



President's Corner

Fellow and Future APAC Members,

I would like to take this chance on behalf of the Board of Director of the Association of Physician Assistants in Cardiology (APAC) to welcome you to APAC. APAC was started with a commitment to and from fellow Cardiology PA's who sought to provide a resource for Cardiology PA's. In the last four years we have achieved many accomplishments including achieving recognition as a specialty organization of AAPA. Last year was very exciting as APAC reached an important milestone with the successful completion of filings and approval of its non-profit corporation status. The new fiscal year continues to bring exciting opportunities to APAC. These, just to name a few, will include our first CME event that is cosponsored with Texas Academy of Physician Assistants (TAPA), in November, 2-4, at the Marriott Hotel, in Las Colinas, Texas called **HEART TO HEART: APACs INAUGURAL CARDIOVASCULAR CONFERENCE - PRIMARY CARE TO SPECIALTY PRACTICE**. We will also soon begin exploring other options for CME events from APAC in 2008. A grant search is underway to finance the expansion of the APAC website <http://www.cardiologypa.org> with goals of adding chat, online CME events and Live Talks to the website for APAC members. Grants are also being explored to develop marketing tools for promotion of the Cardiologist and Cardiology PA Team.

I want to thank you again for your membership and/or renewal and point out that all of the goals above would not be achievable without members such as yourself. We would also ask that you encourage fellow Cardiology PA's you know to join and help us grow. We welcome any input you may have and any assistance you can provide to our committees (membership, CME, and others). I know I speak for the Board of Directors at APAC when I say "Welcome to APAC".

Therin S. Hill, PA-C, MBA

President APAC



Clinical Updates

HYPERTENSION - target nonadherent with simple measures

A new study, published by Dr. Anil K. Gehi at Emory University (Atlanta GA), shows that stable coronary heart disease patients who reported nonadherence to their medication had a greater-than-twofold increased risk of subsequent cardiovascular events [1]. "We've shown that simply asking the patient whether they were adherent to their medication is a pretty decent way to identify those patients we might need to focus on," Gehi told **heartwire**.

"The bottom line is that medication nonadherence is a big predictor of adverse cardiovascular outcomes, and we found that the risk associated with nonadherence was equivalent to that associated with diabetes or smoking. Nonadherence is really a big deal that a lot of physicians don't look at carefully, and it's not a difficult thing to find out."

Gehi and colleagues studied just over 1000 patients with established coronary disease participating in the **Heart and Soul Study** who were already completing a large questionnaire and asked them a single question: "In the past month, how often did you take your medications as your doctor prescribed?"

Nonadherence was defined as taking medications as prescribed 75% of the time or less. Cardiovascular events (coronary heart disease death, MI, or stroke) were identified by review of medical records during 3.9 years of follow-up.

Of the patients, 83 (8.2%) reported nonadherence to their medications, and 146 (14.4%) developed cardiovascular events. Nonadherent patients were more likely than adherent participants to develop cardiovascular events (22.9% vs 13.8%; $p=0.03$).

Self-reported nonadherence remained independently predictive of cardiovascular events even after adjustment for baseline cardiac disease severity, traditional risk factors, and depressive symptoms (hazard ratio 2.3; $p=0.006$).

Association of medication nonadherence with CHD death, MI, and stroke in 1007 participants with stable CHD and complete follow-up data

Outcome	Adjusted HR*	p
CHD death	3.8	0.01
MI	1.5	0.33
Stroke	4.4	0.01
Any of the above	2.3	0.006

*Adjusted for age, sex, race, educational level, smoking, depression, diabetes, hypertension, number of cardiovascular medications, use of beta blocker, use of statin, LVEF, weekly angina, HDL cholesterol level, and LDL cholesterol level

"We have shown that it's not a difficult thing to find out about adherence," says Gehi, "but this is something that perhaps physicians overlook. Our study helps emphasize how important it is; then, something can be done about addressing the specific issues relating to adherence with that patient."

Those who are found to be nonadherent can be targeted with a number of approaches; Gehi suggests such strategies as pillboxes, getting family involved in medication, and arranging more frequent follow-up visits.

"Also, sometimes simply explaining to a patient what a pill is for and the importance of that medication can make a big difference," he says.

Reference

Gehi AK, Ali S, Na B, et al. Self-reported medication adherence and cardiovascular events in patients with stable coronary heart disease. The Heart and Soul Study. *Arch Intern Med* 2007; 167:1798-1803.

HYPERTENSION - new combination antihypertensive approved in US

A new combination antihypertensive, **amlodipine** and **olmesartan medoxomil** (Azor, Daiichi Sankyo), has been approved by the US **FDA** for the second-line treatment of hypertension, to be used alone or in combination with other antihypertensive agents.

