Reviewer's report

Title: The health services burden of heart failure: an analysis using linked population health data-sets

Version: 1 Date: 20 November 2011

Reviewer: Lesley Curtis

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Using a large New South Wales hospital discharge database, the authors describe trends from 2002-2007 in admission, resource use, and survival associated with heart failure. The paper provides new, useful information and highlights the burden of heart failure in the elderly.

Major Compulsory Revisions

1. A 2-year look-back period is reasonable given available data. Please clarify whether a 2006 admission would be considered “index” if the patient was admitted in 2003 (and included in that year’s index population)? More generally, how were patients handled who met the definition of “index” in multiple years? How commonly did this occur? If patients were included in the first—but not subsequent—“index” admission cohorts, the observed decline in index rates may be an artifact of the study design.

2. Although a primary aim of the study was to assess the typical profile and trajectory of a cohort of Australian patients with heart failure, the methods do not describe how “typical” was defined. Moreover, the value of a separate discussion of the “typical patient and typical trajectory” is unclear because, in many cases, it restates information provided in the results. Is “typical” defined by mean (or median) values of study variables? From Table 1, the distribution of patients by sex appears to be quite even. Please clarify how, from these data, one would identify the “typical” patient as female.

3. It is unclear whether mortality was considered a competing risk for readmission. With mortality rates of 10% at 1 month and almost 30% at 1 year, readmission rates will be underestimated if death is not considered a censoring event.

4. Distributions of selected comorbidities over the entire study period are provided in the text, but not shown by year in Table 1. Please comment on whether the comorbid burden remained constant over the study period.

5. In the footnote of Table 7, please list all variables included in the Cox regression model. Please also clarify why individual comorbidities and the Charlson score was included in the multivariable model. The score and individual components are correlated and may explain why the hazards ratio for diabetes flips in the multivariable model.

Minor Essential Revisions
1. The presence of diabetes is protective in the adjusted model (HR 0.92, 95% CI 0.87-0.97). The statement of risk factors for hospital readmission needs to clearly state the direction of the association (abstract and results).

2. The authors appropriately refer to “index” admissions in the abstract Results, but reach a conclusion regarding the incidence of heart failure. Given a limited (2-year) look-back period, it is likely that index admissions overestimate incidence (Health Serv Res. 2011 Sep 23). The abstract Conclusion should refer to “index admissions.”

3. An alternative assessment of comorbidities is described, but results are not presented.

4. The evidence regarding the efficacy of HF disease management programs is weak at best (Am Heart J. 2005 Apr;149(4):722-9). The statement regarding the ability of heart-failure specific management programs to reduce mortality and improve quality of life (page 15) needs to be tempered.

5. Table 1: Please provide distributions of all comorbidities and the mean (SD) for the Charlson score.

Discretionary

1. Table 2: Please clarify the number provided for each 5-year age group. Is it the total number of patients in the age group over all years? Please provide the number and rate in each cell.

2. 30-day readmission and mortality is a common metric in the U.S. Calculation of 30-day rates would enable comparisons with U.S. data as well.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests.