Reviewer's report

**Title:** The risk for chronic kidney disease in patients with heart diseases: a 7-year follow-up in a cohort study in Taiwan

**Version:** 1  **Date:** 8 September 2011

**Reviewer:** Lilyanna Trpeski

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It is interesting paper using linked administrative data bases to address questions of CKD disease development in CVD patients. Most of the studies reported up today were clinical studies which included chart reviewing for the CVD patients if retrospective or using data from clinical trials.

- **Major Compulsory Revisions**

1. This is an effort to identify CKD occurrence in cardiovascular patients using only administrative data bases which data might have problems with coding differences over time and between data bases such as ambulatory care (for example less detailed) and hospital admission data bases with more comorbidity coded for each patients. How was that addressed in this study? It is missing in methodology part. Authors are lacking statement of any data quality issues raising from different data sources. Are the required reporting mechanisms for ambulatory care and hospital discharge patients the same in Taiwan? It is not the case in other jurisdictions and there is bias in reporting comorbidities at the base line between 2 data sources.

2. In the methodology is not clear how the CVD patients with existing CKD are excluded from the cardiovascular disease patient cohort (CVD). CVD cohort is defined if the ICD 9 code for CVD is found in at least of 2 diagnostic records of CVD. What about CKD disease ascertainment?

3. Patients over time could develop chronic kidney disease in different stages. Could authors describe in their methodology how the follow up CKD information was handled? If the same patient had multiple admissions with different CKD stages for example with stage 3 icd9 585.3 and later with renal failure ICD9 585.6? How is the time to event calculated? Is it calculated only to first event? What is the meaning of times >=2 or times >=3 written under table 1?

4. Why the multivariate logistic regression analysis didn’t include risk factor: renal vascular disease for the adjustment?

5. What are the findings if calculating probability of getting vascular disease using Kaplan-Mayer curve? Is that probability significant? There is only 2 % difference in probability after 7 years for patients being free of disease which is significant finding.
6. Could authors also mention/explain why only all chronic CKD events were considered for analysis and they didn't split CKD between icd9 585.1-5 and ICD 9 585.6 which is clearly renal failure with RRT. It seems to be very valuable to do this type of analysis analysis in order to estimate weather there is a need in additional research regarding future interventions for two different groups of CKD patients.

- Minor Essential Revisions

1. In the conclusion part of the abstracts rephrase sentence “This population study provides strong evidence that patients with heart disease are at an elevated risk of developing chronic kidney disease”

2. Second sentence in Background need to be rephrased: “The relation of heart Diseases and chronic kidney disease (CKD) is always to be found together in clinical” Probably Authors wanted to specify that both disease have been found together but their relation is not completely known. Some US studies confirmed that greater occurrence of ESRD exist in severely ill CSV.

3. Need rephrasing: “We investigated whether various heart diseases have effect on subsequent development of CKD in this cohort.”

4. Need rephrasing: “The incidence rate ratios measured by comorbidity were 2.71 for subjects with diabetes mellitus, 2.26 for those with hypertension and 2.81 for those with hyperlipidemia “. Is it IC rate measured by comorbidity or is actually expressed by comorbidity

5. Authors may consider repeating model analysis in only patients without comorbidity condition identify at the beginning of the follow up period in order to estimate only risk of CKD in CV patients at the beginning of observational period.. In this adjusted model analysis HR for CV and DM are very similar.

6. Exclude word newly from the title: “Table 1. Comparisons in demographic characteristics and baseline comorbidities between cohort of patients with heart disease and cohort without heart disease newly diagnosed in 2000-2001.”

7. Change title for Table 3. Hazard ratios of CKD in association with heart disease, the demographic characteristics, and baseline comorbidities. It

- Discretionary Revisions

1. Future analysis of CKD incidence by severity of CKD using available ICD9 codes , or linking with laboratory data bases to estimate the eGFR and severity of CKD
**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Needs some language corrections before being published

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

**Declaration of competing interests:**

'I declare that I have no competing interests'