The company reports that this calcium blocker/angiotensin-receptor blocker combination produces significant mean reductions in seated systolic and diastolic blood pressure in patients with hypertension; in phase 3 trials, the amlodipine 10-mg/olmesartan 40-mg dose reduced systolic blood pressure by an average of 30.1 mm Hg and diastolic pressure by 19 mm Hg, compared with 19.7/12.7 mm Hg for amlodipine 10 mg alone and 4.8/3.1 mm Hg with placebo. The only adverse event that occurred in more than 3% of patients treated with the combination and more frequently than with placebo was edema (22.2% vs 12.3%), it adds.

Source

Daiichi Sankyo Inc. AZOR receives FDA approval for treatment of high blood pressure [press release]. Sept 28, 2007. Available at: http://www.daiichisankyo.com/4less/cgi-bin/cs4view_obj.php/b_newsrelease_n1_eng/365/070928v1-eameri.pdf.

HYPERTENSION - raised blood pressure/BMI in midlife predicts heart failure in later life

A study from Toronto shows that raised blood pressure and excess body mass index (BMI) in middle age increases the risk of heart failure in later life, a new study suggests.

The study, published online in *Hypertension* on September 24, 2007, was conducted by a team led by **Dr Douglas Lee** (University of Toronto, ON). They conclude that their data, although observational, suggest that effective heart-failure prevention strategies are best conceived as lifelong initiatives, rather than as beginning in the seventh decade, at which point the risk of developing the condition begins to escalate.

Lee et al note that the incidence of heart failure increases exponentially in the seventh decade of life and beyond and is therefore often regarded as a disease of the elderly. Given the substantial adverse outcomes associated with heart failure, disease-management guidelines have emphasized the importance of prevention, but the development of preventive strategies requires a better understanding of the key risk factors for heart failure and the evolution of these risk factors over the life course, they add.

They point out that although previous studies have greatly advanced the understanding of risk factors for heart failure, they have not evaluated the contribution of potential risk factors at an earlier point in the life course, such as in midlife. It is widely accepted that cardiac remodeling evolves over time and, in response to risk-factor exposures, Lee and colleagues used Framingham data to examine whether blood pressure and BMI measures obtained over a period of two decades in the midlife period of study participants were related to the risk of heart failure during follow-up.

They studied 3362 Framingham participants (57% women; mean age 62 years) who attended routine examinations between 1969 and 1994 and examined their systolic and diastolic blood pressure, pulse pressure, and BMI at various periods during the past 20 years.

Results showed that during 67 240 person-years of follow-up, 518 participants developed heart failure. Current, recent, and remote systolic pressure; pulse pressure; and BMI were all individually associated with incident heart failure. The recent and remote associations remained after adjustment for current measurements.

Associations of antecedent blood pressure with incident heart failure

Blood Pressure	HR (95% CI) for CHF per standard deviation increment of BP measure (adjusted for current BP)
Recent (1-10 yrs prebaseline)	
Systolic	1.31 (1.11-1.55)
Diastolic	1.02 (0.88-1.19)
Pulse	1.33 (1.14-1.54)
Remote (11-20 yrs prebaseline)	
Systolic	1.17 (1.04-1.31)
Diastolic	1.05 (0.93-1.18)
Pulse	1.17 (1.06-1.31)

Results are age-stratified and adjusted for age, sex, serum cholesterol, hypertension treatment, diabetes, smoking, valve disease, previous MI (all defined at the baseline examination) and for the incidence of an interim MI on follow-up. Models evaluating systolic BP variables are adjusted for baseline diastolic BP. Models evaluating diastolic BP variables are adjusted for baseline systolic BP.

Associations of antecedent BMI with incident heart failure

BMI	HR (95% CI) for CHF per unit increment of BMI (adjusted for current BMI)
Recent (1-10 years prebaseline)	1.15 (1.08-1.23)
Remote (11-20 years prebaseline)	1.09 (1.05-1.14)

Results are age-stratified and adjusted for age, sex, serum cholesterol, systolic and diastolic BP, hypertension treatment, diabetes, smoking, valve disease, previous MI (all defined at the baseline examination), and for incidence of an interim MI on follow-up.

Lee et al say that although hypertension and high BMI detected in later life are associated with heart-failure risk, the effects of these conditions likely begin much earlier. "High blood pressure and elevated BMI in midlife or earlier life may contribute to progressive remodeling of the heart and vasculature, which may predispose to heart failure decades later. Therefore, the prevention of heart failure should begin early in the life course and should include screening for elevated blood pressure and BMI," they write. "Failure to identify or treat such modifiable risk factors early may result in the loss of opportunities to reduce the incidence of heart failure in later life," they add.

Commenting on the study in an **American Heart Association** press release, senior author **Dr Ramachandran Vasan** (Boston University School of Medicine, MA) noted that an increase of just one standard deviation (about 20 mm Hg) in systolic blood pressure at age 50 was associated with a 36% higher risk of heart failure over an observation period extending up to 20 years later, and a standard deviation (about 15 mm Hg) increase in pulse pressure increased the heart failure risk by 31%. "Every 1 kg/m² increment in current, recent, or remote body mass index was associated with a 5% to 7% increase in the risk of heart failure," Vasan said. "This study highlights the importance of maintaining an ideal BMI and blood pressure over the life course of individuals," he concluded.

Reference

Lee DS, Massaro JM, Wang TJ, et al. Antecedent blood pressure, body mass index, and the risk of incident heart failure in later life. *Hypertension* 2007; DOI: 10.1161/HYPERTENSIONAHA.107.095380. Available at: <http://hyper.ahajournals.org>.

PREOP EVALUATION - new ACC/AHA guidelines on perioperative CV evaluation for noncardiac surgery

New **ACC/AHA** recommendations have been issued on the perioperative assessment and care of cardiovascular conditions in patients undergoing noncardiac surgery.

The new guidelines are an update of those published in 2002, and the most important change is that it is no longer deemed necessary to conduct numerous diagnostic tests to look at the extent of heart disease before a patient undergoes surgery, **Dr Lee Fleisher** (Hospital of the University of Pennsylvania, Philadelphia), chair of the guideline writing committee, told **heartwire**. "We now know that for someone with good heart-rate control and only one or two risk factors, there's no difference in outcomes [of noncardiac surgery] between those who have good medical therapy and those who receive coronary revascularization beforehand," Fleisher said.

In general, the indications for further cardiac testing and treatments are the same as in the nonoperative setting, but their timing depends on several factors, he explained. These include the urgency of noncardiac surgery, patient-specific risk factors, and surgery-specific considerations. "The use of both noninvasive and invasive preoperative testing should be limited to those circumstances in which the results of such tests will clearly affect patient management."

"What's the story? It's the algorithm"

Fleisher told **heartwire** that a new algorithm is "the key" to identifying changes from the previous 2002 recommendations. "The previous guidelines had a similar algorithm but it had more to do with stress testing. This newest algorithm for treatment has really reduced the [enthusiasm for] stress testing before noncardiac surgery," he noted.

"In the past we had to go on indefinite evidence, but now there are a number of studies published to help us direct best practices," Fleisher explained, adding that the new guidelines include "class of recommendation" and "strength of evidence."

"Previously, to get someone ready for surgery, we would do a lot of screening, and we might fix their heart disease to get them ready for noncardiac surgery. Several trials now show that in people without symptomatic heart disease, fixing the heart first doesn't make much of a difference to how well they do in surgery," he explains. If noncardiac surgery is an emergency, cardiac testing should be forgone and a patient should go straight to an

operating room, the guidelines state. Cardiovascular evaluation and treatment before other surgery is now thought necessary only in patients with "active" cardiovascular conditions, such as acute coronary syndrome, decompensated heart failure, significant arrhythmias, and severe heart-valve disease.

With specific regard to percutaneous coronary intervention, there was previously little evidence to direct people, Fleisher says. "But now a few recent trials indicate that PCI before noncardiac surgery is not superior to medical therapy alone in single- or double-vessel disease."

However, patients with multivessel disease and severe angina undergoing high-risk surgery might benefit from revascularization before noncardiac surgery. More trials are needed to identify specific subsets of patients in whom preoperative coronary revascularization might reduce perioperative and long-term events, he notes.

Is PCI dangerous before surgery? Best to use a bare-metal stent

Some anecdotal evidence suggests that PCI might even increase the risk of perioperative cardiac problems in some people, says Fleisher, most likely because clopidogrel and aspirin must be stopped for the noncardiac surgery. "In the new recommendations, we discuss the potential risks in the management of patients with recent PCI," he notes.

For patients who need nonurgent or elective noncardiac surgery and who must undergo an artery-opening procedure beforehand, the guidelines recommend angioplasty using a bare-metal stent followed by four to six weeks of antiplatelet therapy.

For patients who already have a drug-eluting coronary stent and must undergo urgent noncardiac surgery that requires stopping clopidogrel, the guidelines recommend continuing aspirin therapy if possible and restarting clopidogrel as soon as possible.

"We now know that the antiplatelet medication is very important after stent placement, and we advocate stopping it for as little time as possible," Fleisher says.

Continue statins and beta blockers

Other changes to the previous recommendations include advice to continue statin and beta-blocker treatment throughout noncardiac surgery.

Fleisher explained to **heartwire** that guidelines were published about one year ago to advise that patients continue to take beta blockers during noncardiac surgery and that this relatively recent recommendation has been "embedded in the new algorithm."

