WEDNESDAY, NOVEMBER 19

DailyNews

American Heart Association®
SCIENTIFIC SESSIONS 2014

INSIDE

Rise in infective endocarditis associated with 2008 change in NICE guideline on antibiotic prophylaxis

Increase in the incidence of infective endocarditis was temporally associated with the United Kingdom's National Institute for Health and Care Excellence (NICE) 2008 recommendation that patients do not need to take antibiotics before invasive dental procedures or certain non-dental procedures to prevent infective endocarditis in research presented during Tuesday's Late Breaking Clinical session.

Mark J. Dayer, PhD, FRCP, consultant cardiologist at Taunton and Somerset NHS Trust, noted that although a substantial fall in prescribing antibiotic prophylaxis (AP) was correlated with a significant rise in the rate of new infective endocarditis cases in England, these results did not establish causation.

He also indicated that based on the publication of the data in *The Lancet* to coincide with its presentation at the American Heart Association's 2014 Scientific Sessions, NICE has issued a press release stating that as a result of the data it will undertake an immediate review of their guidance.

Antibiotic prescribing data showed that since 2008, there was an 88 percent reduction in prescriptions for amoxicillin and clindamycin — down from 10,935 before March 2008 to 1,282 from March 2008.

Coinciding with the timing of the NICE guidelines, a significant increase in the incidence of infectious endocarditis was noted — 0.62 cases per month. By March 2013, the increase was 35 cases per month or 420 cases per year. Mortality, although not significant, was also correlative of stopping AP. Researchers found an association between infectious endocarditis between both the high-risk and low-risk groups, with two-thirds of the increase seen in the low-risk group.

Dayer was cautious in the interpretation of the data. "Although there is a temporal association between the increase of infectious endocarditis and the guidelines for stopping antibiotic prophylaxis, we cannot conclude there is a cause-effect relationship," he said. A randomized clinical trial is required to settle this question, Dayer and others at the session felt.


Mark J. Dayer, PhD, FRCP

The role of losartan in Marfan's syndrome, hypertrophic cardiomyopathy discussed

In children and young adults with Marfan syndrome, losartan, an angiotensin II receptor antagonist, provides no difference in reducing the rate of aortic enlargement compared with the commonly used drug, atenolol, based on a Pediatric Heart Network study presented by Ronald V. Lacro, MD, associate in cardiology, Boston

LATE-BREAKING continued on page 15

Integrating clinical research with clinical large registries could improve CV outcomes

Internationally recognized physician-researcher Lars Wallentin, MD, PhD, discussed the value of integrating outcomes research from clinical trials with clinical outcomes tracked in large Internet-based registries, electronic patient records and data from biobanks that store blood and tissue samples to improve cardiovascular outcomes.

Wallentin is senior professor of cardiology and chief researcher of cardiovascular diseases at the Uppsala Clinical Research Center, which he founded at Uppsala University Hospital in Uppsala, Sweden. He is also the founder of the Cardiothoracic Center at Uppsala, the Swedish Registry of Acute Cardiac Care and the First Swedish Competence Center for National Quality Registers in Health Care.

"In Sweden we can track patients for life through our national registries that contain electronic data about long-term outcomes — every readmission, every medication prescribed and every new disease — until the end of life," said Wallentin, who presented the Paul Dudley White International Lecture on Tuesday. Using the registries, Swedish medical centers can also track any changes in outcomes when they implement new treatment strategies.


Lars Wallentin, MD, PhD

Through SWEDEHEART (Swedish Web-system for Enhancement and Development of Evidence-based care in Heart disease Evaluated According to Recommended Therapies), hospitals get an annual score based on their cardiovascular treatment outcomes, and the scores are made public.

"This has led to a dramatic change in performance. When we started to present these scores publicly, care substantially improved, especially among the poorly performing hospitals," he said. "By this system, I think we have contributed to the equalization of cardiovascular care provided to patients in Sweden."

The marriage of clinical trial data with registry data has also changed the approach to angiography and percutaneous coronary

CV OUTCOMES continued on page 14

Coronary artery calcium predicts CVD in erectile dysfunction patients

Coronary artery calcium may more effectively predict cardiovascular disease risk in patients with erectile dysfunction (ED), new data presented Tuesday suggest.

In the first study to predict the future onset of self-reported ED using subclinical vascular measures, researchers also found that calcium testing may predict erectile dysfunction in those without the disorder.

"Erectile function is a window into cardiovascular health and overall health for a man," said David I. Feldman, BS, clinical research assistant at the Ciccarone Center for the Prevention of Heart Disease at the Johns Hopkins Medical Institution in Baltimore, Maryland. "Many studies have identified that ED and cardiovascular disease coexist, but few have explored the temporal relationship between markers of early vascular disease and the subsequent onset of self-identified ED."

In "The Association of Subclinical Vascular Disease and Erectile Dysfunction at 9-Year Assessment: The Multi-Ethnic Study of Atherosclerosis (MESA)," researchers assessed patients at baseline and every two years. The ED-related findings are based on the fifth visit at a median follow-up of 9.4 years after baseline.

Researchers assessed subclinical atherosclerosis using coronary artery calcium and carotid intima-media thickness; vascular stiffness using carotid ultrasound and MRI of the aorta; and vascular dysfunction using ankle-brachial index and flow-mediated dilation.

During the fifth visit, 1,862 men completed baseline multi-mode subclinical vascular disease phenotyping and underwent ED assessment. They self-reported using the one-question self-assessment in the Massachusetts Male Aging Study. Researchers calculated the odds ratios for erectile dysfunction based on any abnormality in the tested subclinical vascular disease domains.

At visit five, 839 men (45 percent) at a mean 63.9 years old self-reported ED. Researchers found a graded association between the number and the severity of subclinical disease abnormalities and ED. Measures of subclinical atherosclerosis, particularly coronary artery calcium, were most closely associated with self-reported ED.

Initial associations between subclinical vascular diseases and self-reported ED were adjusted for age, race, smoking, family history, triglycerides, LDL-cholesterol, HDL-cholesterol, beta-blockers, the CES-D depression score, education, body mass index, waist circumference, depression medications, antipsychotic medications, systolic and diastolic blood pressure, hypertension medications, diabetes and lipid-lowering therapy.

After adjustment, only coronary artery calcium showed a significant association with self-reported ED. The presence of coronary artery calcium carried an odds ratio of 1.5 for self-reported ED. Coronary artery calcium greater than 100 carried an odds ratio of 1.4 for self-reported ED.

Further research is needed before clinicians routinely use coronary artery calcium tests over typical noninvasive methods such as exercise stress tests and ankle-brachial index testing, Feldman said. But the results have important implications for prevention and men's health clinics.

"Men who are clearly at risk for future ED and cardiovascular disease as shown by the presence of coronary artery calcium should follow heart-healthy diets, focus on improved levels of physical activity and avoid smoking to improve long-term erectile function and to avoid worsening cardiovascular health," Feldman said. ▼

TODAY AT SESSIONS

Don't miss today's highlighted presentations and events. For a complete schedule, see the Final Program or view it online at **scientificsessions.org**.

7 a.m.–3 p.m.
Cardiovascular Nursing Clinical Symposium
N427ad

7 a.m.–3:42 p.m.
Arrhythmia Research Summit
N426bc

7:15–8:20 a.m.
Clinical Science: Special Reports V: Results of ODYSSEY
S100ab

9–10:15 a.m.
Next Best Thing in Cardiovascular Science (at Lightning Speed)
S406b

9–10:15 a.m.
Failure Is Not an Option: The Intersection of Diabetes and Heart Failure Epidemics
S100ab

10:45 a.m.–12 p.m.
Curing Atherosclerosis: The Next Step in Cardiovascular Prevention?
S106

10:45 a.m.–12:03 p.m.
Late-Breaking Clinical Trials IV: Ischemic Heart Disease: Drugs, Devices and Systems of Care
S100ab

TAKE PART

in the website usability study for the MyAmericanHeart.org redesign.

