

# Development of risk models for the prediction of new or worsening acute kidney injury on or during hospital admission: a cohort and nested study

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## Plain English summary

### Risk models for the prediction of new or worsening AKI

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## Plain English summary

Patients admitted to hospital are at risk of damage to kidney function, termed acute kidney injury (AKI), either from their illness or as a result of subsequent treatment. Kidney injury can lead to serious health issues and even death. It is essential that patients at risk, and those who develop kidney injury, are recognised early and treated effectively. However, the 2009 National Confidential Enquiry into Patient Outcome and Death highlighted systematic failings of identification and subsequent management of kidney injury in hospital. The report recommended risk assessment for all patients admitted to hospital.

We extracted data on hospital admissions during 2011 to a large NHS trust. Data comprised age, sex, chronic medical conditions, hospital admission and outpatient history, relevant blood tests, medication history, kidney functions, urine protein testing and operations. These data were used successfully to develop mathematical risk models to predict AKI on admission to hospital and at 72 hours post admission. These models were checked in a second local population and also in a further population with different demographic characteristics, suggesting that these models may be transferable across the NHS. We were unable to develop a model to predict worsening AKI.

We also conducted a focus group and individual interviews about an alerting system already in place for AKI, to assess the most effective way to incorporate risk alerting into everyday clinical practice. This analysis has provided valuable insights into the delivery of information and alerting in clinical practice.

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