With regard to statins, doctors have been unclear what to do, he said, "because previously we had no recommendations." Adding to the confusion was the fact that the package inserts for statins recommended stopping therapy if surgery is required because of the risk of rhabdomyolysis.

"But now, because of a number of recently published trials, we advocate that you should not stop statins, you should continue therapy. There are actually data showing that people who stop statins for four days have a much higher event rate than people who continue to take them," Fleisher says.

"If you look at the table of contents for the guidelines, there are statin recommendations now and there never were before." More data are needed, however, with regard to the length of time medical therapy, such as beta blockers and statins, needs to be initiated before noncardiac surgery to be effective, he concludes.

Reference

Fleisher LA, Beckman JA, Brown KA, et al. ACC/AHA 2007 guidelines on perioperative cardiovascular evaluation and care for noncardiac surgery. A report of the ACC/AHA Task Force on Practice Guidelines (writing committee to revise the 2002 guidelines on perioperative cardiovascular evaluation and care for noncardiac surgery). *Circulation* 2007; DOI: 10.1161/CIRCULATIONAHA.107.185699. Available at: <http://circ.ahajournals.org>.

DIABETES - Omega-3 fatty-acid intake reduces risk of pediatric islet autoimmunity

Could supplementing the diets of children at high risk for type 1 diabetes with polyunsaturated fatty acids help prevent the development of the autoimmune disease? A new study suggests this might indeed be possible, as researchers showed that the dietary intake of omega-3 fatty acids reduced the risk of pancreatic islet autoimmunity in children at increased risk for type 1 diabetes.

Type 1 diabetes mellitus is an autoimmune disease that is characterized by the destruction of insulin-producing beta cells in the pancreatic islets, but these new findings, say the researchers, "suggest that higher consumption of total omega-3 fatty acids . . . is associated with a lower risk of islet autoimmunity." Further study, write the researchers, is still needed to determine whether omega-3 fatty acids should become a dietary mainstay for pregnant women, infants, and young children.

The new findings, from a longitudinal, observational study performed by lead author **Dr Jill Norris** (University of Colorado, Denver) and colleagues, are published in the September 26, 2007 issue of the *Journal of the American Medical Association*.

The DAISY study

Norris and colleagues note that a recent case-control study from Norway showed that children with diabetes were less likely to have been given cod-liver oil during infancy than children without diabetes [2]. Cod liver contains vitamin D and the marine omega-3 fatty acids eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), so it is not entirely clear what factor—the vitamin D or the omega-3 fatty acids—provided the protection. The purpose of this study—known as **Diabetes Autoimmunity Study in the Young** (DAISY)—was to examine whether the intake of omega-3 and omega-6 fatty acids was associated with the development of islet autoimmunity in children.

The DAISY investigators included two groups of young patients at risk for diabetes: one group consisted of unaffected first-degree relatives of individuals with type 1 diabetes, and the other consisted of children determined to be at genetic risk for diabetes by screening that identified diabetes-susceptibility alleles in the human leukocyte antigen (HLA) region. Recruiting children aged eight years and younger, including newborns, between 1994 and 2006, the group identified 1770 children at risk for type 1 diabetes mellitus.

With an average follow-up of 6.2 years, 58 children developed diabetes. After adjustment for HLA genotype, family history, caloric intake, and total omega-6 fatty-acid intake, omega-3 fatty acid intake was inversely associated with the risk of developing islet autoimmunity, a risk reduction of 55%. In a similar adjustment, the consumption of omega-6 fatty acids was not associated with a reduction in risk. When investigators tightened the analysis and measured the risk of developing multiple autoantibodies or type 1 diabetes by fatty-acid intake, the reduction in risk was 77% for the intake of omega-3 fatty acids. Again, omega-6 intake was not associated with a reduction in risk.

In further analysis, the researchers also performed a case-cohort study with 244 children to measure the fatty-acid content of erythrocyte membranes. In this small study, the omega-3 fatty-acid content of the erythrocyte membranes—shown to be a good marker of medium-term fatty-acid intake in children younger than two years—was associated with a 37% decrease in the risk of developing islet autoimmunity. Omega-6 fatty acid intake was not associated with any reduction in risk.

There is a trial currently under way—the **Nutritional Intervention for the Prevention of Type 1 Diabetes**—that will test the hypothesis that dietary supplementation with DHA in utero and in infancy will block early islet inflammatory events and thus prevent the development of islet autoimmunity in children at high genetic risk for the disease. "If this trial confirms this hypothesis," write Norris and colleagues, "dietary supplementation with omega-3 fatty acids could become a mainstay for early intervention to safely prevent the development of type 1 diabetes."

References

Norris JM, Yin X, Lamb MM, et al. Omega-3 polyunsaturated fatty acid intake and islet autoimmunity in children at increased risk for type 1 diabetes. *JAMA* 2007; 298: 1420-1428.

