

Comparison of Different Claims-Based Comorbidity Measures for Use in Healthcare Quality Studies

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Objective:

To compare the performance of three claims-based comorbidity measures which are commonly used in healthcare quality and outcome studies.

Methods:

This retrospective cohort study used data from two sources: the National Health Insurance inpatient claims data and death certification data in Taiwan. Two study populations were inpatients with a principal diagnosis in one of the following disease categories: acute myocardial infarction (AMI) (n=8,961) and chronic obstructive pulmonary disease (COPD) (n=32,755). Three comorbidity measures, including two different adaptations of the Charlson comorbidity index (CCI) and one method developed by Elixhauser et al., were compared. Two adaptations of the CCI were developed by Deyo et al. and Romano et al. The outcome of interest was in-hospital mortality. The performance of different comorbidity methods were compared using the c-statistics derived from multiple logistic regression models that included age, gender, and race.

Results:

The two study populations represent diverse in-hospital mortality rates: 14.94% for AMI and 3.02% for COPD patients. All three comorbidity measures significantly predicted in-hospital mortality. The performance of three methods were in the same rank order among two study populations: Elixhauser > Romano's CCI > Deyo's CCI. Among the AMI patients, the c-statistics was 0.736 for Elixhauser, 0.729 for Romano, and 0.721 for Deyo. Among the COPD patients, the c-statistics was 0.731 for Elixhauser, 0.726 for Romano, and 0.718 for Deyo.

Conclusions:

Our results support the need for comparison of different comorbidity measures for use in healthcare quality and outcome studies. Performance ranking of three commonly used comorbidity measures was the same among two study populations. We suggest that further investigators should consider the relative performance data when selecting the method for healthcare quality and outcome studies.