Comparing the burden of CKD in the U.S. and Taiwan: When is an “epidemic” an epidemic?

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**Introduction**

- Internal comparisons have the potential to produce solutions to public health problems within individual countries.
- Previous international comparisons have focused on the incidence and prevalence of end-stage renal disease (ESRD) patients, while only limited data have been available for cross-national comparisons of medical costs related to ESRD and chronic kidney disease (CKD) patients.
- The Taiwan National Health Insurance and Medicare claims data both use ICD-9-CM diagnosis codes, which provide a beneficial structure for comparison.
- Taiwan has the world’s highest incidence and second-highest prevalence of ESRD.
- The potential of the high ESRD incidence rate might be derived from the CKD population; on the other hand, an alternative perspective of the burden of CKD on the U.S. population is in the growth of ESRD.
- The objective of this study, therefore, was to compare the burden of CKD, and associated costs in the U.S. Medicare and Taiwan NHI populations.

**Methods**

- This study design was based on a retrospective secondary data analysis.
- The study sample in Taiwan was derived from the 1% random sample of the entire NHI population from 2000 to 2004; characteristics of U.S. subjects were derived from the 5% Medicare claims dataset.
- For comparison purposes, distributions of patient counts and costs in the U.S. and Taiwan for CKD, Hypertension (HTN), and diabetes mellitus (DM) included patients age 65 and older, while the ESRD population included all age groups.
- CKD, HTN, DM, and ESRD patients were identified according to the ICD-9-CM diagnosis codes used by the U.S. Renal Data Systems (USRDS).
- At least two outpatient claims or one inpatient claim is required for each primary diagnosis.
- Distributions of patient counts in the U.S. and Taiwanese CKD, HTN, DM, and ESRD populations were compared.

**Results**

- Although, the burden of non-ESRD CKD was higher in Taiwan (7.6% vs. 5.7% in the U.S.), proportionately, expenditures on non-ESRD are similar between the two health care systems (15.4% in Taiwan vs. 16.5% in the U.S.).
- The prevalence of ESRD and associated costs were higher in Taiwan, and was present in 2.1% of population while accounting for 22.3% of costs.
- In total, the combination of CKD and ESRD accounted for 37.7% of Taiwanese expenditure in the population age 65 and older, compared to 23.7% in the U.S. Medicare population.
- The annual percent change in Medicare ESRD expenditures increased 45.7% in 2004 when compared to ESRD expenditures in 2000; this is similar to the 46.5% increase in ESRD expenditures in Taiwan from 2000 to 2004. The growth rate of CKD expenditures was more than 70% in 4 years.
- The distributions of ESRD per person per year (PPPY) costs were quite different between the Medicare and the Taiwan NHI populations.

**Conclusions**

- Managing the economic and clinical burden of CKD will be a significant challenge for the health care system.
- Although the burden of CKD in the U.S. had been traditionally considered to be of “epidemic” proportions, it is dwarfed by the burden of CKD in Taiwan.
- The long-term evaluation of these epidemics need close scrutiny and represent public health problems of international importance.