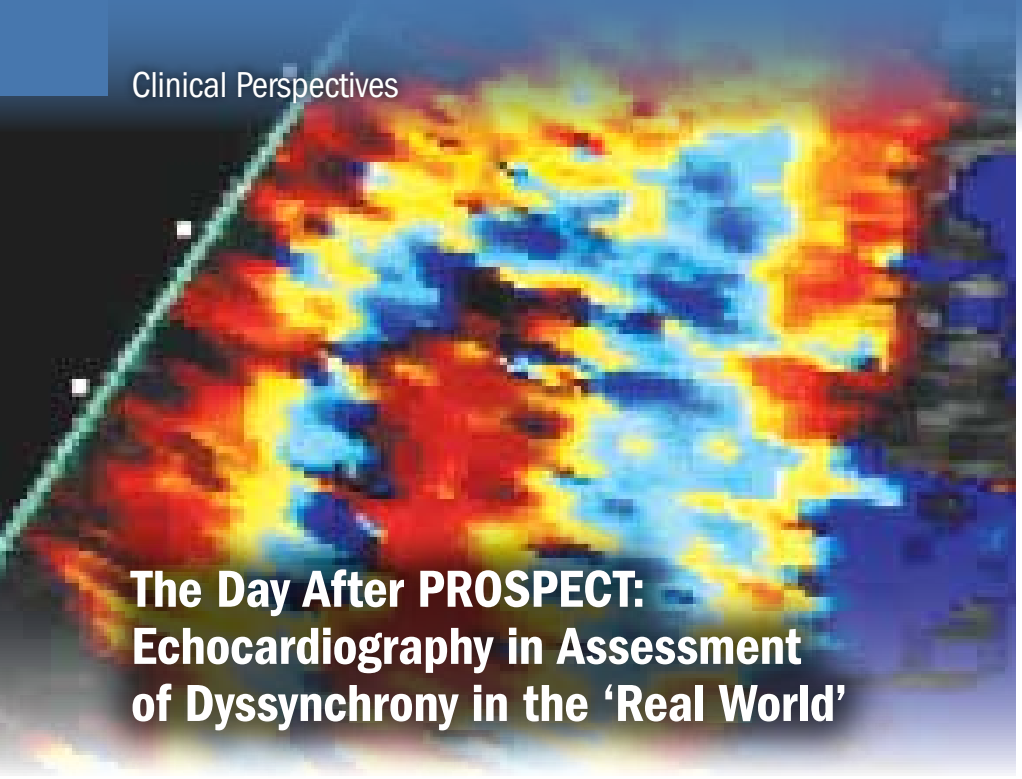
WIC: Visiting Professors and Networking Opportunities

The Women in Cardiology Section of the ACC sponsors Visiting Professors such as Dr. Benjamin to visit internal medicine programs and meet with interested female residents and medical students. If you know of an IM residency program that would be interested in hosting a WIC Visiting Professor, please contact Kelly Ventura at *kventura@acc.org*.

Is your chapter interested in hosting a networking event for Women in Cardiology? The WIC Section has a limited number of grants available to support such programs. If interested in applying, please contact Kelly Ventura at *kventura@acc.org*.

If you have not had a chance to join the WIC Section or renew your section membership, you may pay online at *www.acc.org* by going to Membership/Pay Your Dues or call the ACC Resource Center at (800) 253-4636, ext. 5603.

For more information on the WIC Section, and to see a list of events at ACC.09, please visit *wic.acc.org*.



The Day After PROSPECT: Echocardiography in Assessment of Dyssynchrony in the 'Real World'

By Eugene S. Chung, M.D., F.A.C.C., and Wojciech Mazur, M.D., F.A.C.C.

In patients with New York Heart Association (NYHA) class III and IV systolic heart failure and electrocardiographic evidence of ventricular dyssynchrony, cardiac resynchronization therapy (CRT) is widely practiced and supported by national and international practice guidelines. However, advanced echocardiographic techniques may be better markers of ventricular dyssynchrony than the QRS duration and may offer better ways to identify CRT candidates.

