Reviewer's report

Title: ICD-10 Coding Algorithms for Defining Comorbidities of Acute Myocardial Infarction

Version: 1 **Date:** 6 November 2006

Reviewer: Alain Vanasse

Reviewer's report:

The authors present a validation study on ICD-10 coding algorithms for nine AMI comorbidities. The authors calculate the sensitivity, specificity, PPV and NPV for the 9 pre-selected comorbid diagnosis when comparing the results of ICD-10 coded and ICD-9 coded data to chart review data. Thereafter, they compare BC mortality rates (in-hospital, 30 days and one year) for the 9 comorbid AMI diagnosis generated with ICD-10 algorithms those calculated with the same diagnosis generated with ICD-9 algorithms. The conclusions of the authors are that ICD-10 coding algorithms performed similar to past coding and will allow future policy and quality judgments to be made on AMI outcomes with accurate ICD-10 comorbidities.

General comments:
1. This paper presents interesting results that may prove to be very useful for future studies on AMI. Although previous published works by Quan & Sundararajan are very similar to the work presented here, one can see a more specific application of their coding validation for 9 specific AMI comobid conditions. However, it is not clear why and how the researchers selected these 9 comorbid AMI conditions.
2. Methods are appropriate but more detail on the random selection of Alberta charts would be helpful to replicate the work.
3. Manuscript does adhere to the relevant standards for reporting and deposition data. However the introduction section should have reported previous studies on ICD-10 validation. Also, the titles for some of the tables could be more specific (see comments below).
4. Pulmonary edema which is a complication of heart failure may have been coded as "heart failure" by some physicians and as "pulmonary edema" by others. This may explain the low frequency and the low sensitivity reported by the authors. The discussion and the conclusion section are adequately supported by the data and compare the results to the literature as well as they present the main limitations of the study done.
5. The title of the article could refer to Comparing "validity" of the ICD-10 and ICD-9 coding algorithms for defining comorbidities of acute myocardial infarction. The abstract convey accurately what has been found.
6. The writing is acceptable.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

• Including in the introduction what are the problems and challenges with the transition from the ICD-9 coding system to the ICD-10 coding system. The "so what" question. Also, appropriate references should be added in the "reference" section (that is incorrectly written "REFERNCES")

• Justify the choice of the 9 AMI comorbidities. For example, why cancer but no infectious diseases like pneumonia?

• Specify the method of random selection of 4,008 charts for the 4 teaching hospitals.

• More detail should be provided on the physician involved in the revision of the comprehensive ICD-10 code list (page 6). Are they clinicians or non clinicians, specialists (which specialty) or family physicians?

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Titles for some tables could be more specific:
• Table 2 - indication that the table concerns the Alberta random chart review and specification on the total n.
• Table 3 – indication that the table concerns the Alberta random chart review and specification on the total

n.
• Table 5 - indication that the table concerns the BC provincial database and specification on the total n.

Discretionary Revisions (which the author can choose to ignore)

What next?: Accept after minor essential revisions

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No

Declaration of competing interests:

I declare that I have no competing interests