Free gift: Universal device charger ($25 value)
To sign up, email jacque.sebany@heart.org
Time: 30 - 45 minutes
Room: N140

Attendee feedback

Scientific Sessions attendees can access online meeting evaluation surveys at **learn.heart.org**. The American Heart Association uses these attendee surveys for feedback on programming, location, networking and CME credits. Attendees must complete the survey to receive CME/CE credit.

Attendees who are not claiming CME/CE credit are invited to fill out a non-CME survey, which will be emailed soon.

Responses are anonymous and will be used only to evaluate and build educational and networking opportunities at future Scientific Sessions. ▼

HIGHLIGHTS FROM THE PROGRAM CHAIR

By Robert A. Harrington, MD, FAHA, FACC, FESC, Committee on Scientific Sessions Program Chair

It's the final day of Scientific Sessions — and there's still a lot of great programming to go. We often hear that attendees appreciate experiencing the broad spectrum of science, but they would also like some of the intimacy of a smaller meeting. Now we're ready to deliver.

We have some longstanding embedded meetings within Sessions, including the Global Congress, ReSS and the Cardiovascular Nursing Clinical Symposium. This year, we are pleased to introduce the Arrhythmia Research Summit as a single-day meeting within the meeting. Planned by AHA electrophysiology volunteer members, the day will cover the spectrum of basic science up through population health — all dealing with the science and clinical care issues surrounding cardiac arrhythmias.

Today is the final Late-Breaking Clinical Trials session, concentrated on ischemic heart disease. There are two trials examining the use of new stents — bioabsorbable and biodegradeable. These new technologies have been designed to provide excellent stent strength while minimizing the likelihood of late thrombosis complications. The third trial is a pilot study of the use of oxygen given to patients with acute MI. It's a great example of using the RCT methodology to explore a very practical clinical question. And the last one is the AHA STEMI Accelerator Study. This is an AHA Mission: Lifeline® project that looks at initiatives implemented to improve clinical outcomes.


Robert Harrington, MD, FAHA, FACC, FESC

We have learned this week that non-statin drugs can lower LDL and provide incremental clinical benefits beyond what statins alone can offer. Today we have an entire Clinical Science Special Reports session devoted to a series of studies with a novel PCSK9 inhibitor. None of these studies will provide definitive data as to how we might consider using these agents but, as a whole, the studies provide some insight into how we might think about the drug-development issues. There will be a commentary in this session by Michael J. Pencina, PhD, a biostatistician from the Duke Clinical Research Institute. He'll address the challenges in thinking about an intermediate outcome as sufficient for drug approval in this space.

On this final day of Sessions, spend some time in the member lounges, like FAHA, Early Career and others. Continue those discussions started with colleagues around a poster or oral presentation. And don't forget to block the dates to join us next year in Orlando. Thanks for attending Scientific Sessions 2014 in Chicago! ▼

Clinical Science: Special Reports — CS.05
7:15–8:20 a.m. Wednesday | S100ab
Results of ODYSSEY

TRIAL	DESCRIPTION
Efficacy and Safety of Combining Alirocumab With Atorvastatin or Rosuvastatin versus Statin Intensification or Adding Ezetimibe in High Cardiovascular Risk Patients: ODYSSEY OPTIONS I and II	This study compared the efficacy and safety of alirocumab as add-on to statin versus doubling statin dose, switching to a more potent statin or adding ezetimibe in patients not at goal on commonly used statin doses.
ODYSSEY HIGH FH: Efficacy and Safety of Alirocumab in Patients With Severe Heterozygous Familial Hypercholesterolemia	This study compared the low-density lipoprotein cholesterol-lowering efficacy and safety of alirocumab to placebo in hypercholesterolemia patients with LDL-C =160 mg/dL despite maximally tolerated statin ± other lipid-lowering therapies.
Efficacy and Safety of Alirocumab in High Cardiovascular Risk Patients With Suboptimally Controlled Hypercholesterolemia on Maximally Tolerated Doses of Statins: The ODYSSEY COMBO I Study	This study evaluated efficacy and safety of alirocumab as add-on therapy to stable, maximally tolerated daily statin ± other lipid-lowering therapy in high-risk patients with sub-optimally controlled hypercholesterolemia.
Long-term Safety, Tolerability and Efficacy of Alirocumab versus Placebo in 2,341 High Cardiovascular Risk Patients: ODYSSEY LONG TERM	This is an ongoing study assessing safety, tolerability and efficacy of alirocumab versus placebo in high CV risk patients.

Late-Breaking Clinical Trials — LBCT.04
10:45 a.m.–12:03 p.m. Wednesday | S100ab
Ischemic Heart Disease: Drugs, Devices and Systems of Care

TRIAL	DESCRIPTION
Long-term Outcome of Biodegradable Compared to Durable Polymer Drug-eluting Stents and Bare Metal Stents — Main Results of a Prospective Randomized Trial	This multicenter, open-label, randomized, safety and long-term efficacy study was designed to assess safety and efficacy of two different drug-eluting stents versus a third-generation bare-metal stent.
Primary Outcomes of the EVOLVE II Trial: A Prospective Randomized Investigation of a Novel Bioabsorbable Polymer-Coated, Everolimus-Eluting Coronary Stent	This trial was designed to assess the safety and effectiveness of the SYNERGY Everolimus-Eluting Platinum Chromium Coronary Stent System for the treatment of patients with atherosclerotic lesions in this prospective, multicenter trial.
A Randomized Controlled Trial of Oxygen Therapy in Acute St-segment Elevation Myocardial Infarction: The Air Versus Oxygen in Myocardial Infarction (AVOID) Study	This trial was designed to evaluate whether withholding of routine supplemental oxygen therapy in patients with acute STEMI but without hypoxia prior to reperfusion decreases myocardial infarct size.
Developing Regional STEMI Systems of Care: Final Results of the Mission: Lifeline® STEMI ACCELERATOR Study	This program was designed to evaluate the effect of quality measures on regional STEMI systems of care as well as clinical outcomes across the United States for STEMI patients.

Distinguished Scientist Lecture focuses on 'big data' to inform practice

Robert M. Califf, MD, this year's Distinguished Scientist lecturer, sees "big data" as the pathway to fundamentally changing what physicians know about a person's risk of cardiovascular disease.

Califf has been working since 1978 to make the potential benefit of big data a workable reality for physicians and their patients.

"When I was a medical student, I needed a job and had the good fortune to run into Dr. Eugene Stead, who pioneered the Duke Cardiovascular Disease Research Database, and went to work for him capturing data from physical examinations and histories of people with heart disease and putting it into a computer," Califf said.

While doing this work, he said he found that doctors often were missing crucial information. That revelation spurred a desire to work toward the goal of a healthcare system where people make health choices fully informed by the comparative risks and benefits.

"It's within our reach to answer 10 times as many important questions at one-tenth the cost, which means a 100-fold increase in information for the same cost, so patients will have greater assurance that when they get a recommendation from a doctor, the recommendation will likely lead to better health," he said.

Califf sees an ongoing "information explosion" that is radically transforming medicine in three major areas. They are: large-scale multidimensional analysis of biological data to quantify systems biology and its intersection with health and disease; the learning health system, in which the data created by routine clinical transactions contributes to the evidence base needed to improve patient care at the individual and clinical cohort levels; and the integration of biological and clinical data with social and environmental information to inform population health.