Despite promising preliminary data from prior single-center studies, echocardiographic measures of dyssynchrony aimed at improving patient selection criteria for CRT do not appear to have a clinically relevant impact on improving response rates when studied in a multicenter setting.

In small studies, several echocardiographic measures of mechanical dyssynchrony, using traditional echocardiographic techniques, as well as tissue Doppler imaging, have effectively identified responders and non-responders to CRT before device implantation. However, the validity of these methods for patient selection needed testing in a prospective, multicenter setting. The Predictors of Response to CRT (PROSPECT) trial represents the first large-scale, multicenter, clinical trial evaluating the performance of echocardiographic measures of mechanical ventricular dyssynchrony to predict responsiveness to CRT.

PROSPECT Setting and Findings

Patients with heart failure symptoms with left ventricular ejection fraction (LVEF) less than or equal to 35 percent as assessed by the investigator, NYHA functional status III or IV and QRS duration greater than or equal to 130 ms were enrolled across 53 centers in the US, Europe and Hong Kong between March 2004 and December 2005. All centers collected data at pre-implant baseline assessment; at the time of implantation; immediately post implantation; at one, three and six months post- implantation and every six months until study closure.

The PROSPECT Steering Committee selected 12 echocardiographic parameters identified from published and unpublished literature as possible predictors of a positive response to CRT. *(See Table 1.)*

Echocardiograms were performed according to study protocol and analyzed at one of three core echocardiography laboratories. GE machines were used for studies in 37 percent of patients, Philips in 50 percent, Siemens in12 percent and Aloka in 1 percent. Each center was trained in data acquisition and required to obtain accreditation from their designated core echocardiography laboratory. Only studies judged to be of sufficient quality by the laboratory were included in the analysis of LV volumes and tissue Doppler data.

Response to CRT was evaluated using two separately analyzed primary outcomes at six months — heart failure clinical composite score (CCS) and relative change in LVESV. Based on survival, HF-related hospitalization, patient global assessment and NYHA classification, a patient's CCS was classified as Worsened, Improved or Unchanged. With CCS, a positive response to CRT was defined as a designation of Improved. With LVESV, it was reduction of 15 percent or more at six months compared with baseline.

Overall, 426 patients formed the final study group comprising the present report. Based on CCS, 69 percent of patients improved, 15 percent remained unchanged and 16 percent worsened. With LVESV response, the 286 patients with available paired LVESV measurements showed a relative reduction of 19.7% ± 27.3% (mean ± s.d.) at six months with —

- 161 (56.3 percent) had a reduction of 15 percent or more
- 26 (9.1 percent) had an increase of at least 15 percent in LVESV.

Using clinical composite score as (1a) or reduction in LVESV (1b) as the outcome measure, each echocardiographic parameter is assessed for predictive ability. Red bars represent response rates in whom the parameter predicted positive response while blue bars represent response rates in those the parameter predicted no response. The dotted line is the overall response rate, based solely on current implant criteria.

Figure 1a

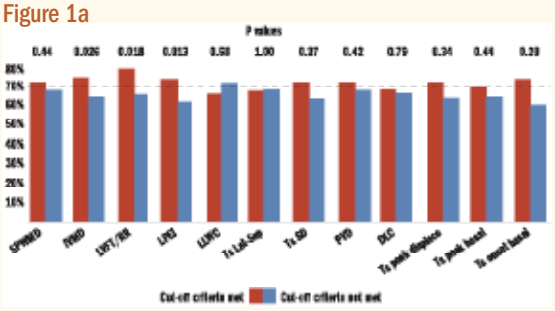


Figure 1b

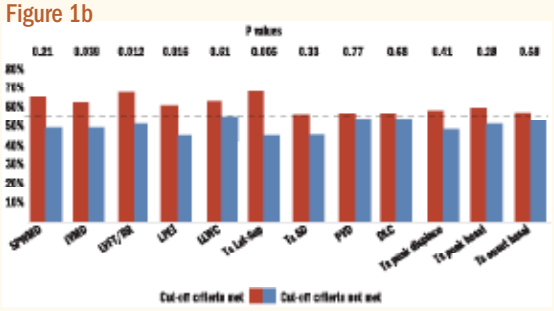


Table 1. Summary of echocardiographic predictors of response to cardiac resynchronization therapy