Stene LC, Joner G: the Norwegian Childhood Diabetes Study Group. Use of cod liver oil during the first year of life is associated with lower risk of childhood-onset type 1 diabetes: a large, population-based, case-control study. *Am J Clin Nutr* 2003; 78: 1128-1134.

CARDIAC REHAB - New guidelines on cardiac rehab as another study shows underuse

Fewer than one in five people receive cardiac rehabilitation (CR) services after an MI or coronary artery bypass surgery, according to a new study, by **Dr Jose A Suaya** (Brandeis University, Waltham, MA) and colleagues, published online September 24, 2007 in *Circulation*. "The low cardiac rehabilitation utilization rates we have documented are discouraging in light of the considerable evidence that supports the effectiveness of cardiac rehabilitation," say the researchers. "It's a remarkable finding," Suaya told **heartwire**. "We need to find ways to increase the use of cardiac rehabilitation, because it is used very little by patients who could benefit a lot."

Suaya and colleagues also found that certain individuals were less likely to use cardiac rehabilitation—for example, women. And there was a "remarkable cross-state variation in use of cardiac rehabilitation," which differed by up to ninefold between states, they observe.

Bypass patients more likely to get rehab than those with MI

Suaya and one of his coauthors, **Dr Donald S Shepard** (Brandeis University, Waltham, MA), told **heartwire** that this "is the largest and most comprehensive study of its kind." They evaluated Medicare claims data on 267 427 men and women age 65 and older who survived at least 30 days after hospital discharge following an MI or bypass surgery in 1997. They assessed use of early outpatient cardiac rehabilitation (also known as phase 2 rehab).

At the time of the study, Medicare provided coverage for up to 36 sessions (three per week for three months) of cardiac rehabilitation after MI, bypass surgery, or stable angina. Rehabilitation patients in this study had an average of 24 sessions. In 2006, Medicare expanded coverage to include patients undergoing heart and lung transplants, heart-valve surgery, and percutaneous coronary intervention.

In the year following hospital discharge, fewer than one in five (18.7%) of patients in the study had at least one session of cardiac rehabilitation. Bypass patients (31%) were far more likely to receive rehabilitation than patients who had had an MI (13.9%). "Coronary bypass surgery is a big event for most patients, and cardiac rehab has been adopted as a very important component of recovery," explains another of the authors, **Dr William B Stason** (Brandeis University). "In contrast, the condition of patients after heart attack varies widely, and there is less agreement among physicians about the value of cardiac rehab compared with medications and lifestyle changes."

Once again it's the old, the poor and the sickest who miss out

Patients least likely to receive cardiac rehab were women, older patients, nonwhites, less educated patients, of lower socioeconomic status, patients with multiple comorbidities & those at greatest distance from a rehab center.

Adjusted ORs for CR use by patient characteristic and availability of CR

Patient characteristics	Adjusted OR
Gender by age group (y)	
Male, 65-74	1.00 (reference group)
Male, 75-84	0.87
Male, ≥85	0.29
Female, 65-74	0.98
Female, 75-84	0.69
Female, ≥85	0.17
Race	
Nonwhite	1.00 (reference group)
White	1.33
Distance from patient zip code to nearest CR facility (mi)	
0.3-1.5	1.00 (reference group)
1.6-3.2	0.93
3.3-6.4	0.78
6.5-14.9	0.58
15.0-231	0.29

Differences in the use of cardiac rehabilitation for different age groups may reflect physicians' preconceptions about less value in older people rather than a careful look at the clinical evidence, say the researchers. However, they stressed that they did not look at referral rates, just use of rehab services—ie, whether a patient went to rehab and Medicare was billed.

"We don't know the referral pattern," Suaya told **heartwire**. "Between discharge and utilization there are many things that could happen. It's possible that the doctor wrote a referral but that for personal factors the patient decided not to go.

"But all the evidence shows that nearly all patients with stable angina or a recent MI, bypass surgery, or a coronary stent could benefit from cardiac rehabilitation," Suaya says. "Importantly, this benefit applies regardless of age, gender, or race," he stresses. Shepard says: "Patients and their families should ask for referral to cardiac rehabilitation before they are discharged from the hospital."

Massive variation in use between states; what can be done?

Differences in use of cardiac rehab between states also shocked the investigators. Use rates were more than fourfold higher in north central states of the US (Nebraska, Iowa, North and South Dakota, Minnesota, and Wisconsin) than in southern states. Utilization of cardiac rehabilitation ranged from 53.5% of patients in Nebraska to just 6.6% in Idaho.

"A few parts of our country are doing it well, but most are not," Shepard commented to **heartwire**. "We have to substantially raise the rates of use in those states that are not doing well."

