

# Home Monitoring Helps to Manage Heart Failure

*Automated devices, when added to standard disease management, improved short-term clinical outcomes.*

BY DAMIAN McNAMARA  
Miami Bureau

BOCA RATON, FLA. — Automated home monitoring improved short-term outcomes for patients with heart failure, compared with standard disease management alone, in a multicenter, randomized study, Dr. Andrew R. Weintraub reported at the annual meeting of the Heart Failure Society of America.

Previously, researchers showed the benefit of disease management for heart failure patients, but the studies were non-randomized, single-center, or assessed nonspecialized teams. Then the prospective, randomized Specialized Primary and Networked Care in Heart Failure (SPAN-CHF) study demonstrated a significant reduction in hospitalizations from heart failure and cardiovascular disease, as well as a shorter length of stay with disease management (*Circulation* 2004;110:1450-5), said Dr. Weintraub, director of the Coronary Care Unit at the Tufts–New England Medical Center, Boston.

To determine whether the addition of automated home monitoring would fur-

ther reduce hospitalization and resource use for patients enrolled in the disease management program, Dr. Weintraub and his associates randomized 93 patients to a control group of disease management and another 95 to an intervention group with home monitoring.

The control patients received the same disease management as in the SPAN-CHF study, which included an initial nurse home visit, weekly or biweekly telephone monitoring, and the availability of a nurse manager 24 hours a day via pager. Intervention patients received the same services, but also weighed themselves on an interactive scale, measured their blood pressure, and took their pulse daily using an automated home monitor (Philips Medical Systems, Bothell, Wash.). Intervention patients answered health status and compliance questions daily via text messaging (Health Hero Network, Mountain View, Calif.).

The investigators enrolled patients within 2 weeks of discharge after their first episode of heart failure. All had a measurement of left ventricular function within 6 months (mean 30%). The patients

were aged 18-90 years. There was a high incidence of ACE inhibitor, angiotensin receptor blocker, and  $\beta$ -blocker use. Patient demographics were similar. Both groups had a wide range in baseline ejection fractions, said Dr. Weintraub.

“We detected a trend in reduction with intervention of heart failure hospitalized days, cardiac hospitalized days, and all-cause hospitalized days,” said Dr. Weintraub, who received research support from GlaxoSmithKline Inc., Agilent Technologies/Philips Medical Systems, and the Health Hero Network.

The mean number of hospitalizations for heart failure lasting more than 90 days in the intervention group was 0.5, compared with 1.8 for the control group (relative risk 0.28). Hospitalizations for all cardiac causes were 0.8 in the intervention group, compared with 2.2 in the control group (RR 0.37). There were no significant differences between groups in all-cause hospitalizations.

There were no differences in hospitalization rates according to gender, age, left ventricular ejection fraction, New York

Heart Association classification, or hypertension. However, “our patients with diabetes at baseline were significantly more likely to be hospitalized for heart failure,” Dr. Weintraub added (odds ratio 4.3).

“We documented the 90-day benefit of adding an automated home monitoring system to a previously validated telephonic disease management program,” Dr. Weintraub said. “The addition ... produced further improvement in the short-term, heart failure–related clinical outcomes in patients recently hospitalized for heart failure.”

In response to an attendee’s comment that there was more nurse-patient interaction in the automated-home-monitoring group, Dr. Weintraub said he tracked interactions in each group, and “the nurse managers indicated the time spent with automated-home-monitoring patients above the normal standard care was an additional 15%-20%.”

“So you think most of the benefit was from self-management of disease?” the attendee asked. Dr. Weintraub replied, “Yes, but the nurses facilitated that benefit.” ■

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## Intensive Atorvastatin Cuts Hospitalization In Heart Failure, Secondary Analysis Shows

BY MITCHEL L. ZOLER  
Philadelphia Bureau

DALLAS — Intensive treatment with atorvastatin in patients with stable coronary heart disease led to a significant reduction in hospitalization for heart failure in a secondary analysis of results from a study with 10,001 patients.

The results are the best evidence so far that statin treatment confers a heart-failure benefit. The findings also suggest that the benefit is not mediated by a reduction in ischemic coronary events but by another, as-yet unknown, mechanism, Dr. David D. Waters said at the annual scientific sessions of the American Heart Association. “Randomized, controlled trials of statins in

patients with heart failure will likely yield important findings,” said Dr. Waters, chief of the division of cardiology at San Francisco General Hospital.