Echocardiographic Predictor	Description of method	Echo method	Cut-off
SPWMD[10]	Septal-posterior wall motion delay: M-mode measured by parasternal short-axis view	M-mode	>130ms
IVMD14	Interventricular Mechanical Delay: defined as the difference between left and right ventricular pre-ejection intervals	Pulsed Doppler	>40ms
LVFT/RR14	Left ventricular filling time (LVFT) in relation to cardiac cycle length (RR) as measured by transmitral Doppler echo, expressed as percentage	Pulsed Doppler	<40%
LPEI14	Left ventricular pre-ejection interval: defined as the time interval between the beginning of QRS and beginning of left ventricular ejection by Doppler	Pulsed Doppler	>140ms
LLWC14	Intraventricular dyssynchrony left lateral wall contraction: defined as the presence of overlap between the end of lateral wall contraction (via M-Mode) and onset of LV filling (by Doppler echo)	M-mode & Pulsed Doppler	any overlap
Ts-(lateral-septal)15	Delay between time to peak systolic velocity in ejection phase at basal septal and basal lateral segments	TDI	>60ms
Ts-SD11,13	Standard deviation of time from QRS to peak systolic velocity in ejection phase for 12 left ventricular segments (6 basal and 6 middle)	TDI	>32ms
PVD16	Peak velocity difference: derived from subtracting the maximal to the minimal difference of time to peak velocity (excluding velocities occurring during isovolumic contraction time) for 6 segments at basal level	TDI	>110 ms
DLC17,18	Delayed longitudinal contraction: measured in the 6 basal left ventricular segments with a systolic contraction component in early diastole by TDI and confirmed using strain rate.	TDI+SRI	>2 basal segments
Ts-peak displacement	Maximum difference of time to peak systolic displacement for 4 segments	TDI	>median
Ts-peak (basal)	Maximum difference of time to peak systolic velocity for 6 segments at basal level	TDI	>median
Ts-onset (basal)	Maximum difference of time to onset of systolic velocity for 6 segments at basal level	TDI	>median

Using clinical composite score as (1a) or reduction in LVESV (1b) as the outcome measure, each echocardiographic parameter is assessed for predictive ability. Black bars represent response rates in whom the parameter predicted positive response while yellow bars represent response rates in those the parameter predicted no response. The dotted line is the overall response rate, based solely on current implant criteria.

Figures 1a for CCS and 1b for LVESV reduction show the predictive ability of each parameter for each outcome measure.

What the Findings Indicate

While several parameters predicted statistically significant improvement in clinical and reverse remodeling outcomes, sensitivity and specificity were modest. The findings suggest that various echocardiographic measures of ventricular dyssynchrony as applied in this study were unable to distinguish responders from non-responders to a degree that should affect clinical decision making. Thus, current clinical criteria including the electrocardiogram remain the standard for CRT patient selection.

The findings may be due to the high degree of variability in dyssynchrony measurements by the core laboratories, perhaps because of multiple platforms and inadequate training and expertise in data acquisition. Also, tissue Doppler techniques assessed longitudinal myocardial velocities, which may not accurately represent contractile timing. Strain-based measurements in the radial dimension may provide more accurate assessments of dyssynchrony.

