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doi:10.1016/S0735-1097(03)00336-X

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## Cost-Effectiveness of a Heart Failure Management Program From the Societal Perspective?

I read with great interest the study by Capomolla et al. (1), which was recently published in this *Journal*. The investigators assessed the cost-effectiveness of an interdisciplinary heart failure management program delivered by day-hospital compared with usual care. In times of increasing pressures to contain health care resource consumption, the study by Capomolla and colleagues represents an important contribution to the literature.

The investigators state that their cost-effectiveness analysis was conducted from the societal perspective, whereas it actually represents an analysis from the health care perspective. When defining the perspective of an economic evaluation, the following key issues need to be considered in order to be in line with a societal viewpoint:

**The type of costs in economic evaluation.** In an analysis from the societal perspective, all costs are included. In addition to health care costs, productivity costs should have been assessed (2,3). This is important if the age of the study population is relatively young. The average age in the study by Capomolla et al. (1) was 56 years. The researchers might have therefore missed a significant proportion of the costs from a societal perspective, thereby probably underestimating the cost-effectiveness of the interdisciplinary heart failure management program, a program that might help to avert future production losses in that it enables the sick person to work again or work until later in his or her life.

**Time horizon of the analysis.** From an economic perspective, the appropriate time horizon for a trial would include all of the

time when there is resource use related to heart failure (4). Because heart failure is a chronic disease, a life-long treatment/management is necessary. Accordingly, to agree with a societal perspective, the follow-up period of  $12 \pm 3$  months of the within-trial evaluation might have been expanded within a modeling framework. In such a simulation study, one would describe the course of the disease with and without the intervention for a patient's lifetime. The simulated societal costs and (untruncated) life-expectancy resulting from the two strategies would then be compared in an incremental analysis.

**The utility of health states.** The utility values were elicited from patients using the time trade-off technique. In a societal cost-effectiveness analysis, it is not the patients' utilities but the utilities that society attributes to the health states experienced by the patient that should be included in the study. That is, a random sample of the general public should have been asked to estimate utilities from the societal perspective. Alternatively, the EuroQoL questionnaire (5), a generic measure of quality of life, could have been administered to the patients in the study. Value sets are available that can be used to attach societal utility values to the health states described by the patient in the EuroQoL questionnaire.

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doi:10.1016/S0735-1097(03)0335-8

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## REPLY

We thank Dr. Sendi for the methodological considerations of our study.

**The type of costs in economic evaluation.** In our economic analysis we considered both direct health costs and indirect costs (as missing profit). The choice of evaluating the former costs was a consequence of the management strategy. In the analysis of

indirect costs, we measured the lost days of work. However, despite their young age, all the subjects analyzed in our study were retired. This can be explained by the fact that our center, being a pre-heart transplantation facility, formally selects more compromised patients. However, the analysis of their functional characteristics (LVEF, peak  $\text{VO}_2$ ) highlights that the ability to work was, in fact, preserved in some subgroups of patients. We believe that this “black hole” has been produced by a lack of published data that has been translated into legislative misunderstanding. Our recent experience about patients not entered into a program of evaluation for cardiac transplantation pointed out that the frequency of return to work was low and essentially completely detached from clinical and functional characteristics (1). We could have used the method of willingness to pay; this involved the introduction of another subjective variable, but one that should have been randomly and homogeneously distributed between the two groups and thus not have biased the cost analysis.

**Time horizon of the analysis.** The building of the model requires the survival curves of a representative population of the considered sample to be extrapolated to zero. The introduction of new therapies, such as beta-blockers and antialdosterone agents, has so drastically modified the course of the survival curves that by the point at which the curves reached zero, the differences would be extremely large (2,3). Hence, we applied our analysis to a relatively short time window. Indeed, analysis of our database of 1,062 patients puts these different temporal courses of illness into perspective (1991–1995: cardiac deaths: 198/495 (40%); 1996–2002: cardiac deaths: 114/567 (20%). These methodological problems were reported in the study limitations.

**The utility of health states.** We agree with Dr. Sendi that in a societal perspective the time trade-off (TTO) to quantify the utility of the patient is that attributed by the society. The question of how to quantify this remains substantially open (4). The EuroQoL questionnaire does not eliminate the problem of subjectivity in attributing the utility of illness. Different studies have underlined that, substantially, the EuroQoL-visual analogue scale (VAS) has been validated with a TTO method. Moreover, VAS valuations can be affected by social class and education of patients (5,6). Finally, in a recent report, TTO utility scores fitted with the usual quality-of-life measures (7).

We warmly thank Dr. Sendi for his methodological clarifications as we firmly believe that only full interchange between those proposing, implementing, and evaluating management strategies in public health will lead to the combination of optimal health care and optimal use of society's resources (8).

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doi:10.1016/S0735-1097(03)00334-6

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### Use of Spironolactone in Heart Failure Patients Receiving Angiotensin-Converting Enzyme Inhibitors and Beta-Blockers

We read with great interest the report by Bozkurt et al. (1) which raises important issues related to translation of research findings into clinical practice. This is especially important for the use of spironolactone for patients with heart failure and left ventricular systolic dysfunction who are already receiving a beta-blocker. The investigators demonstrated significant dissimilarities between patients enrolled in the Randomized Aldactone Evaluation Study (RALES) and clinical practice, which might have resulted in increased adverse effects. However, perhaps the single most important variable, the increasing dissimilarity of which will likely determine the future role of spironolactone in heart failure patients, is use of beta-blockers. Only 11% of the RALES participants were receiving a beta-blocker (2). The American College of Cardiology and American Heart Association heart failure guidelines recommend that all stable patients with heart failure and left ventricular systolic dysfunction should receive a beta-blocker unless specific contraindication exists (3). The weight of evidence for use of a beta-blocker is stronger than that for spironolactone, and it is expected that appropriate use of beta-blocker will increase in the future. Data from the Valsartan Heart Failure Trial (Val-HeFT) demonstrated that extensive blockade of multiple neurohormonal systems in patients with heart failure may not be desirable and may be associated with adverse outcomes (4). In the Val-HeFT study, among patients receiving both an angiotensin-converting enzyme (ACE) inhibitor and a beta-blocker at baseline, use of valsartan was associated with over 40% increase in the risk of death ( $p = 0.009$ ) and nearly 20% increase in the risk of combined end point of mortality and morbidity ( $p = 0.10$ ). The impact of use of spironolactone on heart failure patients already receiving an ACE inhibitor and a beta-blocker is currently unknown. New randomized controlled trials should be conducted before spironolactone could be recommended for such patients.

The study also highlighted that hasty adoption of research