Robert M. Califf, MD

"In my view, the tipping point has been reached," he said. "All of us who are involved in cardiovascular medicine — clinicians, scientists, educators and administrators — need to understand how to adjust our views and approaches and take advantage of the new capabilities available to us."

As examples of the medical and scientific community moving in the right direction, he points to the work being done by collaborative networks such as the National Institutes of Health's Health Care System Research Collaboratory and the National Patient-Centered Clinical Research Network (PCORnet) developed by the Patient-Centered Outcomes Research Institute to use electronic health records to do randomized clinical trials.

He added that the Duke Translational Medicine Institute is also working with Google X, the research arm of Google Inc., in developing the Baseline Study. It's a project designed to collect anonymous genetic and molecular information from healthy people to help researchers detect cardiovascular and other chronic diseases earlier and design ways to prevent the diseases.

"So, there is hope on the horizon. These programs, and others on the way, have the potential to open up a whole new approach to looking at human biology," he said. "I wish I was 20 years younger, because we're really at a place right now where the things that we dreamed about that seemed impossible in our lifetimes are really becoming possible." ▼

CAREER PROGRESSION

JOSEPH P. BRODERICK, MD, FAHA

Each day in this spot, we will profile an investigator at a different career stage, from early career to distinguished veteran.

Joseph P. Broderick, MD, FAHA, says volunteering for the American Heart Association and American Stroke Association has shaped his career.

"It's been an avenue for success for my career and for the process of doing science and education," said Broderick, chair of the Stroke Council, professor of neurology and rehabilitation medicine at the University of Cincinnati and director of the University of Cincinnati Neuroscience Institute.

Broderick joined the American Heart Association as a professional member in 1988, at the urging of a colleague, Thomas Brott, MD. That year, he earned an American Heart Association Grant-in-Aid for a study that examined the burden of hemorrhagic stroke among African-Americans and whites in greater Cincinnati.

This was the precursor to the largest ongoing population-based, biracial studies for stroke in the region, providing the basis for many important research observations.

The AHA's focus on education and research resonated with Broderick's passion for stroke research. That's why he has served in various roles for the Stroke Council, AHA national committees and the Southwest Ohio Division.

Annual AHA scientific meetings, including the International Stroke Conference, are a highlight for Broderick, an opportunity to get a first look at late-breaking trials and other information that can change the way stroke and heart medicine is practiced.

"The science is fresh and exciting," he said. "I look forward to seeing my colleagues and friends from around the world and discussing what we're hearing."

The in-person connections create a strong foundation for collaboration, said Broderick, who is on the Program Committee for the 2015 International Stroke Conference.

"Most of science is team science," he said. "Going to meetings allows you to make those connections that enable you to do that team science more effectively than you could otherwise."

During his long tenure as a Stroke Council member, Broderick has worked with his AHA/ASA colleagues to help consumers lower their risks of stroke through programs such as Life's Simple 7, influence key changes to the way stroke care is measured and advocate for advances in stroke medicine.

"As physicians and scientific leaders with an organization with international respect, we can hopefully make change for the better," Broderick said.

He's worked with the Centers for Medicaid and Medicare Services to consider the severity of strokes, not just mortality rates. He's also advocated for hospitals to be more fairly reimbursed for costs to care for patients treated with tissue plasminogen activator (tPA).

"We want to make sure the hospitals that are taking care of the most severe strokes aren't penalized," Broderick said.

Broderick's involvement with the AHA/ASA has also allowed him to work on stroke issues with leaders in science and lay people in the community.

"It's been a terrific boon for my professional career to do science, publish science and educate the next generation," Broderick said. ▼

MEMBER SPOTLIGHT

Heather L. Gornik, MD, FAHA, FSVM

Director, Non-Invasive Vascular Laboratory, Cleveland Clinic Heart and Vascular Institute, Associate Professor of Medicine, Cleveland Clinic Lerner College of Medicine of Case Western Reserve University

How long have you been an AHA/ASA Professional Member?

I have been an AHA Professional Member since 2002.

Why did you join?

I joined because so many of my mentors were actively engaged in the AHA and had made the AHA such an important component of their professional lives. My mentor, AHA President-Elect Mark Creager, MD, FAHA, strongly encouraged me to become active with the Interdisciplinary Working Group on Atherosclerotic Peripheral Vascular Disease when I was a fellow in 2004 and introduced me to numerous senior AHA members with vascular interests. That opened several doors for me within the organization and also within the broader field of academic vascular medicine.

Are you involved in AHA councils?

I have been the Membership Committee chair of the Council on Peripheral Vascular Disease (PVD) and have served as council representative to several AHA-wide committees. I now serve on the Program Committee and Nominating Committee of the PVD Council.

What do you enjoy most about these roles?

My involvement has given me terrific opportunities for professional networking and clinical and research collaborations. Many of my collaborations began with a conversation at Scientific Sessions or through introductions made by other PVD Council members. For example, I first met Jeffrey Olin, DO, FAHA, at the AHA PVD Fellows' workshop in Washington, DC, in 2004 when I was a vascular medicine fellow in Boston. That initial meeting and interaction formed the foundation of a terrific friendship and collaboration in clinical care and research related to fibromuscular dysplasia.

How else are you involved with the AHA?

My participation in scientific statements has really been a highlight of my AHA membership. With Jeff Olin, I co-chaired the AHA scientific statement on fibromuscular dysplasia published earlier this year. I also participated in the peripheral artery disease guideline update in 2011, the scientific statement on periodontal disease, and the 2007 guideline on the prevention of cardiovascular disease in women.

Why is membership valuable to you?

As an academic vascular clinician, the AHA is one of the few organizations where there is truly balanced multidisciplinary representation in the planning of programming and leadership of our PVD Council. It's great to sit at a table with vascular medicine doctors, interventional and non-invasive cardiologists, vascular surgeons, interventional radiologists and vascular nurses and collaborate with epidemiologists and basic science researchers as well as nephrologists and neurologists on some of our statements. There are few other meetings I go to where I get to engage with so many others who are equally passionate about vascular disease, but have different points of view and experience.

What message would you like to convey to your colleagues about being an AHA member?

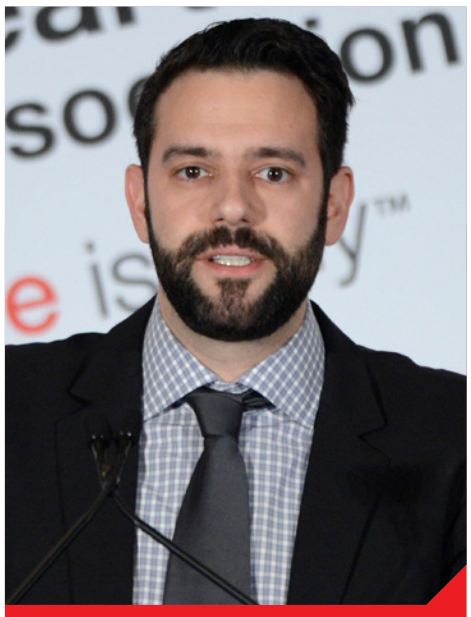
There are many ways to get involved with the AHA. For me, scientific statement writing and participation in the PVD Council activities has been my path. But there are so many other avenues to explore, including patient education, public health grassroots initiatives, research grant funding, advocacy and Scientific Sessions programming. ▼

Maternal obesity boosts offspring CVD mortality

Children of overweight mothers have increased risk for cardiovascular disease mortality, according to new data from the Framingham Heart Study presented Tuesday.

"An individual's risk for cardiovascular disease events and cardiovascular death was associated with whether his or her mother was overweight prior to pregnancy," said Michael Mendelson, MD, SM, research fellow at Boston University and Boston Children's Hospital Heart Center. "We also found that the effect in the offspring appears to be partially mediated by the classical cardiovascular disease risk factors such as obesity, hypertension, diabetes and dyslipidemia in the offspring generation."