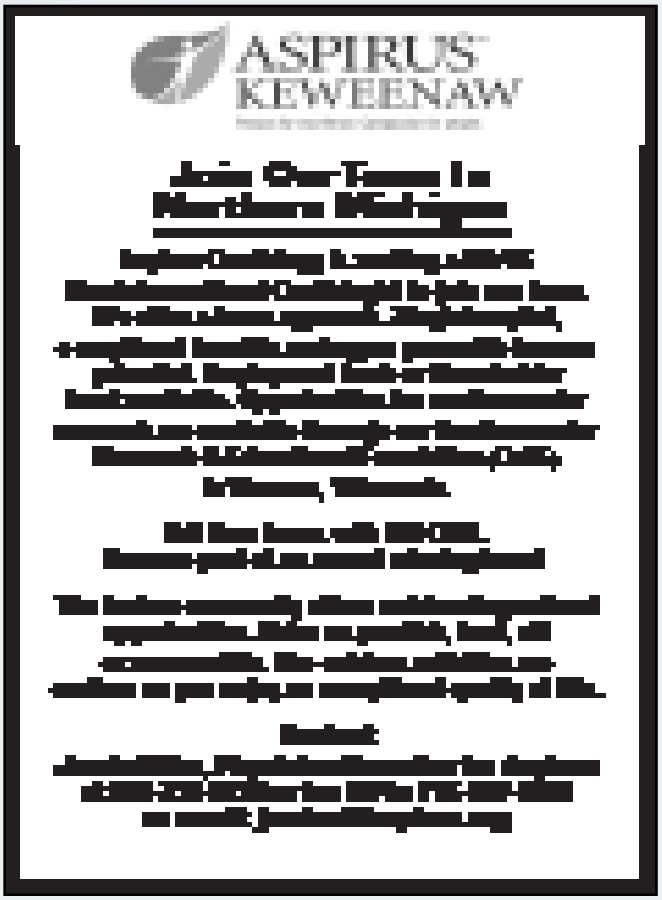
Despite promising preliminary data from prior single-center studies, echocardiographic measures of dyssynchrony aimed at improving patient selection criteria for CRT do not appear to have a clinically relevant impact on improving response rates when studied in a multicenter setting. Thus, at present, the echocardiographic parameters assessing dyssynchrony do not have enough predictive value to be recommended as selection criteria for CRT beyond current indications.

Chung

Mazur

Chung and Mazur are with the Ohio Heart Health Center, Cincinnati.

1. Chung ES, Leon AR, Tavazzi L, Sun JP, Nihoyannopoulos P, Merlino J, Abraham WT, Ghio S, Leclercq C, Bax JJ et al: Results of the Predictors of Response to CRT (PROSPECT) trial. Circulation 2008, 117(20):2608-2616.



March 2009

Ad Index

Career Opportunities

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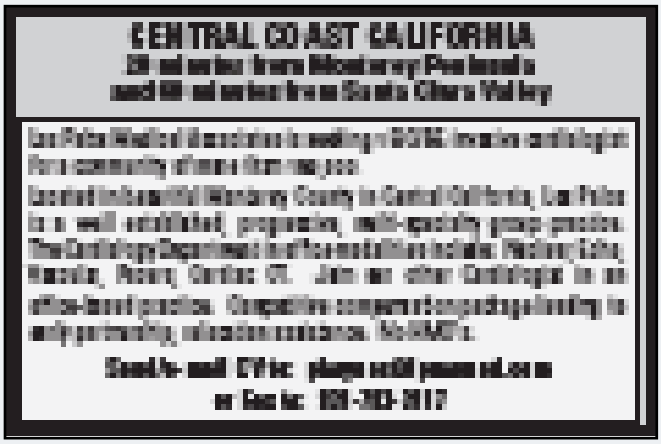


This Month in

JACC

JACC Journal CME

Beginning with the March 24th issue, CME credit will be available for one article in the third issue of the *Journal of the American College of Cardiology (JACC)* each month as an online activity at *cme.jaccjournals.org*. Up to 1 *AMA PRA Category 1 Credit*™ may be earned for each successfully completed quiz.

Articles designated for CME are identified in the table of contents and on the JACC Journals Web site at *onlinejacc.org* by the green CME symbol: CME. The online CME quizzes provide immediate results along with confirmation of credit earned. The quizzes are available for one year from the journal issue date.