The researchers say that increased use of cardiac rehabilitation might be achieved by improving the way in which patients are referred to rehab facilities after hospitalization, implementing quality indicators, and increasing reimbursement rates for these services.

On the latter point, they note that although Medicare expanded eligibility for cardiac rehabilitation services in 2006, it didn't change levels of reimbursement for the service. "We don't know for sure if the low rate of reimbursement is the main factor [for low use of rehab]," says Suaya, "but it needs to be looked at very carefully."

And for patients who live a long way from a cardiac rehabilitation facility—whom the study showed are less likely to receive rehab—the researchers suggest greater use of community or home-based programs as supplements or alternatives to facility-based programs. "Available evidence suggests that such programs are safe and equally effective, at least for patients who are at low or moderate risk of complications," they note.

Will new performance measures help?

Published simultaneously with the new study in *Circulation* are new performance measures for cardiac rehabilitation, which the authors hope will help boost patient enrollment in rehab programs.

The paper is the result of collaboration between the **American Association of Cardiovascular and Pulmonary Rehabilitation**, the **American College of Cardiology**, and the **American Heart Association**.

"This is a call to arms," says the lead author, **Dr Randal J Thomas** (Mayo Clinic, Rochester, MN). "Cardiac rehabilitation is extremely beneficial to patients . . . but it's vastly underutilized." One goal of the new performance measures is to make referral to cardiac rehab as automatic as giving aspirin during an MI. A second goal is to ensure the safety and excellence of cardiac rehabilitation programs.

"We hope that healthcare providers, healthcare systems, and health insurance carriers will work together to help all eligible patients participate in such programs," says Thomas. Shepard says the new performance measures "are a step in the right direction, as increasing referral rates is one of the goals." It's also possible that in the future in the US, referral may be linked with reimbursement, and that "would increase the likelihood that the guidelines are followed," he notes. Referral is a critical step in the utilization of cardiac rehabilitation, Suaya told **heartwire**, "so to have an outcome [in the new performance measures] that looks at what percentage of patients can be referred for rehab is an excellent evaluation."

References

Suaya JA, Shepard DS, Normand SLT, et al. Use of cardiac rehabilitation by Medicare beneficiaries after myocardial infarction or coronary bypass surgery. *Circulation* 2007; DOI: 10.1161/CIRCULATION/AHA.107.701466. Available at: <http://circ.ahajournals.org>.

Thomas RJ, King M, Lui K, et al. AACVPR/ACC/AHA 2007 Performance measures on cardiac rehabilitation for referral to and delivery of cardiac rehabilitation/secondary prevention services. *J Cardiopulm Rehabil Prev* 2007; 27: 260-290. *J Am Coll Cardiol* 2007; 50:1400-1433. *Circulation* 2007; 10.1161/CIRCULATIONAHA.107.185734. Available at: <http://circ.ahajournals.org>.

CHD and CANCER - Coronary heart disease linked to colorectal tumors

Patients with coronary artery disease had almost twice the prevalence of colorectal tumors and cancers than patients without heart disease in a new study coming from China. The authors, led by **Dr Annie On On Chan** (University of Hong Kong, China), note that the two conditions share similar risk factors, and their co-occurrence may be due to a common underlying pathology—chronic inflammation. They conclude that their results have important implications in prevention of both colorectal neoplasm and CAD, as well as for the screening strategy of colorectal cancer.

The study, published in the September 26, 2007 issue of the *Journal of the American Medical Association*, found that the association between CAD and colorectal neoplasms was stronger in persons with metabolic syndrome and a history of smoking. Chan et al note that smoking has been demonstrated as a major risk factor in the development of the two diseases, and there are also reports on insulin-resistance syndrome and colorectal cancer, as well as metabolic syndrome predisposing to colorectal adenomas.

In the introduction of their paper, Chan et al explain that they previously published a retrospective study that reported a strong association between colorectal cancer/adenoma and CAD, possibly due to the sharing of common environmental risk factors, such as diabetes mellitus; smoking; hyperlipidemia; sedentary lifestyle; high-fat, low-fiber diet; obesity; and hypertension. But they add that they were not able to identify the risk factors involved with any certainty because of the retrospective nature of the study.

They thus conducted the current cross-sectional study to investigate the prevalence of colorectal cancer and adenoma (colorectal neoplasms) in patients with newly diagnosed CAD and to identify the underlying risk factors, after adjusting for age and sex, that predisposed to the two conditions.

Patients in Hong Kong were recruited for a screening colonoscopy after undergoing coronary angiography for suspected CAD from November 2004 to June 2006. Angiography showed that 206 patients had CAD, defined as at least 50% diameter stenosis in any one of the major coronary arteries, and the other 208 patients were considered CAD negative. An age- and sex-matched control group of 207 individuals were recruited from the general population. Patients were excluded if they were taking aspirin or statins or had a personal history of colonic disease or colonoscopy in the past 10 years.