In one of the first studies to document increased cardiovascular disease mortality in children of overweight mothers, researchers analyzed data collected prospectively in 1971-2012 on 879 participants in the Framingham Heart Study Offspring cohort. Researchers also had information on the mothers' weight status.



Michael Mendelson, MD, SM

For 136 participants, the Framingham database included direct measurements of the mothers' body mass index before pregnancy. The other 743 participants provided an assessment of their mothers' overweight status before pregnancy.

Outcomes in the study included a composite measure of cardiovascular disease events and all-cause mortality, and secondary outcomes included fatal or non-fatal cardiovascular disease and fatal or non-fatal coronary heart disease. Initial hazard ratios were adjusted for age and sex. Later adjustments included potential mediators, including traditional cardiovascular disease risk factors. Pharmacologic treatments for diabetes, hypertension or dyslipidemia were included as time-varying covariates.

The mean age of the offspring participants at baseline was 32 years, 52 percent were female, and the mean follow-up was 34 years. Within the group, 193 cardiovascular events occurred, including 20 cardiovascular deaths and 138 total deaths.

Having an overweight mother was associated with an increased hazard ratio for cardiovascular disease events and all-cause mortality of 1.9.

A sensitivity analysis restricted to the smaller group of participants whose mothers had directly measured pre-pregnancy BMI showed similar findings. The hazard ratios were similar, while the confidence intervals were larger due to the smaller sample size.

Adjustment for offspring BMI, diabetes, hypertension and dyslipidemia attenuated the associations, Mendelson said.

"The main question that remains is whether intervening on maternal obesity and obesity among young women prior to their childbearing years will improve cardiovascular disease outcomes in the children," Mendelson said. "The evidence would support the premise that, if you intervene on maternal health, it would have implications on cardiovascular disease outcomes in the children. But we are not able to show that with these data. That would be an important next step in this line of research." ▼

Weighty Problem

In the Framingham Heart Study, mothers who were overweight before pregnancy passed to their offspring a 90 percent increased risk (hazard ratio: 1.9) of cardiovascular disease events and all-cause mortality. Offspring risk factors such as obesity, hypertension, hypercholesterolemia and diabetes appear to at least partly mediate this relationship.

Right ventricle remodeling a indicator in pulmonary hypertension

A pilot study using 3D echocardiography wall motion tracking in the right ventricle shows great promise for quantifying right ventricular remodeling and providing helpful prognostic information for patients with pulmonary hypertension, according to results presented Tuesday.

"Three-dimensional echo is a rather new technology," said Keiko Ryo, MD, PhD, Kobe University Graduate School of Medicine, Kobe, Japan. "Many echocardiography units have the capability for 3D imaging, but it is not used very often to assess right ventricular function in patients with pulmonary hypertension."

The goal of the project was to use 3D echocardiography to track ventricular wall motion to assess and quantify right ventricular remodeling in patients with pulmonary hypertension. A second goal was to study any associations between right ventricular remodeling and patient outcomes.

Developing this less-invasive imaging technology is particularly important for the pulmonary hypertension population, Ryo noted. Invasive catheterization is the clinical standard to monitor disease progression, but 3D echocardiography provides additive and important prognostic data. This new information has promise to help with clinical decisions for advanced therapy, such as continuous infusion therapy or lung transplantation.

Researchers used 3D wall motion tracking echocardiography in 92 patients with pulmonary hypertension. The 3D data and images were used to evaluate right ventricular volume indexed to body surface area, in particular right ventricle end-systolic volume index (RVESVI). All of the patients also underwent invasive hemodynamic measurements about the same time as 3D echocardiography was performed.

The working hypothesis was that right ventricle remodels in response to pulmonary hypertension and that 3D echocardiography can identify patients who progress from adapted remodeling to adverse remodeling with a poorer prognosis.

Patients were divided into three groups using receiver-operator characteristic analysis and pressure volume relations between the systolic pulmonary artery pressure and the RVESVI.

RVESVI greater than 74 ml/m2 emerged as the cut point between positive prognosis and poor prognosis for death or lung transplantation (91 percent sensitivity, 68 percent specificity).

Patients with RVESVI of 74 – 114 ml/m2 had a moderately poor prognosis and were considered the right ventricle adapted-remodeled group. Patients with RVESVI greater than 114 had the worst prognosis (p=0.01) and were considered the right ventricle adverse-remodeled group. Multivariate analysis showed that RVESVI and NYHA functional class were factors independently related to death or lung transplantation.

"For now, 3D echocardiography results are very dependent on the patient's image quality and the technique of the sonographer," said Ryo, whose research came from work she performed as a research fellow in the laboratory of John Gorcsan III, MD, professor of medicine and director of echocardiography at the University of Pittsburgh Medical Center. "Like many imaging techniques, that will be improved as the technology matures with greater clinical experience." ▼

Moms with congenital heart disease are not at higher risk for death, cardiac events in delivery

Women with congenital heart disease are more likely to deliver by cesarean section and have longer hospitalizations — but aren't at greater risk for cardiac events or death during delivery, according to research presented Tuesday

"We were able to look at more than 2.7 million admissions for delivery in the state of California over a seven-year period," said Robert Hayward, MD, cardiac electrophysiology fellow at the University of California, San Francisco. "Women with congenital heart disease more commonly had a history of congestive heart failure, but their in-hospital mortality was not different compared to women who did not have congenital heart disease."

Researchers identified hospital admissions for vaginal and cesarean delivery in California hospitals in 2005-11, including 3,218 women with non-complex congenital heart disease and 248 with complex congenital heart disease. They compared length of stay, in-hospital mortality, incident congestive heart failure, cardiac arrests and cardiac arrhythmias.


Robert Hayward, MD

Researchers found:

- The length of stay was 2.3 days for women without congenital heart disease, 3.4 days for women with non-complex congenital heart disease and 5 days for women with complex congenital heart disease.
- Women with any degree of congenital heart disease were more likely to deliver by cesarean section.
- In-hospital mortality was slightly higher for women with congenital heart disease, but the difference was not statistically significant.
- Incident heart failure, arrhythmias and cardiac arrests were uncommon in all groups.
- A history of congenital heart failure was 8.1 percent for complex congenital heart disease, 2.6 percent for non-complex congenital heart disease and .08 percent for no congenital heart disease.

Researchers only looked at hospital admission through delivery and discharge.

"For that brief period, the rates of these complications appear to be lower than we might have expected," Hayward said. ▼

Healthier diet after diabetes diagnosis reduces cardiovascular events

Women with Type 2 diabetes who adopt a healthier diet have a lower risk of major cardiovascular events compared to women who have an unhealthy diet, according to research presented Tuesday.

"We found that eating healthy diets is directly related to reducing the risk of major cardiovascular events after a diagnosis of Type 2 diabetes," said Hyun Joon Shin, MD, SD, MPH, MS, clinical cardiology fellow at Baylor University Medical Center in Dallas, and a nutrition epidemiology doctoral of science candidate at Harvard School of Public Health in Boston.

"The most important changes were limiting sugar-sweetened beverages, avoiding trans fat, increasing the amount of polyunsaturated fatty acids and, especially, improving the amount of whole grains in the daily diet," Shin said.

Consuming less red and processed meats had a protective effect in reducing the risk of heart attack, but no statistically significant effect on the risk of stroke.

Researchers followed 6,924 women with Type 2 diabetes in the Nurses' Health Study for a maximum 26 years. They assessed multivariate association between the alternative Healthy Eating Index and the first major heart attack or stroke.

Among women with Type 2 diabetes during follow-up, 1,044 had major cardiovascular events, including 675 heart attacks and 465 strokes. Ninety-six women experienced heart attack and stroke.

