Home HF Monitoring System Improves Outcomes

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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 nonrandomized, 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 further 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.). They also 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%). They were aged 18-90 years. There was a high incidence of ACE inhibitor, angiotensin receptor blocker, and β-blocker use. Patient demographics were similar. Both groups had a wide range in baseline ejection fractions, said Dr. Weintraub.

Hospitalizations for heart failure more than 90 days in the intervention group were a mean of 0.5, compared with 1.8 for the control group.

"We detected a trend in reduction with intervention of heart failure hospitalized days, cardiac hospitalized days, and all-cause hospitalized days," he said.

The number of hospitalizations for heart failure more than 90 days in the intervention group was a mean 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," said Dr. Weintraub, who received research support from GlaxoSmithKline Inc., Agilent Technologies/Philips Medical Systems, and the Health Hero Network. "The addition … produced further improvement in the short-term, heart failure–related clinical outcomes in patients recently hospitalized for heart failure."

An attendee asked whether the benefits were a result of self-management or the increase in nurse-patient interaction. Nurse managers reported spending 15%-20% above the normal standard care time with automated-home-monitoring patients, Dr. Weintraub said. But the benefit was from self-management and "the nurses facilitated that benefit," he asserted. ■
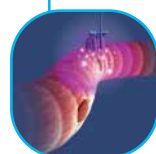

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THE ECS IMPACTS THE METABOLISM OF LIPIDS AND GLUCOSE[1-3]	• ECS overactivity may be associated with the development of cardiometabolic risk factors including: — Low HDL cholesterol — Elevated fasting glucose — High triglycerides — Insulin resistance — High waist circumference
THE ECS HELPS REGULATE PHYSIOLOGIC PROCESSES[1-4]	• The ECS consists of signaling molecules and their receptors, including the cannabinoid receptor CB_1[2] • Endocannabinoids bind to CB_1 receptors and trigger events that may have a negative impact on lipid levels and insulin sensitivity[1] • CB_1 receptors are located in sites such as muscle, the liver, the brain, and adipose tissue[1,2,4-6]
RESEARCH CONTINUES TO INVESTIGATE THE ROLE OF CB_1 RECEPTORS IN MUSCLE*	• Reduced glucose uptake has been observed in isolated skeletal muscle of genetically obese, insulin-resistant animals
ENDOCANNABINOIDS TARGET FATTY ACID PRODUCTION IN THE LIVER[3]	• May contribute to dyslipidemia and insulin resistance[3,7]
PRESENT IN MULTIPLE AREAS OF THE BRAIN[2]	• Hypothalamus integrates signals from adipose tissue and other peripheral tissues[8,9]
ADIPOSE TISSUE—MORE THAN SIMPLY A FAT STORAGE DEPOT	• Produces factors active in the metabolism of lipids and glucose[10] • Low levels of adiponectin negatively affect glucose and free fatty acids[1,10]
EXPLORING THE EFFECTS OF THE ECS	• This newly discovered physiologic system provides new opportunities for understanding cardiometabolic risk

*Data from animal model only.

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