

Can valid and practical risk-prediction or casemix adjustment models, including adjustment for comorbidity, be generated from English hospital administrative data (Hospital Episode Statistics)? A national observational study

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Plain English summary

Risk-prediction or casemix adjustment models from HES data

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Plain English summary

England's NHS collects a large number of useful data on patients attending or admitted to its hospitals. With personal information such as names and addresses removed, these data are made available to researchers who comply with strict security regulations. Using these records and different types of statistical models, we set out to determine how best to compare hospitals in terms of the quality of care that patients receive while at those hospitals. Different hospitals treat different types of patients with different levels of health, and it would not be fair or useful to ignore this while comparing hospitals. We therefore focused on two main challenges in this task: how best to define the measures of quality of care and appropriately adjust the figures for patient differences.

Our measures included death and complications such as unplanned readmissions and unplanned reoperations. We were also interested in predicting missed outpatient appointments. First we had to define these measures using the coding systems in use in the database. Then we had to decide the best way to take into account factors such as how old the patient is and whether or not they have illnesses such as diabetes or heart disease. We built a large number of statistical models using old and new methods and found that the old methods just needed a tweak. We make a number of recommendations on how to build such models using NHS data in order to compare the quality of hospitals fairly.

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