

# Hospital Is 'Teachable Moment' for Heart Failure

*Heart failure patients started on  $\beta$ -blocker, ACE inhibitor in hospital are likely to stay on them.*

BY BRUCE JANCIN  
Denver Bureau

ORLANDO, FLA. — Starting heart failure patients on a  $\beta$ -blocker and ACE inhibitor before hospital discharge sharply increases the likelihood that they will be on these key medications at follow-up 60-90 days later, Gregg C. Fonarow, M.D., reported at the annual meeting of the American College of Cardiology.

"What this really tells us is that hospitalization can serve as a teachable moment for patients and clinicians regarding heart failure medications, that patients can be effectively initiated on these evidence-based therapies, and if they're started in the hospital they're much more likely to be on treatment during long-term follow-up," he said.

"We need to provide for all patients hospitalized with heart failure a systematic approach to ensure that the evidence-based therapies are started prior to discharge," said Dr. Fonarow, professor of cardiovascular medicine at the University of California, Los Angeles, and director of the Ahmanson-UCLA Cardiomyopathy Center.

He presented data on 4,434 patients

with systolic heart failure (HF) treated at 86 hospitals participating in the Organized Program to Initiate Lifesaving Treatment in Hospitalized Patients with Heart Failure (OPTIMIZE-HF) registry, a national quality-improvement project.

None of the patients in this subset of the larger OPTIMIZE-HF database had contraindications to  $\beta$ -blockers or ACE inhibitors/angiotensin receptor blockers (ARBs). Of the 86% discharged on a  $\beta$ -blocker, 95% remained on  $\beta$ -blocker therapy at follow-up 60-90 days post discharge. In contrast, only 32% of patients who were not yet on a  $\beta$ -blocker at discharge were taking one at follow-up.

"That means two-thirds of these eligible patients [discharged without  $\beta$  blocker] remained untreated with what is our single most important life-saving therapy in heart failure:  $\beta$ -blocker treatment," said Dr. Fonarow, director of OPTIMIZE-HF.

The same was true for ACE inhibitors/ARBs: 84% of eligible patients were on one of these drugs at discharge, and 74% of this group remained on the medication at 60-90 days. Only 19% of patients not discharged on one of these drugs were taking one at follow-up.

"Many clinicians have kind of had the

view, 'Well, we don't need to worry about starting treatment in the hospital, we'll get around to it on an outpatient basis.' There hasn't necessarily been a consensus that each of these therapies needs to be started prior to hospital discharge," Dr. Fonarow observed.

But that's changing fast, in large part because of the evidence gathered in OPTIMIZE-HF. At the ACC meeting, the American Heart Association launched a new nationwide, hospital-based, quality-improvement project called Get With The Guidelines-Heart Failure (GWTG-HF).

The program, aimed at accelerating adherence to ACC/AHA treatment guidelines, utilizes techniques similar to those employed in the OPTIMIZE-HF registry, including decision-support tools, customized patient education materials, real-time performance benchmarking, and collaborative workshops to help hospitals share best practices. Dr. Fonarow is chairman of the GWTG Science Subcommittee.

"We hope that hospitals across the country will sign up and participate. Already in place for more than 2 years has been a program called Get With The Guidelines-

Coronary Artery Disease that has shown remarkable improvements in care and is currently in more than 300 U.S. hospitals," he said.

With 5 million Americans currently diagnosed with HF, and the ranks expected

to swell further as baby boomers age, this type of systems approach is badly needed, according to John S. Rumsfeld, M.D., who chaired a session on quality-improvement programs at the ACC

**We need to provide a systematic approach to the evidence-based therapies prior to discharge.**

DR. FONAROW



meeting.

"The U.S. over the next 20-30 years is going to be overwhelmed by the need for heart failure care. If we don't do this now, just think of the potential number of people who won't get these treatments. We can have all sorts of late-breaking clinical trials telling us about better care, but if we don't apply them, we won't actually be improving our population outcomes," noted Dr. Rumsfeld of the University of Colorado, Denver.

GWTG-HF and OPTIMIZE-HF are both funded by GlaxoSmithKline Inc. Dr. Fonarow is a consultant to and member of the speakers' bureau for the pharmaceutical company. ■

## Hypoalbuminemia Predicts Mortality in Heart Failure

BY MITCHEL L. ZOLER  
Philadelphia Bureau

NEW ORLEANS — Patients with heart failure who also have hypoalbuminemia have a two- to threefold increased risk of death, compared with patients with normal serum albumin levels, according to results from a study in about 1,000 patients.

