

Improving risk prediction model quality in the critically ill: data linkage study

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Plain English summary

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Plain English summary

Large amounts of information (data) are collected about patients using NHS services, but we do not make the best possible use of these data to improve patient care. Data are held by different organisations in different databases. Joining up these databases (data linkage) can give us a more complete picture of what happened to a patient.

The Intensive Care National Audit & Research Centre is an independent charity that runs national clinical audits to monitor and improve care for critically ill patients. These audits use statistical models that take information about the patient known before, or soon after, the start of their illness to make a prediction of their likely outcome. In this research study, we used data linkage to improve these models and ensure that the audits provide useful information back to hospitals to support quality improvement. However, it took over 4 years to link the databases.

By linking with death certificate information, we were able to predict how many patients die by 30 days, 90 days and 1 year after their critical illness. By linking with routine hospital data, we were able to take better account of how sick patients were before they became critically ill and look at how many days they spent in hospital in the year after their critical illness and the costs of these hospital stays. By linking with two other national clinical audits, we were able to develop new models to predict important problems of kidney failure and diabetes that some patients experience after critical care. By linking with another national clinical audit, we were able to get a more complete picture of how sick patients having heart surgery were before they were admitted to an intensive care unit, helping us to improve our models to make fairer comparisons for these patients.

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