The heart failure analysis was a pre-specified, secondary analysis of the Treating to New Targets (TNT) study, which randomized 10,001 patients with stable coronary disease to daily treatment with 10 mg or 80 mg atorvastatin (Lipitor) and followed them for a median of 4.9 years. The primary end

point of the study was the combined rate of coronary death, nonfatal myocardial infarction, resuscitated cardiac arrest, and stroke. The 80-mg daily dose of atorvastatin was significantly more effective than the 10-mg daily dose for preventing this end point (*N. Engl. J. Med.* 2005;352:1425-35).

The study was sponsored by Pfizer, which markets Lipitor. Dr. Waters has been a consultant to, speaker for, and research grant recipient from Pfizer.

The impact of treatment on heart failure was assessed by the number of hospitalizations for heart failure during the study. A total of 164 patients (3.3%) on the 10-mg dose were hospitalized for heart failure, compared with 122 patients (2.4%) in the 80-mg group, a 26% relative risk reduction that was statistically significant, Dr. Waters said.

The study excluded patients with New York Heart Association class IIIb and class IV heart failure, as well as patients with a left ventricular ejection fraction at baseline of less than 30%. Among the enrolled patients, 8% had heart failure at baseline but this subgroup accounted for 38% of the hospital admissions for heart failure.

Among patients who entered the trial without heart failure the incidence of heart-failure hospitalizations was 1.9%.

In the subgroup with preexisting heart failure, the impact of high-dose atorvastatin was even greater. The hospitalization rate was 17.3% among patients on 10 mg compared with 10.6% among those on 80 mg, a “very large” absolute reduction of 6.7%, and a relative risk reduction of 41% that was statistically significant, Dr. Waters said.

In a multivariate analysis, reduction of low-density lipoprotein (LDL) cholesterol was a significant modifier of risk after adjustment for other clinical and demographic variables. For every 1% drop in the serum level of LDL cholesterol, the risk of hospitalization for heart failure fell by 0.6%.

There was no indication that the drop in hospitalizations was mediated by an effect of high-dose atorvastatin on the incidence of myocardial infarctions and other ischemic events. During the 3 months prior to their first hospitalization for heart failure, only 15% of patients had an acute coronary event. That meant that 85% of the hospitalizations for heart failure were not triggered by a coronary event, Dr. Waters said. Other benefits of statins that might explain an effect on heart failure include improved endothelial function, inhibited production of inflammatory cytokines, and direct antifibrotic, anti-hypertrophic, or antioxidant effects. ■

## RBC Transfusion Cited As Overused, Unhelpful

ATLANTA — Despite guidelines recommending against red blood cell transfusions in patients undergoing coronary artery bypass graft surgery, the practice remains fairly common, and is often detrimental, a study shows.

Of 940 stable CABG patients from the Multicenter Study of Perioperative Ischemia Epidemiology II (EPI II), 20% received red blood cell transfusions, and these patients were significantly more likely than those who did not receive a transfusion to experience myocardial infarction (odds ratio 1.9), renal dysfunction (OR 3.4), renal failure requiring dialysis (OR 4.0), and/or harvest-site wound infection (OR 5.5), Dr. Jack Levin reported at the annual meeting of the American Society of Hematology.

Red blood cell transfusion was shown on multivariate analysis to be an independent predictor of composite morbidity outcome, cardiac morbidity, and harvest-site wound infection, said Dr. Levin of University of California, San Francisco.

Transfusion also resulted in a significantly longer hospital stay. The mean stay was 14.4 days for transfused patients, compared with 11.9 days for nontransfused patients.

Patients included only those from EPI II who had a low to moderate risk profile, postoperative hemoglobin levels of at least 10 g/dL, minimal postoperative blood loss, and no evidence of any morbid event on the day of surgery. They were followed postoperatively for 24 hours to assess the transfusion, and until hospital discharge to assess multiorgan outcomes and resource utilization.

Red blood cell transfusions, which had no detectable benefit in this study, are overused, and are associated with increased morbidity and increased health care expenses, Dr. Levin concluded.

—Sharon Worcester