

# Follow-Up Lowers Heart Failure Readmissions

BY JANE ANDERSON

**H**ear failure patients discharged from hospitals with high levels of early postdischarge follow-up are less likely to be readmitted to the hospital within 30 days, according to a new study.

However, most heart failure patients do not visit a physician within 7 days of discharge (JAMA 2010;303:1716-22).

The study, which looked at hospital-level rates of early outpatient follow-up after discharge, included data on more than 30,000 heart failure patients from 225 hospitals. It found that the median rate of follow-up within 7 days of discharge was 38%.

"For patients with heart failure, the transition from inpatient to outpatient care can be an especially vulnerable period because of the age of the patients, complex medical regimens, the large number of comorbid conditions, and the multiple clinicians who may be involved," wrote Dr. Adrian F. Hernandez of Duke University, Durham, N.C., and his coauthors. "Our findings highlight a need for improvement and greater uniformity in coordination of care from inpatient to outpatient settings."

## VITALS

**Major Finding:** Risk-adjusted hazard of 30-day readmission was 15% lower in the hospitals with higher rates of early follow-up.

**Data Source:** More than 30,000 heart failure patients from 225 hospitals.

**Disclosures:** Study was supported by grants from the American Heart Association, GlaxoSmithKline, Medtronic, and the Agency for Healthcare Research and Quality. The authors reported a variety of financial support, research grants, consulting arrangements and honoraria from drug manufacturers, other health care companies, and nonprofit organizations.

Overall, about 21% of heart failure patients were readmitted to the hospital within 30 days of discharge. Patients in hospitals with higher rates of early follow-up had a lower risk of readmission, the study found.

After adjustment for case mix, admission laboratory results, provision of discharge instructions, and length of stay, the risk-adjusted hazard of 30-day readmission was 15% lower in the hospitals with higher rates of early follow-up, the study found. Whereas 20% of patients whose initial hospital stay took place in a hospital with the highest rates of ear-

ly follow-up were readmitted, 23% of patients in the hospitals with the lowest follow-up rates were readmitted, a significant difference.

Still, the authors only found differences in rehospitalization rates in the hospitals that ranked in the lowest quartile of posthospitalization follow-up; rates at the other 75% of hospitals were similar.

The researchers did find some racial differences: The proportion of black patients was "markedly higher" among

hospitals with the lowest rates of early follow-up.

They also found that patients discharged from hospitals with the highest rates of early follow-up by a cardiologist had lower risk of 30-day mortality, which they noted is consistent with other studies of cardiology care for heart failure.

Most follow-up during the transitional period, especially during the first week, is handled by general internists, the study authors found. More than two-thirds of patients hospitalized for heart failure are evaluated by a cardiologist during their inpatient stays, but fewer

than 10% see a cardiologist within 7 days of hospital discharge.

However, neither early follow-up with a cardiologist nor continuity of care from the same physician seen during the hospitalization was a significant predictor of 30-day readmission, they wrote.

Documentation of discharge instructions, which many physicians presume helps to ensure early follow-up and better outcomes, also was not associated with lower readmission rates. "This finding raises the possibility that discharge instructions are becoming rote processes that do not adequately address elements of care that ensure a safe transition," the authors wrote.

The study provides evidence in support of guidelines recommending the use of postdischarge systems of care, the authors said. "Achieving early follow-up may be difficult for some physician practices, but models of care that include nurse practitioners or physician assistants under physician supervision may result in increased access to and timeliness of care."

In addition, they said, early follow-up is a potential quality measure that could be used as part of heart failure performance measure sets. ■

# Subclinical Atherosclerosis Seen in Middle-Aged Marathoners

BY BRUCE JANCIN

ATLANTA — Middle-aged male marathon runners may be at substantial cardiovascular risk.

A CT coronary angiography study of 25 middle-aged male runners who had completed the Twin Cities Marathon annually for the past 25 consecutive years, demonstrated they had significantly greater mean volumes of coronary calcified plaque (274 mm<sup>3</sup>) than did age-matched sedentary controls (169 mm<sup>3</sup>) who underwent 64-slice CT angiography for a variety of indications, Dr. Jonathan Schwartz reported at the annual meeting of the American College of Cardiology.

The marathoners also had higher coronary calcium scores and greater noncalcified plaque volumes than did

marathoners had favorable lipid profiles and low resting heart rates and body mass indexes.

"The bottom line here is just because you run a lot of marathons and you're very active doesn't mean you're protected from coronary artery calcification," Dr. Schwartz said in an interview. "Benefits to long-term, high-volume endurance training for overall health include favorable body mass index, heart rate, and lipid panel, but these may be counterbalanced by metabolic and mechanical factors that enhance coronary plaque growth."

Dr. Robert S. Schwartz of the Minneapolis Heart Institute, Dr. Jonathan Schwartz's father and coinvestigator in the study, speculated that avid distance runners may spend many hours training and racing under metabolically demanding conditions.

They are tachycardic, in lactic acidosis and under oxidative stress; their blood pressure is increased; and they are possibly leaking calcium into the blood because of microtrauma to weight-bearing bones, he said.

This study, he added, confirms earlier work by Dr. Stefan Möhlenkamp of the University of Duisburg-Essen, Germany, who studied 108 apparently healthy middle-aged marathoners and found they had significantly higher coronary artery calcium scores and significantly lower Framingham risk scores than did age-matched controls. In 21 months of follow-up, four marathoners, all with coronary artery calcium scores of 100 or more, experienced coronary events (Eur. Heart J. 2008;29:1903-10).

Dr. Robert Schwartz noted that the Twin Cities Marathon veterans, many of whom have completed numerous other marathons in addition to their 25 Twin Cities finishes, are "not your typical marathoner." The investigators are expanding their study to include women marathoners and younger veterans of fewer races.

Elsewhere at the meeting, Dr. Despina Kardara re-

ported that a group of Greek marathoners had stiffer arteries than did age- and gender-matched controls.

The 49 marathoners, mean age 38, included 7 women. All had trained an average of 15 hours per week for 11.6 years. Their mean pulse wave velocity—a measure of aortic stiffness—was 6.9 meters per second, significantly greater than the 6.3 m/sec seen in



**Avid distance runners may be leaking calcium into the blood because of microtrauma to weight-bearing bones.**

controls who were not runners.

Although the marathoners' 60-bpm mean resting heart rate was 6 bpm lower than in controls, their mean brachial blood pressure of 126/78 mm Hg was significantly higher than the mean of 115/71 mm Hg for controls. The findings raise the possibility that a long-time, high-volume, high-intensity exercise training program may be harmful, according to Dr. Kardara of Athens Medical School.

Her study was supported by the Athens Classic Marathon Organizing Committee. She reported having no financial conflicts. ■

## VITALS

**Major Finding:** Mean volumes of coronary calcified plaque were 274 mm<sup>3</sup> in male marathon runners and 169 mm<sup>3</sup> in age-matched sedentary controls.

**Data Source:** A CT coronary angiography study of 25 middle-aged male runners, each of whom had completed the Twin Cities Marathon annually for the past 25 consecutive years.

**Disclosures:** The study was funded by the Ken Rome Foundation. The speakers had no relevant financial disclosures.

controls. These differences did not achieve statistical significance, however. Still, the veteran marathoners were no better off in these domains than were the sedentary controls, noted Dr. Schwartz, an intern at the University of Colorado, Denver.

Coronary artery disease risk might get overlooked in patients who are dedicated marathoners, the investigators said. In a sense, completing a race or a hard training workout is like passing an informal stress test. Also, high-mileage runners often have excellent Framingham risk scores. Indeed, the avid Twin Cities