CME for articles in *JACC: Cardiovascular Imaging* and *JACC: Cardiovascular Interventions* will be introduced in early 2010.

The CME for the March 24 JACC is "Advanced Age, Antithrombotic Strategy and Bleeding in Non- ST-Segment Elevation Acute Coronary Syndromes: Results from ACUITY."

March 3

- Novel Risk Factors for Heart Failure: When the Whole may be Greater than the Sum of its Parts

March 10

- The Public Health Hazards of Risk Avoidance Associated with Public Reporting of Risk Adjusted Outcomes in Coronary Intervention

March 17

- Prevalence of Low LDL-Cholesterol with Elevated High Sensitivity C-reactive Protein in the United States: Implications of the JUPITER Study

March 24

- Advanced Age, Antithrombotic Strategy and Bleeding in Non- ST-Segment Elevation Acute Coronary Syndromes: Results from ACUITY

March 31

- Pulmonary Hypertension in Heart Failure with Preserved Ejection Fraction: A Community-Based Study

JACC cardiovascular Imaging

- Prognostic Value of Exercise Echocardiography in Patients with Left Bundle Branch Block
- Risk Stratification by Stress Echocardiography Beyond Wall Motion Analysis
- Evaluation of Pulmonary Artery Stiffness in Pulmonary Hypertension with Cardiac Magnetic Resonance

JACC cardiovascular Interventions

- The Uncertain Value of Renal Artery Interventions: Where Are We Now?
- Renal Artery Revascularization — Is there a Rationale to Perform?
- PCI Treatment of Bifurcation Lesions — A Work in Progress: The Importance of Single Center Studies

Educational Programs Calendar

2009* — *Washington, D.C.*
ACCF/SCCT Coronary CTA Practicum — CME
**Program Dates available online*

March 28, 2009 — *Orlando*
Clinical Pharmacology in the Management of Cardiovascular Disease — PHARM CME CE
Janet B. Long, M.S.N., A.C.N.P., F.A.H.A.

April 16 - 18, 2009 — *Philadelphia*
The 36th Interpretation and Treatment of Cardiac Arrhythmias: Arrhythmia Management for the Clinician — CME
Peter R. Kowey, M.D., F.A.C.C.

May 7 - 9, 2009 — *Washington, D.C.*
31st Annual Recent Advances in Clinical Nuclear Cardiology and Cardiac CT Featuring Case Review with the Experts — CME CE
Daniel S. Berman, M.D., F.A.C.C.
Guido Germano, Ph.D., M.B.A., F.A.C.C.
Jamshid Maddahi, M.D., F.A.C.C.

May 29 - 30, 2009 — *Chicago*
Emergency CV Care 2009 — CME CE
Christopher B. Granger, M.D., F.A.C.C.
James G. Jollis, M.D., F.A.C.C.
Mayme Lou Roettig, R.N., M.S.N.

May 29 - 31, 2009 — *Washington, D.C.*
7th Annual Cardiovascular Magnetic Resonance Imaging: State-of-the-Art Updates and Comparisons with Computed Tomography — CME
W. Gregory Hundley, M.D., F.A.C.C.

June 19 - 21, 2009 — *San Francisco*
2nd Annual West Coast Cardiovascular Forum — CME CE
Valentin Fuster, M.D., Ph.D., F.A.C.C.

August 20, 2009 — *Dallas*
ACCF Study Session for Maintenance of Certification – Interventional Cardiology Updates 2007 and 2008 — CME
Joseph D. Babb, M.D., F.S.C.A.I., F.A.C.C.
James E. Tcheng, M.D., F.A.C.C., F.S.C.A.I., F.E.S.C

August 21 - 23, 2009 — *Dallas*
ACCF/SCAI Premier Interventional Cardiology Overview and Board Preparatory Course — CME
Joseph D. Babb, M.D., F.S.C.A.I., F.A.C.C.
James E. Tcheng, M.D., F.A.C.C., F.S.C.A.I., F.E.S.C

September 8-13, 2009 — *Lake Las Vegas, Nev.*
ACCF Cardiovascular Board Review for Certification and Recertification — CME
Rick A. Nishimura, M.D., F.A.C.C.
Patrick T. O'Gara, M.D., F.A.C.C.

