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Meeting abstract

Evaluating case-mix and predictive modeling measures within the British Primary care sector

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Aim
The goal of this project was to promote the ability of the NHS to apply diagnostic and other clinical information to develop state of the art case-mix measures relevant to medical and fiscal management activities. In addition, it demonstrated the validity of the ACG case-mix system using Read codes.

Data and methods
Data was obtained from three Primary Care Trusts (PCTs) within the British NHS. Four years of data were collected at two of the sites, while two years were collected at the third site. The population of the sites varied from 6,000 to 20,000 in 2005. The independent variables included age, gender and diagnostic information, in the form of Read codes. A range of variables were used to measure resource utilization.

Results
The project looked at three specific applications:population risk profiling, provider performance profiling, and patient identification.

Population Risk Profiling was done to assess the disease burden of populations for resource allocation. There was found to be a very strong relationship between the simple risk score distribution and relative resource use in all three sites. The distribution of Read codes demonstrated that the number of codes per patient differ significantly across practices. The distribution of ACG-PM risk scores by postal code revealed the differences across geographical areas. Eleven conditions have been identified as key conditions in the ACG program. There is significant variation in the distribution of key conditions.

Provider Performance Profiling was performed to assess efficiency across PCTs or providers. For budgetary allocation and performance profiling, concurrent regression models were used to estimate the expected resource use adjusted for demographic and diagnostic information of the patient. The actual and expected resource use were then compared to profile providers performance and measure efficiency.

Predictive modelling was undertaken to identify people at risk for assessment and care planning. Comparisons of the explanatory power of alternative models show significant improvement when ACG measures are added. Highest explanatory power is achieved with total secondary care costs as the dependent variable. For primary care variables, the explanatory powers are much higher for pharmacy use and lab tests. It is possible to identify 4.2% to 21.5% of all true high risk patients from the models. A list of anticipated high-risk patients for 2006 was generated.

Conclusion

Accounting for differences in the health status of populations and their anticipated need for health care services is necessary when considering policies at the individual level, be it the provider or patient level. Our results show that UK populations do vary in their need for health care resources and can be successfully compared across PCTs, as well as on the individual practice level, to assess the disease burden and the health care resource needs of the population. The ACG model proved to work well with the available British data. These results can be directly used for population risk profiling, performance management, or case management.