

Ensuring comparisons of health-care providers are fair: development and validation of risk prediction models for critically ill patients

David A Harrison,^{1*} Paloma Ferrando-Vivas,¹
Jason Shahin^{1,2} and Kathryn M Rowan¹

¹Clinical Trials Unit, Intensive Care National Audit & Research Centre (ICNARC), London, UK

²Department of Medicine, Respiratory Division and Department of Critical Care, McGill University, Montreal, QC, Canada

*Corresponding author

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Plain English summary

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What was the problem?

When a patient becomes very sick, it is usually an emergency. The patient will not be able to choose where they are treated. We must therefore make sure that all hospitals provide good care. When comparing hospitals, we need to take account of the different patients they treat; if one hospital has more very sick patients, we expect the death rate to be higher. To do this, we use risk prediction models. These models take information about the patient from early in their care and make a prediction of their probable outcome.

What did we do?

We used information about patients who were admitted to an intensive care unit or had a heart attack in hospital, including how sick each patient was (e.g. blood pressure or heart rhythm). We used statistical techniques to fill in missing information and to estimate curves to relate this information to the patients' outcomes.

What did we find?

We produced new risk prediction models to predict outcomes for patients who were admitted to an intensive care unit or had a heart attack. We showed that the new models work well when they are used to predict the outcomes of different patients.

What does this mean?

The new models can be used to compare outcomes for patients who were admitted to an intensive care unit or who had a heart attack in different hospitals.

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Editorial contact: nihredit@southampton.ac.uk

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