Results showed that colorectal neoplasms, advanced lesions, and cancers were all more prevalent in the CAD-positive group than in the CAD-negative and general-population groups.

Colonic lesions in the CAD-positive, CAD-negative, and general-population groups

Lesion	CAD positive (%)	CAD negative (%)	General population (%)	p
Colorectal neoplasm	34	18.8	20.8	<0.001
Advanced lesion	18.4	8.7	5.8	<0.001
Colorectal cancer	4.4	0.5	1.4	0.02

After adjustment for age and sex, an association still existed between colorectal neoplasm and presence of CAD (odds ratio 1.88) and between advanced lesions and presence of CAD (OR 2.51). Metabolic syndrome (OR 5.99) and history of smoking (OR 4.74) were both independent factors for the association of advanced colonic lesions and CAD.

Chan et al say that the current study confirms the association between the two diseases and their previous retrospective observation study. They point out that the design of the current study is robust compared with others, in that CAD was defined by coronary angiogram and patients were recruited prospectively for colonoscopy.

On the suggestion that inflammation may be the culprit for the simultaneous development of the two conditions, they point out that statins have been shown to have beneficial effects in both colorectal cancer and CAD, probably through an anti-inflammatory mechanism, and that aspirin has long been proven to be beneficial in both conditions, albeit through different mechanisms.

Prospective study needed

They conclude: "The study might not be able to estimate the true magnitude of association between CAD and colorectal neoplasm because there might be a percentage of patients in the general population with CAD who have not had a coronary angiogram. However, the study highlights the important point that, at least in those with CAD presenting for coronary angiogram, a high prevalence of colorectal neoplasm was observed. The predictive value of the metabolic syndrome and smoking on predisposing the positive association of colorectal neoplasm and CAD is limited by the nature of the cross-sectional study. A prospective study evaluating the role of the metabolic syndrome and smoking on the two conditions is desirable."

Reference

Chan AOO, Jim MH, Lam KF, et al. Prevalence of colorectal neoplasm among patients with newly diagnosed coronary artery disease. *JAMA* 2007; 298:1412-1419.

HEART FAILURE - Home telemonitoring shows limited clinical impact on HF in primary-care setting

Automated telemonitoring systems, used by heart-failure care providers with some success to stay on top of their patients' changing management needs, may hit a wall in their ability to improve outcomes under some circumstances—for example, in some special patient populations or when medical therapy is already tightly managed, according to investigators from a randomized trial.

One such device, the DayLink monitor (Alere, Reno NV), made no apparent impact on mortality, heart-failure hospitalizations, or other important end points in a population that had been deliberately enriched with women and ethnic minorities and managed by primary-care physicians in a community setting, reported **Dr Z Ozlem Soran** (University of Pittsburgh, PA) here at the **Heart Failure Society of America 2007 Scientific Meeting**. Prior to randomization in the study, she said, care providers had received special instruction in managing outpatients with heart failure, including education in current evidence-based treatment guidelines and how to adjust drug dosages.

"The trial assessed the utility of this heart-failure monitoring system in a real-world setting, rather than in the confines of an academic medical center," Soran told **heartwire**. Patients in other heart-failure telemonitoring studies, she observed, have been predominantly male, white, drawn from large university-affiliated institutions, and receiving care from specialists or in disease-management programs.

Observing that the study's patients ultimately were on optimal, guidelines-based therapy more reliably than usually occurs in primary care, Soran said automated telemonitoring devices aren't necessarily helpful in all heart-failure populations. On the other hand, she said, the study also supports a strategy of education-enhanced primary care as a way to improve heart-failure outcomes.

"If we give simple instructions to the patient and the primary-care physicians, maybe there is very little room left to change the natural course of the disease itself," she told **heartwire**. "Maybe we will be able to handle [the patients] without including complicated devices if we can diminish the disease with medication and education."

Speaking from the audience after Soran's presentation of the study, **Dr John GF Cleland** (University of Hull, UK) characterized the way in which the researchers' conclusions were framed as "pessimistic." The findings, he said, are in line with earlier trials, which together show a significant fall in mortality of about 40% with telemonitoring devices but no effect on hospitalization [2]. The mortality outcomes Soran was reporting, he observed, show a nonsignificant but nearly 40% decrease with the device.

"So I think this is an underpowered trial but highly consistent with the rest of the data showing a substantial reduction in mortality with these systems," Cleland said.

Soran's trial randomized 315 patients hospitalized for heart failure within the previous six months who were in NYHA class 2-3, had medically refractory symptoms, and were under the care of primary-care physicians in the community. The population excluded any with "significantly symptomatic" ischemic heart disease or on dialysis or receiving inotropic therapy. By design, enrollment tilted toward women, Hispanics, and African Americans, who made up about 65%, 27%, and 47% of the population, respectively.

