

Intelligent Information: A National System for Monitoring Clinical Performance

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Objective. To use statistical process control charts to monitor in-hospital outcomes at the hospital level for a wide range of procedures and diagnoses.

Data Sources. Routine English hospital admissions data.

Study Design. Retrospective analysis using risk-adjusted log-likelihood cumulative sum (CUSUM) charts, comparing each hospital with the national average and its peers for in-hospital mortality, length of stay, and emergency readmission within 28 days.

Data Collection. Data were derived from the Department of Health administrative hospital admissions database, with monthly uploads from the clearing service.

Principal Findings. The tool is currently being used by nearly 100 hospitals and also a number of primary care trusts responsible for purchasing hospital care. It monitors around 80 percent of admissions and in-hospital deaths. Case-mix adjustment gives values for the area under the receiver operating characteristic curve between 0.60 and 0.86 for mortality, but the values were poorer for readmission.

Conclusions. CUSUMs are a promising management tool for managers and clinicians for driving improvement in hospital performance for a range of outcomes, and interactive presentation via a web-based front end has been well received by users. Our methods act as a focus for intelligently directed clinical audit with the real potential to improve outcomes, but wider availability and prospective monitoring are required to fully assess the method's utility.