September 12, 2009 — *Lake Las Vegas, Nev.*
ACCF Study Session for Maintenance of Certification (MOC): Cardiovascular Disease Updates 2007 and 2008 — CME
Rick A. Nishimura, M.D., F.A.C.C.
Patrick T. O'Gara, M.D., F.A.C.C.

For a complete listing of upcoming events and to register online, go to *www.acc.org/education/programs/programs.htm*

Rx ONLY

The XIENCE™ V Everolimus Eluting Coronary Stent on the MULTI-LINK MINI-VISION® or MULTI-LINK VISION® Delivery System

INDICATIONS

The XIENCE V Everolimus Eluting Coronary Stent System (XIENCE V stent) is indicated for improving coronary luminal diameter in patients with symptomatic heart disease due to de novo native coronary artery lesions (length ≤28 mm) with reference vessel diameters of 2.5 mm to 4.25 mm.

CONTRAINDICATIONS

The XIENCE V stent is contraindicated for use in patients:

- Who cannot receive antiplatelet and/or anti-coagulant therapy
- With lesions that prevent complete angioplasty balloon inflation or proper placement of the stent or stent delivery system
- With hypersensitivity or contraindication to everolimus or structurally-related compounds, cobalt, chromium, nickel, tungsten, acrylic, and fluoropolymers.

WARNINGS

- Ensure that the inner package sterile barrier has not been opened or damaged prior to use.
- Judicious patient selection is necessary because device use has been associated with stent thrombosis, vascular complications, and/or bleeding events.
- This product should not be used in patients who are not likely to comply with the recommended antiplatelet therapy

PRECAUTIONS

- Stent implantation should only be performed by physicians who have received appropriate training.
- Stent placement should be performed at hospitals where emergency coronary artery bypass graft surgery is accessible.
- Subsequent restenosis may require repeat dilatation of the arterial segment containing the stent. Long-term outcomes following repeat dilatation of the stent is presently unknown.
- Risks and benefits should be considered in patients with severe contrast agent allergies.
- Care should be taken to control the guiding catheter tip during stent delivery, deployment and balloon withdrawal. Use fluoroscopy to avoid arterial damage.
- Stent thrombosis is a low-frequency event that current drug-eluting stent (DES) clinical trials are not adequately powered to fully characterize. Stent thrombosis is frequently associated with myocardial infarction (MI) or death.
- When DES are used outside the specified Indications for Use, patient outcomes may differ from the results observed in the XIENCE V SPIRIT family of trials.
- Compared to use within the specified Indications for Use, the use of DES in patients and lesions outside of the labeled indications, including more tortuous anatomy, may have an increased risk of adverse events, including stent thrombosis, stent embolization, MI, or death.
- Orally administered everolimus combined with cyclosporine is associated with increased serum cholesterol and triglycerides levels.
- A patient's exposure to drug and polymer is proportional to the number of and total length of implanted stents. See *Instructions for Use* for current data on multiple stent implantation.
- Safety and effectiveness of the XIENCE V stent have not been established for subject populations with the following clinical settings:
  - Patients with prior target lesion or in-stent restenosis related brachytherapy, patients in whom mechanical atherectomy devices or laser angioplasty devices are used simultaneously, women who are pregnant or lactating, men intending to father children, pediatric patients, unresolved vessel thrombus at the lesion site, coronary artery reference vessel diameters < 2.5 mm or > 4.25 mm or lesion lengths > 28 mm, lesions located in saphenous vein grafts, unprotected left main coronary artery, ostial lesions, chronic total occlusions, lesions located at a bifurcation or previously stented lesions, diffuse disease or poor flow (TIMI < 1) distal to the identified lesions, excessive tortuosity proximal to or within the lesion, recent acute myocardial infarction (AMI) or evidence of thrombus in target vessel, moderate or severe lesion calcification, multivessel disease, in-stent restenosis, and patients with longer than 24 months follow-up
- Everolimus has been shown to reduce the clearance of some prescription medications when it was administered orally along with cyclosporine (CsA). Formal drug interaction studies have not been performed with the XIENCE V stent because of limited systemic exposure to everolimus eluted from XIENCE V.
- Everolimus is an immunosuppressive agent. Consideration should be given to patients taking other immunosuppressive agents or who are at risk for immune suppression.
- Oral everolimus use in renal transplant patients was associated with increased serum cholesterol and triglycerides that in some cases required treatment.
- Non-clinical testing has demonstrated that the XIENCE V stent, in single and in overlapped configurations up to 68 mm in length, is MR Conditional. It can be scanned safely under the conditions in the *Instructions for Use*.
- The XIENCE V stent should be handled, placed, implanted, and removed according to the *Instructions for Use*.