"In the past, we have not had enough evidence that diet can reduce risk based on hard outcomes in people with diabetes," Shin said. "These results will help patients with diabetes realize that they really can avoid having myocardial infarction or a stroke by healthy dietary choices. We can say that it is never too late to change to a healthier diet." ▼

2014 Poster Winners

Early career work is vital to the American Heart Association. The future of cardiovascular science is in the hands of these healthcare professionals and scientists. That's why it's so important that we continue to fund their work through research awards and provide meaningful learning and mentoring opportunities. In fact, we devoted a full day to early career programming Saturday during Scientific Sessions.

Their work is also showcased throughout Scientific Sessions, and the Poster Sessions include many examples. Here is a look at the Poster Winners from Scientific Sessions 2014 — all of whom are early career professionals:

Core 1. Cardiovascular Imaging

Patricia Nguyen

Cell Damage and Even Death Detected in Peripheral T-Lymphocytes in Patients Undergoing Cardiac Computed Tomographic Angiography

Board 1313

Core 2. Epidemiology and Prevention of CV Disease: Physiology, Pharmacology and Lifestyle

Min-Tsun Liao

Comparative Effectiveness of Different Angiotensin II-Receptor Blockers for Survivors of ST-Elevation Myocardial Infarction: A Nationwide Cohort Study Using Insurance Claims Database

Board 2110

Core 2. Epidemiology and Prevention of CV Disease: Physiology, Pharmacology and Lifestyle

Andrew E. Moran

Effect of Dietary Salt Restriction on Blood Pressure in Chinese Adults: A Meta-Analysis

Board 2178

Core 3. Genetics, Genomics and Congenital CV Disorders

Yassine Sassi

Cardiomyocyte miR-29 Promotes Cardiac Remodeling

Board 3043

Core 4. Heart Rhythm Disorders and Resuscitation Science

Nitesh Sood

Incidence and Predictors of Peri-procedure Complications with Transvenous Lead Extractions in the Real World: Data from NCDR ICD Registry

Board 4297

Core 5. Myocardium: Function and Failure

Diederik Kuster

N-terminal Region of Cardiac Myosin Binding Protein-C Regulates Sarcomeric and Cardiac Function

Board 9003

Core 6. Catheter-Based and Surgical Interventions

Sungsoo Cho

Impact of the Duration of Dual Antiplatelet Therapy in Patients with Peripheral Arterial Occlusive Disease After Percutaneous Transluminal Angioplasty on Clinical Outcomes

Board 6139

Core 7. Vascular Disease: Biology and Clinical Science

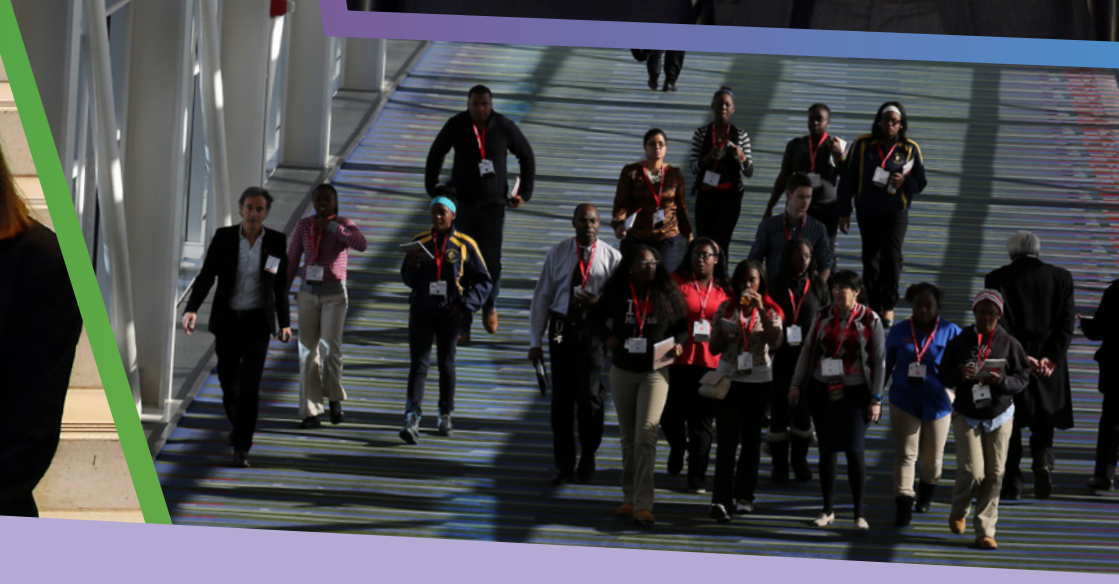
Haruki Sekiguchi

Prevention of Contrast-Induced Nephropathy by Oxygen Preconditioning in Patients With Impaired Renal Function

Board 7458

SCENES FROM SESSIONS

In the first-ever Health Tech Innovation Competition at Scientific Sessions, the top prize was awarded to Sense.ly and the People's Choice award went to Eko Devices. Ivana Schnur, MD, PhD (left), co-founder and chief medical officer, accepted on behalf of Sense.ly and Jason Bellet (right), co-founder and COO, accepted on behalf of Eko Devices.



CELEBRATING RESEARCH

Current and past American Heart Association research awardees gathered Monday for a group photo. The AHA has funded more than $3.7 billion in research into heart disease, stroke and other cardiovascular diseases, more than any organization outside the federal government. The organization has funded 13 Nobel Prize winners and lifesaving research advancements such as the first artificial heart valve, cholesterol-inhibiting drugs, heart transplantation, and CPR techniques and guidelines.

Walking Challenge

Congratulations, Walking Challenge participants. You've already logged enough steps to walk from McCormick Place to the Orange Country Convention Center in Orlando, the site of next year's Scientific Sessions ... and back ... several times over!

As of 6 p.m. Tuesday, Walking Challenge participants had logged a grand total of 8,758,644 steps. Using 3 feet as an average stride length, that comes out to more than 4,975 miles. The driving distance between the Chicago and Orlando convention halls is 1,156 miles, so that's more than two full round trips.

The winners of this year's Walking Challenge will be displayed by 10 a.m. Wednesday on the leaderboards throughout McCormick Place. Winners must pick up their prizes by 1 p.m. at the Walking Challenge booth in the Grand Concourse lobby.


Yoshimi Fukuoka, RN, PhD

New mobile app helps obese, overweight adults delay or prevent onset of Type 2 diabetes

A new mobile app has replicated positive results of the NIDDK-funded Diabetes Prevention Program (DPP) lifestyle intervention at a fraction of the cost, according to a small trial presented Tuesday.

"We know from the Diabetes Prevention Program that a 7 percent weight loss can put a clinically significant dent in Type 2 diabetes by delaying or preventing its onset," said Yoshimi Fukuoka, RN, PhD, associate professor of nursing at the University of California, San Francisco School of Nursing. "But it is extremely expensive to produce this type of significant weight loss using the DPP methodology. So we adapted the DPP core programs into a mobile app, and we were able to produce a clinically and statistically significant weight loss and blood pressure reduction."

Researchers randomized 61 overweight and obese adults to an intervention using Fukuoka's mobile phone app and a pedometer versus a pedometer only to measure physical activity. The mean age of the patients was 55.2 years, their mean baseline body mass index was 33.3 kg/m^2, 77 percent were female and 48 percent were racial or ethnic minorities.

The original DPP intervention included 16 in-person counseling sessions and at least two supervised physical activity sessions every week. Fukuoka's intervention included six in-person sessions and a pedometer tracking a home-based physical activity program. Automated feedback and interactive intervention content based on the participants' level of activity helped them reach their goals.