It's possible that this elevated mortality risk may be controlled using nutritional supplements or treatments aimed at cutting the inflammation associated with hypoalbuminemia, Tamara Horwich, M.D., said at the annual scientific sessions of the American Heart Association.

It's unclear what links hypoalbuminemia with worse survival during heart failure, but several candidate mechanisms exist. These include hemodilution, cardiac cachexia, biventricular heart failure, reduced colloid osmotic pressure causing pulmonary edema, and reduced tolerability and use of optimal medical therapy, said Dr. Horwich, a cardiologist at the University of California, Los Angeles.

Results from prior studies had linked hypoalbuminemia with a higher risk of death in a variety of disease states, including cancer, end-stage renal disease, infections, and cardiac surgery. But until now, few studies had examined whether a similar association exists in patients with heart failure.

To assess this potential link, Dr. Hor-

wich and her associates reviewed case records for 1,162 heart failure patients with who were treated at UCLA Medical Center from December 1983 through June 2004. Some patients were excluded because their left ventricular ejection fraction was greater than 40% or they had inadequate follow-up. The study focused on the 1,039 eligible patients who remained. Their average age was 52 years, and their mean ejection fraction was 23%.

Patients were diagnosed with hypoalbuminemia if their serum albumin was less than 3.4 g/dL. About 25% of the patients in this study had hypoalbuminemia, a prevalence consistent with reports from prior studies of heart failure patients. Low albumin levels were most prevalent in lean patients, with a prevalence of 29%, but hypoalbuminemia was also common in overweight and obese patients, with prevalences of 15% and 20%, respectively.

The 1-year survival rate among patients who were hypoalbuminemic at baseline was 68%, compared with more than 80% for those with normal baseline serum albumin levels.

In a multivariate analysis that took into account a number of potential confounders, including age, gender, and body mass index, patients who had low serum albumin were 2.8-fold more likely to die, compared with patients with a serum albumin level within the normal range, Dr. Horwich said. ■

## Using Standard Digoxin Nomogram Can Lead to Deadly Overdoses

MUNICH — Patients with heart failure who are treated with digoxin administered according to the standard nomogram risk getting an overdose that might kill them.

"We recommend treating patients who get digoxin with half the dose from the nomogram," said Kirkwood F. Adams Jr., M.D., at the annual congress of the European Society of Cardiology.

Half the standard dosage will give most patients a serum level of 0.5-0.9 ng/mL. A post hoc analysis of data collected in the landmark Digitalis Investigation Group (DIG) trial, run during the early 1990s, showed that patients who have a serum level in this range had a 15%-20% reduced risk of death during follow-up compared with patients who did not receive digoxin, reported Dr. Adams, a cardiologist at the University of North Carolina in Chapel Hill.

In contrast, patients who had serum levels of 1.2-1.5 ng/mL had a death rate that was 33% higher than that of matched placebo patients. This risk is believed to be due to the neurohormonal effects of a relatively high serum level of the drug. At lower serum levels, digoxin probably has a small inotropic effect that is safe and beneficial, Dr. Adams told this newspaper.

The DIG trial, which began enrolling patients in 1991, was completed in December, 1995; the primary results were reported in 1997. The 6,800 patients with stable heart failure were randomized to

treatment with digoxin or placebo on top of what was standard heart failure treatment at that time. The primary finding of the study was that digoxin treatment had no effect on mortality compared with placebo, but it did reduce the hospitalization rate (N. Engl. J. Med. 1997;336:525-33).

The post hoc analysis by Dr. Adams and his associates focused on the 1,843 patients in the digoxin arm of the study who had their serum concentration of the drug checked after they had been on treatment for 4 weeks, an indicator of their steady-state level of the drug.

The relationship between serum levels of digoxin after 4 weeks of treatment and mortality was similar in men and women.

The standard nomogram for calculating a digoxin dosage dates to 1974 and takes into account a patient's body mass index and renal function. But there can be substantial variability in the actual serum level that individual patients maintain from a particular dosage. Using the nomogram, most patients receive a dosage of 0.25 mg/day. A better dosage based on these findings would be 0.125 mg/day, Dr. Adams said.

All patients with heart failure who receive digoxin should have their serum level checked after 4 weeks and then have their dosage modified if the level is outside of the 0.5-0.9 ng/mL range, he added.

—Mitchel L. Zoler