Prior to randomization, all patients and providers received special instruction in evidenced-based medical therapy and other heart-failure management issues. Patients were followed up by telephone at 30 days and three months by personnel, blinded to randomization, from the otherwise-hands-off heart-failure disease-management program running the study, Soran said.

The intervention group was also trained in and received a DayLink telemonitoring system, which is directly wired to a digital bathroom-type scale and linked to primary-care providers over telephone lines. Activated with the push of a button, the device, in addition to monitoring for changes in weight, presents the patient with yes-or-no questions about symptom status and relays the responses to a database and, as appropriate, the care providers, according to Soran. Noteworthy data from the patient prompted a call from the provider to confirm and follow up, so it's likely the intervention group had more individualized contact with providers compared with the control group, Soran said.

Six months after randomization, however, the two groups showed no significant difference in the study's primary composite end point, "treatment failure," defined as cardiovascular death or hospitalization for heart failure, she reported. Hospital length of stay, she said, was a primary end point for any hospitalized patient.

Outcomes at six months with and without DayLink telemonitoring

Outcome	With telemonitoring, n=160	Without telemonitoring, n=155
Primary end point* (%)	21	29
All-cause mortality (%)	7.0	11.2
Mean length of stay (d)	10	9.3

*Cardiovascular death or hospitalization for heart failure No significant differences

There were also no differences in any prospectively defined secondary end points, including the composite end point's components, number of emergency-department visits, change in functional status, and quality of life.

Although some forms of telemonitoring have made significant contributions to care in clinical trials, the current findings caution against generalizing those results to all heart-failure outpatients, according to Soran. Those favorable results, she said, "don't mean that those devices are universally effective. We need to try to understand which groups really respond to this treatment." In the current study, she emphasized, the device didn't work as expected in a predominantly female, predominantly minority population. "If we focus our attention on educating the primary-care physicians and try to manage heart failure by adjusting the medications and following the guidelines, then we will be able to treat those patients with the same effectiveness as using sophisticated devices."

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Heart Failure Society of America - Summary

Interviewee: Sue Wingate RN, DNSc, CRNP

11th Annual Scientific Meeting of the Heart Failure Society of America, held in Washington, DC, Sept 16-19, 2007.

Highlights:

The results of several late-breaking clinical trials were presented. Cook et al. reported on results from the DAVID II trial, which compared outcomes from back-up ICD pacing set at either AAI rate 70 or VVI rate 40 and found that there were no differences in mortality or hospital admissions for heart failure. These results were somewhat surprising, given that DAVID I showed untoward outcomes from RV pacing in patients with heart failure. A second late-breaking presentation was from the ECLIPSE study (Udelson et al.), which examined the acute hemodynamic effects of tolvaptan, a vasopressin receptor blocker, in 600 patients with symptomatic heart failure and systolic dysfunction, with baseline mean pulmonary capillary wedge pressure (PCWP) of >18 mmHg. Patients randomized to tolvaptan (single oral dose of 15, 30, or 60 mg.) experienced a change in PCWP of -6.4 mmHg (P = .003), -5.7 mmHg (P = .04), and -5.7 mmHg (P = .03) in the 15, 30, and 60 mg dose groups, respectively, compared to -4.2 mmHg in the placebo group.

There were several other studies of particular interest to CCAs. Ramasubbu et al. reported on a meta-analysis of statin use and survival in patients with both ischemic and non-ischemic heart failure. Ten studies evaluating over 85,000 patients were evaluated; statin use was associated with a 28% decrease in mortality risk, with a similar effect seen for both ischemic and non-ischemic heart failure, suggesting that non-lipid-lowering effects of statins may be the predominant mechanism for these favorable effects.(1)

Dyke et al. reported on data from 231 patients enrolled in a clinical trial of the HeartMate II LVAD implanted as a bridge to transplant. Functional capacity and quality of life were measured at baseline before implantation and at one, three, and six months on LVAD support. These patients had early, sustained, and marked improvement in functional capacity and quality of life (74% improvement in 6 minute walk test and 86% improvement in the Kansas City Cardiomyopathy Questionnaire scores at six months as compared to baseline).(2)

Lenihan et al. reported on 109 patients with various cancers undergoing chemotherapy and measured ejection fraction and biomarkers (troponin I and BNP) at baseline and after six cycles of chemotherapy. An elevated BNP during chemotherapy conferred greater than 58 times higher risk of developing cardiotoxicity and was more sensitive than ejection fraction for detecting cardiotoxicity. The authors suggest that BNP be monitored during chemotherapy, especially for those regimens containing anthracyclines.(3)

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