

# Four years on, ICU patients with kidney injury show high mortality, elevated urinary protein

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In 4 years of follow up of 1464 participants in the randomized controlled trial Randomised Evaluation of Normal vs. Augmented Levels of RRT (RENAL) study, Martin Gallagher (The George Institute for Global Health, Sydney, Australia) and colleagues found that patients with acute kidney injury (AKI) in an intensive care unit (ICU) who require renal replacement therapy (RRT; hemodialysis combined with hemofiltration) do not benefit from higher intensity RRT. At a median of 43.9 months follow up, mortality (63% in the low intensity and 63% in the high intensity group), as well as quality of life among those who survived, were the same in both groups. Albuminuria (elevated protein levels in urine, signifying persistent kidney injury) was common among survivors and with equal rates in both groups (40% in the low intensity and 44% in the high intensity group).

The authors state, "Our study highlights the increased long-term risk of death associated with AKI treated with RRT in an ICU. Only one third of randomized patients were alive 3.5 years later, a lower survival than seen in recognised high mortality conditions such as the acute respiratory distress syndrome. Although, in our patients the risk of subsequent maintenance dialysis dependence is low, almost half have evidence of significant proteinuria, portending further risk in the years to come. These findings support the view that survivors of AKI are at increased risk and that closer surveillance may be justified. In addition, our findings suggest that chronic proteinuria reduction strategies, which have

shown benefit in some patient groups with proteinuria, may warrant investigation as a therapeutic intervention."

A limitation is that the patients were enrolled in a randomized trial and therefore not necessarily representative of patients in ICUs with AKI in general, and not all patients agreed to long term follow up.

The authors conclude, "In a large cohort of patients with [acute kidney injury](#) randomized to differing doses of continuous renal replacement therapy in the ICU, the increased risk of death continues well beyond hospital discharge and is not altered by increased intensity of dialysis. The proportion of patients entering a maintenance dialysis program is small but there is a high prevalence of proteinuria amongst survivors suggesting significant ongoing risk of chronic kidney disease and mortality."

**More information:** Gallagher M, Cass A, Bellomo R, Finfer S, Gattas D, et al. (2014) Long-Term Survival and Dialysis Dependency Following Acute Kidney Injury in Intensive Care: Extended Follow-up of a Randomized Controlled Trial. *PLoS Med* 11(2): e1001601. [DOI: 10.1371/journal.pmed.1001601](#)

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