

A case-mix classification system for explaining healthcare costs using administrative data in Italy

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Background: The Italian National Health Service (NHS) provides universal coverage to all citizens, granting primary and hospital care with a copayment system for outpatient and drug services. Financing of Local Health Trusts (LHTs) is based on a capitation system adjusted only for age, gender and area of residence. We applied a risk-adjustment system (Johns Hopkins Adjusted Clinical Groups System, ACG® System) in order to explain health care costs using routinely collected administrative data in the Veneto Region (North-eastern Italy).

Methods: All residents in the Veneto Region were included in the study. The ACG system was applied to classify the regional population based on the following information sources for the year 2015: Hospital Discharges, Emergency Room visits, Chronic disease registry for copayment exemptions, ambulatory visits, medications, the Home care database, and drug prescriptions. Simple linear regressions were used to contrast an age-gender model to models incorporating more comprehensive risk measures aimed at predicting health care costs.

Results: A simple age-gender model explained only 8% of the variance of 2015 total costs. Adding diagnoses-related variables provided a 23% increase, while pharmacy based variables provided an additional 17% increase in explained variance. The adjusted R-squared of the comprehensive model was 6 times that of the simple age-gender model.

Conclusions: ACG System provides substantial improvement in predicting health care costs when compared to simple age-gender adjustments. Aging itself is not the main determinant of the increase of health care costs, which is better explained by the accumulation of chronic conditions and the resulting multimorbidity.

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