Researchers found:

- The intervention group lost an average 6.2 kg between baseline and a five-month follow-up visit compared to a 0.3 kg gain for the control group.
- The intervention group had significant reductions in hip circumference and lower systolic and diastolic blood pressure.
- Triglyceride levels decreased 13 mg/dL in the intervention group and increased 7 mg/dL in the control group.
- Patients in the intervention group walked an additional 2,551 steps per day relative to baseline and the control group walked 734 fewer steps per day.
- The intervention group reported a larger reduction in saturated fat intake than the control group.
- The intervention group had a 93 percent completion rate and the control group 90 percent.

"We don't yet know if the app can have the same weight loss effects in the general population, but we know it has an effect in overweight and obese patients at increased risk for Type 2 diabetes, heart disease and stroke," Fukuoka said.

"We are modifying the app based on this pilot trial and are planning to conduct a larger study before we release it for general use." ▼

Good Choices for Kids

Looking at things like the amount of sleep time and screen time, researchers in Japan studied the lifestyles of elementary school children and their parents to determine how those choices affect cardiovascular risk factors in the children. Hear their study results at 9:45 a.m. Wednesday in S503.

Obesity more strongly linked to heart failure than other cardiovascular disease subtypes

Although obesity appears to be more strongly linked to heart failure than to coronary heart disease and stroke, traditional risk factors do not explain the association. There are unknown mechanisms and pathways linking obesity and heart failure that need new treatment strategies, according to research presented Tuesday.

"Obesity is associated with all forms of cardiovascular disease," said Chiadi Ndumele, MD, MHS, Robert E. Meyerhoff Assistant Professor of Medicine at the Johns Hopkins University School of Medicine in Baltimore. "We found that the obesity-heart failure relationship is the strongest, with approximately a four-fold higher risk of heart failure associated with severe obesity. But the association was only half explained by traditional risk factors. This makes heart failure associated with obesity a particular clinical and public health challenge."

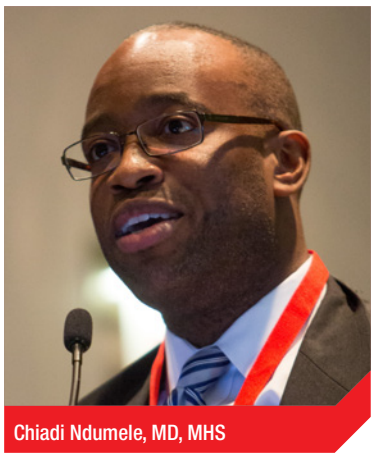
The initial puzzle, he said, is that while the relationships between increasing obesity and all types of cardiovascular diseases are well-known, emerging evidence suggests that multiple mechanisms — including hypertension, hypercholesterolemia and diabetes — are at play. Each plays a distinct role in the development of coronary heart disease, stroke and other cardiovascular conditions, but none seemed to fully explain the development of heart failure, said Ndumele in research presented Tuesday.

Researchers followed 13,370 participants in the Atherosclerosis Risk in Communities (ARIC) study who had a body mass index of at least 18.5 but did not have cardiovascular disease at baseline, 1987 to 1989. Participants were segmented into four groups based on BMI.

ARIC participants were followed for incident heart failure, coronary heart disease and stroke for a median of 23 years. Risk models that included demographic and traditional risk factors were constructed to assess the associations between obesity and the three types of cardiovascular disease.

Any degree of obesity was clearly associated with all three forms, Ndumele reported. But the obesity-heart failure association was the strongest among overweight, obese and severely obese groups, with the strength of the relationship increasing with the degree of obesity. In the severely obese group, the hazard ratio for heart failure was 4.08 compared to 2.21 for coronary heart disease and 1.90 for stroke.

After adjustment for traditional risk factors, including diabetes, systolic blood pressure, anti-hypertensive medication use, HDL-cholesterol, LDL-cholesterol, triglycerides and estimated glomerular filtration rate, the risk coefficient between severe obesity and heart failure remained statistically greater than those for coronary heart disease and stroke ($p<0.0001$). But while those traditional risk factors accounted for nearly all the increased hazard for coronary heart disease and stroke, they accounted for little more than half the increased hazard for heart failure.


Chiadi Ndumele, MD, MHS

That suggests current clinical models and guidelines do a good job of explaining and managing the relationships between obesity and coronary heart disease and obesity and stroke. It also suggests that additional, nontraditional pathways account for half the increased risk of heart failure associated with obesity.

"These results make it clear that controlling the traditional risk factors is quite important, but may not be enough by itself to prevent heart failure associated with obesity," Ndumele said. "We must enhance strategies that can both predict and prevent heart failure in the presence of obesity." ▼

Healthy High School

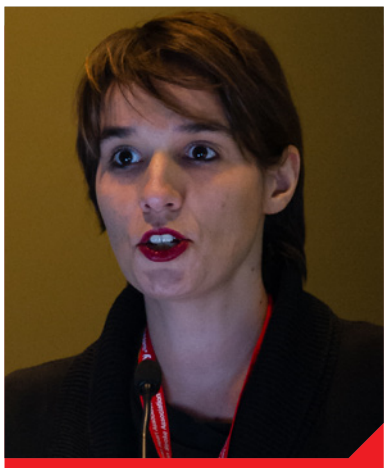
An innovative health and physical education class has helped students lose weight and increase their performance at a high school in Portland, Oregon. See the full results of the intervention at 9:30 a.m. Wednesday in South Hall A2, Core 2, poster board 2690.

Evidence favors PCI for all out-of-hospital cardiac arrests

A decade of observation has shown that patients who survive cardiac arrest outside of a hospital are candidates for immediate coronary angiography.

Long-term results from the PROCAT (Parisian Region Out of Hospital Cardiac Arrest) registry presented Tuesday found that most patients presenting with out-of-hospital cardiac arrest did not have STEMI, yet a significant portion of non-STEMI patients had coronary occlusion and needed angioplasty or some other percutaneous intervention. PCI was associated with significantly better outcomes in these patients.

"The latest guidelines recommend coronary angiography and PCI when indicated for resuscitated cardiac arrest patients with ST segment elevation," said Florence Dumas, MD, PhD, Parisian Cardiovascular Research Center, Paris Descartes University. "The question has been whether we should do coronary angioplasty for patients who did not have STEMI. After 10 years of observation and almost 1,000 patients, the answer is yes. Immediate coronary angioplasty is a predictor of increased survival, even if the patient does not have STEMI on the ECG after return of spontaneous circulation."


Florence Dumas, MD, PhD

The original PROCAT results, published in 2010, showed that immediate PCI following out-of-hospital cardiac arrest doubled the odds of survival with or without ST segment elevation. Current European treatment guidelines do not fully reflect PROCAT findings.

However, while the presence of STEMI predicts a coronary occlusion that can be treated with PCI, its absence does not predict the absence of coronary blockage.

Some clinicians have taken a more aggressive approach and used coronary angiography for all patients who present with out-of-hospital cardiac arrest that does not have an obvious non-cardiac cause. Other clinicians have used angiography only in the presence of STEMI on a post-resuscitation ECG or other evidence suggestive of a coronary occlusion that might benefit from PCI.

The PROCAT protocol calls for angiography in all cases of out-of-hospital cardiac arrest, Dumas said. The original PROCAT report included 714 patients from 2003 to 2008. The more recent PROCAT II included 946 post-cardiac arrest patients from 2004 to 2013. Unless there is an obvious non-cardiac cause of the arrest, all patients receive an immediate coronary angiogram following admission and return of spontaneous circulation.

Over the 10-year study, 704 of the 946 patients (74 percent) who underwent angiography showed no signs of STEMI on their post-resuscitation ECG. Most of the patients, 75 percent, were male and the mean age was 60.