POTENTIAL [illegible] EVENTS

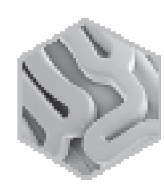
Adverse events (in alphabetical order) which may be associated with coronary stent use in native coronary arteries include but are not limited to:

- Abrupt closure, Access site pain, hematoma, or hemorrhage, Acute myocardial infarction, Allergic reaction or hypersensitivity to contrast agent or cobalt, chromium, nickel, tungsten, acrylic and fluoropolymers; and drug reactions to antiplatelet drugs or contrast agent, Aneurysm, Arterial perforation and injury to the coronary artery, Arterial rupture, Arteriovenous fistula, Arrhythmias, atrial and ventricular, Bleeding complications, which may require transfusion, Cardiac tamponade, Coronary artery spasm, Coronary or stent embolism, Coronary or stent thrombosis, Death, Dissection of the coronary artery, Distal emboli (air, tissue or thrombotic), Emergent or non-emergent coronary artery bypass graft surgery, Fever, Hypotension and / or hypertension, Infection and pain at insertion site, Injury to the coronary artery, Ischemia (myocardial), Myocardial infarction (MI), Nausea and vomiting, Palpitations, Peripheral ischemia (due to vascular injury), Pseudoaneurysm, Renal Failure, Restenosis of the stented segment of the artery, Shock/pulmonary edema, Stroke / cerebrovascular accident (CVA), Total occlusion of coronary artery, Unstable or stable angina pectoris, Vascular complications including at the entry site which may require vessel repair, Vessel dissection

Adverse events associated with daily oral administration of everolimus to organ transplant patients include but are not limited to:

- Abdominal pain, Acne, Anemia, Coagulopathy, Diarrhea, Edema, Hemolysis, Hypercholesterolemia, Hyperlipidemia, Hypertension, Hypertriglyceridemia, Hypogonadism male, Infections: wound infection, urinary tract infection, pneumonia, pyelonephritis, sepsis and other viral, bacterial and fungal infections, Leukopenia, Liver function test abnormality, Lymphocele, Myalgia, Nausea, Pain, Rash, Renal tubular necrosis, Surgical wound complication, Thrombocytopenia, Venous thromboembolism, Vomiting

Prior to use, please reference the Instructions for Use at [illegible] for more information on indications, contraindications, warnings, precautions, and adverse events.



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Abbott Vascular


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Discover the XIENCE behind it.
Finally, a DES to help you navigate your most challenging cases.
XIENCE V™ is built on the market-leading MULTI-LINK VISION® cobalt chromium stent with the thinnest struts[1] for smooth and effortless deliverability.
[1]Manufacturers-reported strut thickness. Data on file at Abbott Vascular.
All illustrations are artist's renditions. Please see brief summary of IFU on the following page.
For more information, visit our web site at www.XienceV.com.
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