

Congestive Heart Failure Disease Management

Whellan DJ, Gaulden L, Gattis WA, et al. The benefit of implementing a heart failure disease management program. *Arch Intern Med* 2001;161:2223–8.

Study Overview

Objective. To evaluate the potential benefits of a congestive heart failure (CHF) program in a tertiary care center, with special attention paid to the use of β blockers and cost to the health care system.

Design. Interventional study without randomization.

Settings and participants. Patients were recruited from different clinics at the Duke University Health System between July 1998 and April 1999. 74% were referred by cardiologists and 26% by primary care physicians. Eligible patients had at least 1 of the following criteria: recent hospitalization for CHF, ejection fraction (EF) of less than 20%, or symptoms of heart failure consistent with New York Heart Association (NYHA) class III or IV.

Intervention. The CHF program team members consisted of pharmacists, nurse practitioners, and physicians from the Duke Heart Failure Program. The program provided consultation services for inpatients, close follow-up after discharge, and routine telephone calls to the patients to monitor weight and symptoms.

Main outcome measures. Medication use was compared, and resource utilization was determined. Other outcomes included hospitalization and average length of stay as well as number of clinic visits.

Main results. The number of patients who were screened is unknown, but 117 enrolled. The mean age was 62, and there were more males (62%) than females (38%). The mean EF was 23%. 50% of the patients were in NYHA class II, 30% were in class III, and 20% were in class IV.

The use of ACE inhibitors was high before enrollment and was similar at the end of the study (78% versus 79%). There was a significant increase in ACE inhibitor dose over the duration of the study. β Blocker use and dose significantly increased during the study (use, 52% to 76% [$P < 0.01$]; dose, 6% to 13% of target dose [$P < 0.01$]), while hospitalization rates decreased from 1.5 to 0 hospitalizations per

patient-year ($P < 0.01$). The median average length of stay decreased from 6 days prior to enrollment to 5 days after enrollment ($P = 0.08$). The number of visits to a cardiologist increased significantly from 0 to 7.4 ($P < 0.01$) and clinic visits increased from 4.3 to 9.8 per patient-year ($P < 0.01$). The cost-analysis showed that the outpatient cost increased by a median of \$659 while the inpatient cost decreased by a median of \$6963. The cost of discharges also decreased significantly, by \$8571 per patient-year ($P < 0.01$). 12 patients died during the study. After performing the same analysis without including the data from the 12 patients who died, the increase in outpatient cost was \$606 ($P = 0.04$), while inpatient costs significantly decreased by \$10,741 ($P < 0.01$).

Conclusion. The heart failure management program was associated with improvement in ACE-inhibitor dosing, better use of β blockers, less hospitalization, and less cost for the health care system.

Commentary

Whellan et al's study confirms the findings of other studies on heart failure programs. Several other nonrandomized trials have shown the benefit of using a comprehensive program to improve the care of patients with CHF [1–3]. A recent study by Holst et al demonstrated that a comprehensive heart failure program reduced admissions by 87%, increased the use of ACE inhibitors by 42%, and increased the use of β blockers by 61% [4]. All of these results were statistically significant. Unfortunately, there are no randomized controlled trials comparing the efficacy of a heart failure program versus usual care.

An aspect that this study did not cover was quality of life. Hershberger et al showed that a heart failure management program could improve quality of life for patients at 3 and 6 months [5]. Another problem is that new therapeutic options have become available since this study was conducted. For example, angiotensin-receptor antagonists are an effective alternative for treating patients who cannot tolerate ACE inhibitors due to cough. Spironolactone, too, is used more extensively now. Also, the study was performed in only 1 center, so it may be difficult to generalize the results.

The weaknesses of the study, of which the authors are well aware, are the lack of randomization and the many potential biases associated with such studies. Perhaps it is time to conduct randomized studies to measure the efficacy of a heart failure management program. An article by Fonarow outlines the major quality markers for the treatment of CHF, which should be incorporated in further studies as benchmarks [6].

Applications for Clinical Practice

This study confirms the findings of other studies. The implementation of a heart failure program can reduce hospitalization and improve medication compliance among these patients. It should be noted that the cost of the program evaluated in this study was absorbed by Duke University. To implement such a program in the general community would likely require endorsement from third-party payers.

—Review by Benoit Tonneau, MD

References

1. Smith LE, Fabbri SA, Pai R, et al. Symptomatic improvement and reduced hospitalization for patients attending a cardiomyopathy clinic. *Clin Cardiol* 1997;20:949–54.
2. Fonarow GC, Stevenson LW, Walden JA, et al. Impact of a comprehensive heart failure management program on hospital readmission and functional status of patients with advanced heart failure. *J Am Coll Cardiol* 1997;30:725–32.
3. Rich MW, Beckham V, Wittenberg C, et al. Multidisciplinary intervention to prevent the readmission of elderly patients with congestive heart failure. *N Engl J Med* 1995;333:1190–5.
4. Holst DP, Kaye D, Richardson M, et al. Improved outcomes from a comprehensive management system for heart failure. *Eur J Heart Fail* 2001;3:619–25.
5. Hershberger RE, Ni H, Nauman DJ, et al. Prospective evaluation of an outpatient heart failure management program. *J Card Fail* 2001;7:64–74.
6. Fonarow GC. Quality indicators for the management of heart failure in vulnerable elders. *Ann Intern Med* 2001;135(8 Pt 2):694–702.

Copyright 2001 by Turner White Communications Inc., Wayne, PA. All rights reserved.