Of those patients who didn't show evidence of STEMI on ECG, angiography indicated the need for PCI in 29 percent. Among the patients who underwent PCI, 42 percent had a favorable outcome compared to 33 percent of patients who did not undergo PCI (p=0.02). After adjusting for covariates, PCI was associated with a 79 percent increase in favorable outcome (HR=1.79, p=0.02).

"Our system is designed to perform coronary angiography on a systematic basis, but we also recognized that it is not easy to do an angiogram in every patient in every case in every setting," Dumas said. "We tried to identify factors that might help us predict which patients without STEMI have the greatest need for an angiogram to identify a potential coronary occlusion. An initial shockable rhythm is the strongest predictor of the need for a coronary angiogram, followed by increasing age." ▼

WEDNESDAY, NOVEMBER 19
DailyNews
American Heart Association. SCIENTIFIC SESSIONS 2014

The American Heart Association's Scientific Sessions 2014 *Daily News* is published by TriStar Publishing, Inc., as a service to the members of the American Heart Association.

American Heart Association
7272 Greenville Avenue
Dallas, TX 75231
Phone: (214) 570-5935
www.scientificsessions.org

TriStar Publishing, Inc.
7285 W. 132nd Street, Suite 300
Overland Park, KS 66213
Phone: (913) 491-4200
www.tristarpub.com

Once you've read this issue of *Daily News*, please share with colleagues or deposit it in an approved paper recycling bin. Thank you.

Educational intervention can reduce sodium intake, improve health outcomes


Eun Kyeung Song, PhD, RN

Education and self-monitoring can reduce sodium intake in patients with heart failure and improve their outcomes, according to research presented Tuesday during the Kathleen A. Dracup Distinguished Lecture. Individualized education that emphasized dietary changes and self-monitoring for worsening heart failure symptoms conferred an eight-fold lower risk of cardiac-related events and mortality compared to patients who received conventional care.

"Heart failure is the leading cause of repeated hospitalization and death and the most common reason for exacerbated symptoms is volume overload," said Eun Kyeung Song, PhD, RN, associate professor in the department of nursing at the University of Ulsan, South Korea. "In most cases, volume overload is attributed to excessive sodium intake due to non-adherence to the recommended low-sodium diet. Because adherence to low-sodium diet recommendations is so poor, we have been looking for interventions that might improve adherence and health outcomes."

Researchers randomized 109 heart failure patients who were not adherent to the recommended low-sodium diet into three groups. Nonadherence was demonstrated by three grams or more of excreted sodium over 24 hours at baseline.

A group of 37 patients, dubbed SMART (symptom monitoring and restricted three gram sodium diet), received personal education and guidance to enhance self-monitoring for symptom-worsening associated with diet by using a symptom and diet diary for four sessions over eight weeks. A second group, with 35 patients, TM (telephone monitoring), had regular telephone monitoring of diet and symptoms. A 37-patient control group received standard care.

At baseline, the mean age of patients across all three groups was 64 and 29 percent were female. Adherence to low-sodium diet was assessed at six months using a second 24-hour sodium excretion test. The patients were followed for one year from baseline to assess time to first hospitalization or death due to cardiovascular causes.

At six months, the SMART group showed a significant reduction in sodium intake compared to both the TM and control groups (p=0.022), Song reported. At one year, SMART had a longer cardiac event-free survival compared to the standard care group after controlling for age, gender, ejection fraction, angiotensin-converting enzyme inhibitor use and beta blocker use. Compared to the SMART group, the usual care group had a hazard ratio of 8.39 for cardiac-related events and mortality during the first year of follow up (p=0.008).

The TM group had a hazard ratio of 4.13 for cardiac-related death or hospitalization during the first year of follow up compared to the SMART group, Song said. But the difference did not reach statistical significance (p=0.095).

The next step in the project is a randomized controlled trial to determine the optimum level of sodium restriction needed to reduce the risk of repeated hospitalization for heart failure patients.

"These current findings might help providers guide patients in learning and understanding the benefits of a low-sodium diet and convincing them of the potential for self-management," Song said. "What we see is that providers need to help patients recognize their real sodium intake and understand the rationale for a low-sodium diet in order to relieve their symptom burden in clinical practice." ▼

Wireless monitoring reduces HF hospitalizations, readmissions in high-risk populations

Wireless monitoring of pulmonary arterial pressure can reduce heart failure hospitalizations in high-risk populations by nearly 50 percent and 30-day readmissions by 78 percent, according to the CHAMPION (CardioMEMS Heart Sensor Allows Monitoring of Pressure to Improve Outcomes in NYHA Class III Heart Failure Patients) trial presented Tuesday.

"We have a new disease management strategy that applies directly to the elderly population to make heart failure management more efficient, more effective and better individualized to each patient to reduce hospitalizations," said Philip Adamson, MD, director of the Heart Failure Institute and professor of physiology at the University of Oklahoma Health Sciences Center in Oklahoma City, Oklahoma.

"This is one of the first times that any type of monitoring has been shown to reduce readmissions in the heart failure population."

Results of CHAMPION and a subgroup analysis of patients 65 and older have prompted the Food and Drug Administration to approve the device and the Centers for Medicare and Medicaid Services to reimburse patients.

In CHAMPION, researchers compared daily wireless monitoring of pulmonary artery pressure to conventional care in patients with NYHA Class III or greater heart failure across 64 treatment centers.


Philip Adamson, MD

The procedure involves implanting a small, wireless pressure monitor in the pulmonary artery. Patients took their pulmonary artery pressure daily while reclining on a pillow with embedded electronics. When patients pushed a button, the electronics queried the implanted sensor and automatically uploaded data to a secure website over a cell phone link. The treating physician used the daily pressure data to monitor patients and adjust therapy as appropriate.

"Our questions in this analysis were two-fold," Adamson said. "One was whether we would see the same effect in terms of hospitalization reduction in patients eligible for Medicare at the time of enrollment.

"The second was whether these patients would be able to successfully interact with the technology. The stereotypical image of patients in this age bracket is that they can't even program a TV remote, much less interact with implanted devices. This strategy requires active patient involvement with the technology if it is going to be successful."

Answers to both questions were resoundingly positive, he said. There were no sensor failures in the CHAMPION population and the eight minor complications were evenly divided between the over-65 and under-65 cohorts. All complications were reversed.

Patients in the treatment group had significantly fewer heart failure hospitalizations (0.34 per year versus 0.67 per year in the control group) and reduced 30-day readmissions.

Pulmonary artery pressure monitoring resulted in a CHAMPION readmission ratio of 0.74 — lower than all hospital excess readmissions ratios reported in the 2011 Hospital Readmissions Reduction Program RRP dataset.

"This device provides diagnostic information that we could never get before," Adamson said. "Now that we are able to look at the lesion that causes their symptoms and causes them to decompensate, we are able to act early and maintain stability. This device maintains their health and stability rather than being a crisis reactive system." ▼


Long-time American Heart Association volunteers Clyde Yancy, MD, FAHA (left), and Gregg Fonarow, MD, FAHA (right), thank Tony Hooper, AMGEN's executive vice president of global commercial operations, during an awards dinner at Scientific Sessions. AMGEN is sponsoring Get With The Guidelines®-Heart Failure, the association's quality improvement program, for three years. Boehringer Ingelheim and Daiichi Sankyo (sponsors of Get With The Guidelines®-AFIB), and BMS-Pfizer were also recognized for their support.

CV OUTCOMES continued from page 1

intervention in Sweden from a femoral approach to a radial approach.

"There has been a dramatic increase in the radial approach rather than the femoral approach for coronary angiography and PCI, increasing over 10 years from 10 percent up to 80 percent, with almost all centers providing the radial approach at this time," he said.

