exposure." Nevertheless, apart from a brief paragraph at the end of the Results section, all of their findings (in Tables 2 and 3 and in Fig. 1) are presented in terms of an inappropriate time-independent analysis that ignores any change in the provision of care during follow-up.

At the moment of discharge, all patients will have had no cardiovascular follow-up, and they will remain in that category until the first physician visit, at which time their status will change. Should that visit be to an FP, they will move into the FP-only category. Should they subsequently visit a specialist, they will move from the FP-only category to the combined (FP and specialist) category. From a methodologic point of view, these patients will leave behind the days at risk they experienced while in each of the preceding categories. A time-dependent Cox regression will assign them to the appropriate category in the risk set formed at the time of each death in the cohort. Neither the log-rank analysis of Fig. 1 nor the multiple logistic regression analysis of Table 3 make this correct comparison.

It is also not clear that the time-dependent Cox analysis mentioned in the last paragraph of the Results section has been done correctly. The authors state that the model was adjusted for "cumulative days spent in hospital within 1 year after discharge." However, in a Cox analysis, the characteristics of subjects who died are compared with the characteristics of subjects still alive at the time of death of each case subject. The relevant variable would thus be time spent in hospital up to that time. Use of cumulative days within 1 year of discharge requires the use of future information. This is logically untenable.

I conclude that the authors' results cannot be accepted at face value because their methods were inappropriate for their study design. I encourage them to compute the appropriate time-dependent models to answer this important question about management of congestive heart failure.

Murray Finkelstein
Family Medicine Centre
Mount Sinai Hospital
Toronto, Ont.

Reference
1. Ezekowitz JA, van Walraven C, McAlister FA, Armstrong PW, Kaul P. Impact of specialist follow-up in outpatients with congestive heart failure. *CMAJ* 2005;172(2):189-94.

[The authors respond:]

Murray Finkelstein is appropriately concerned about including postevent outcomes in a regression model. This would result in biased associations, namely, the inability to determine if the predictive factor resulted in the event or if the event resulted in the predictive factor. This has been called "survivor-treatment selection bias"[1] or, more generically, "time-dependent bias" and is relatively common even in highly cited medical journals. In a recent systematic review,[2] we found that 18.6% (95% confidence interval [CI] 15.8%–21.8%) of studies with a survival analysis contained a time-dependent factor and that 40.9% (95% CI 32.3%–50.0%) of these studies were susceptible to time-dependent bias.

However, we strongly disagree that our Cox model was performed incorrectly, since it was corrected for this bias. As stated in the Methods section, we adjusted for the appropriate time-dependent variables and did have a variable expressing time spent in hospital up to that time.[3] Our Results section summarizes the findings. The phrase "within 1 year after discharge" used there refers to the censoring time that we used for all analyses in the study. We did not use any "future information" and our methodology was robust.

In the Methods section, we note that we performed a sensitivity analysis using all outpatient visits rather than cardiovascular visits to define our groups; however, the results of this analysis were omitted by the journal because of space limitations. Using the same variables as in Table 3 but with all visits rather than cardiovascular visits, we found similar results: compared with those who had no outpatient visits, patients seen by a family physician (odds ratio [OR] 0.80, 95% CI 0.64–0.96) or a specialist and family physician (OR 0.48, 95% CI 0.40–0.58) had lower mortality rates. Furthermore, similar results were obtained with the Cox model when all visits instead of cardiovascular visits were used: seeing a specialist was associated with lower mortality (hazard ratio 0.95, 95% CI 0.94–0.96).

Justin A. Ezekowitz
Paul W. Armstrong
Padma Kaul
Division of Cardiology
Finlay A. McAlister
Division of General Internal Medicine
University of Alberta
Edmonton, Alta.
Carl Van Walraven
Department of Medicine
University of Ottawa
Ottawa, Ont.

References
1. Glesby MJ, Hoover DR. Survivor treatment selection bias in observational studies: examples from the AIDS literature. *Ann Intern Med* 1996;124:999-1005.
2. Van Walraven C, Davis D, Forster AJ, Wells GA. Time-dependent bias was common in survival analyses published in leading clinical journals. *J Clin Epidemiol* 2004;57:672-80.
3. Ezekowitz JA, van Walraven C, McAlister FA, Armstrong PA, Kaul P. Impact of specialist follow-up in outpatients with congestive heart failure. *CMAJ* 2005;172(2):189-94.

Corrections

The DOI attached to a recent News article[1] should have read 10.1503/cmaj.050548.

Reference
1. Chéné C. Ads pressure Ontario to butt out in retail locations. *CMAJ* 2005;172(12):1544.

The DOI attached to a recent Query article[1] should have read 10.1503/cmaj.1040841.

Reference
1. Query. *CMAJ* 2005;173(1):112.