The change in approach and other factors have lowered the bleeding rates associated with these procedures. He noted that a fairly high frequency of intracranial bleeding has been reduced to almost no intracranial bleeds. "This is probably related to the use of the radial approach and the fact that we no longer use thrombolytics, and we have switched to bivalirudin from heparin," he said.

Wallentin presented a number of examples of clinical trials using biomarkers to inform clinical care, including his lab's investigation into the prognostic importance of the biomarkers high-sensitivity troponin T, N-terminal pro-brain natriuretic peptide and growth differentiation factor-15 to stratify risk and tailor treatments for patients with acute coronary syndrome (ACS) and atrial fibrillation.

His studies showed that high-sensitivity troponin could help identify ACS patients who would respond to treatment with antithrombotic agents, such as heparin and platelet inhibitors, and those who should receive early catheterization and revascularization procedures.

N-terminal pro-brain natriuretic peptide and growth differentiation factor-15 are useful for risk stratification after revascularization in ACS patients. All these biomarkers are helpful in identifying the risk of stroke, death and bleeding in anticoagulated patients with atrial fibrillation, he said. ▼

LATE-BREAKING

continued from page 1

Children's Hospital, assistant professor of pediatrics, Harvard Medical School, Boston, Massachusetts.

Marfan syndrome, caused by mutations in the FBN1 gene, is associated with enlargement of the aortic root, which may lead to premature death. While beta-blockers are typically used in the clinical management of Marfan's syndrome, an understanding of the involvement of transforming growth factor-β suggested that losartan more than atenolol may attenuate aortic-root enlargement.

The study randomized 608 patients (aged 6 months to 25 years) with Marfan's syndrome diagnosed by the Ghent criteria to receive daily atenolol (303 patients) or losartan (305 patients). Atenolol was dosed at 4 milligrams per kilogram and losartan at 1.4 milligrams per kilogram. Lacro noted that the daily dose of atenolol used in the study in adults was higher than that typically used in clinical practice.

The primary endpoint of the study was the rate of change of body surface area adjusted maximum aortic root diameter or ARz; other adverse clinical endpoints included aortic dissection, aortic-root surgery, death and composite endpoint.

Over three years of treatment there was no significant difference in the rate maximum ARz between the two treatment groups. However, it improved over time in both groups of patients.

In addition, no subgroup of patients was seen to benefit from losartan, with respect to age, beta-blocker usage, ARz at baseline and gender. However, the analysis of ARz at baseline was restricted to a 4.5 cut-off. In addition, Lacro showed a significant decrease in ARz with age, with greater improvement seen in younger children. There were no significant safety differences between losartan and atenolol used over three years.

There is an important interpretation to the seemingly negative study, Lacro noted. Both drugs are equally effective and can be available for the treatment of Marfan's syndrome. He also suggested that there may be a role to combine them for a more effective treatment.

The study is being published in the New England Journal of Medicine.

In another presentation, losartan was evaluated in patients with hypertrophic cardiomyopathy (HCM). Based on data from the INHERIT study, losartan was shown to have no effect in decreasing wall thickness.

INHERIT was a single center, double-blind, placebo-controlled, randomized trial conducted in Denmark. Patients with HCM were randomized to losartan 100 milligrams daily (64 patients) or placebo (69 patients) for 12 months. Primary endpoint of the study was change in left ventricular mass measured by magnetic resonance imaging or computed tomography. A change in left ventricular mass of 12 grams per meter square was considered clinically relevant.

A drop in blood pressure and a pill count indicated that 93 percent of patients were compliant with taking study medication.

In each arm, patients experienced a similar decrease in left ventricular mass—1 gram per square meter. Anna Axelsson, MD, research fellow in the Department of Genetics at Harvard Medical School, noted that in retrospect, expecting a change in left ventricular mass of 12 was very ambitious.

With losartan showing no significant adverse effects, Axelsson said, "the observed safety indicates that losartan may be used for other indications in patients with HCM regardless of obstructive physiology."

Mitral regurgitation: Mitral valve repair does not provide added benefits to CABG

While coronary artery bypass grafting (CABG) alone improves left ventricular function, it is believed that CABG along with surgery to repair the mitral valve will address the persistent adverse consequences of mitral regurgitation or a leaky mitral valve. Based on data from the Cardiothoracic Surgical Network this may not be the case, and repair surgery may actually have some adverse consequences.

Robert Michler, MD, professor and chairman of the Departments of Surgery and Cardiovascular and Thoracic Surgery, and director of the Heart Center at the Montefiore Medical Center/Albert Einstein College of Medicine in New York, addressed whether a surgical intervention to repair a leaky mitral valve provides added benefit to CABG alone using data from the Cardiothoracic Surgical Network trial.

The trial randomized 301 patients with mitral regurgitation to CABG alone (151 patients) or to CABG plus repair with an annuloplasty ring (150 patients) to determine left ventricular remodeling as measured by left ventricular end systolic volume index (LVESVI) using imaging. The study did not meet its prespecified endpoint to detect a change of 12 milliliters per meter square in LVESVI with CABG and repair compared to CABG alone.

At baseline, the mean LVESVI was 55 in the CABG alone group and 60 in the CABG plus repair group. After 12 months, there was no difference in the primary endpoint of LVESVI between the two treatment groups. Significant reductions in LVESVI were achieved within each group and the median reduction from baseline was approximately 6 milliliters per meter square.

For the secondary endpoints, mortality at the end of 12 months was similar across the two arms. Major cardiac and cerebrovascular event rates at the end of 12 months were also similar.

Patients in both treatment groups received the same number of coronary bypass grafts, but the duration of the operation was significantly longer for patients undergoing the combined procedure. The aortic cross clamp time was 42 minutes longer and the cardiopulmonary bypass time 56 minutes longer for CABG plus mitral valve repair, Michler said. In addition, the ICU length of stay was nearly one day longer and the postoperative length of stay two days longer for the combined procedure, he added. Patients on the CABG plus repair arm also had significantly higher rates for all neurological events and supraventricular arrhythmias.

Mitral regurgitation improved in both groups. Mitral regurgitation was moderate or severe in greater than 95 percent of patients at baseline; after 12 months, 31 percent and 11 percent of patients undergoing CABG and CAPG plus repair, respectively, experienced moderate or severe mitral regurgitation.

Based on these data, the routine addition of repair to CABG for patients with moderate ischemic mitral regurgitation may not be warranted, Michler concluded. He indicated that longer-term follow-up is ongoing to determine if lower incidence of moderate or severe mitral regurgitation at one-year will translate into a net clinical benefit for patients undergoing CABG plus repair. ▼

HMG-CoA reductase is part of the LDL-C metabolism story[1]

But PCSK9 also plays an important role in LDL-C regulation[2]

New pathway discoveries are uniting the cholesterol conversation.

By inhibiting HMG-CoA reductase and reducing cholesterol biosynthesis, statins help lower LDL-C.[1] PCSK9, another important protein involved in cholesterol metabolism, promotes degradation of the LDL receptor, thereby increasing LDL-C levels.[2] **In discussions of cholesterol metabolism, the roles of HMG-CoA reductase and PCSK9 should go hand in hand.**

Join the conversation at **DiscoverPCSK9.com.**

HMG-CoA = 3-hydroxy-3-methylglutaryl coenzyme A; **PCSK9** = proprotein convertase subtilisin/kexin type 9; **LDL-C** = low-density lipoprotein cholesterol.

References: 1. Toth PP. *Drugs*. 2010;70;1363-1379. **2.** Zhang D, Lagace TA, Garuti R, et al. *J Biol Chem*. 2007;282:18602-18612.

AMGEN®

Cardiovascular