

Predicting First-Year Mortality in Incident Dialysis Patients with End-Stage Renal Disease – The UREA5 Study

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Commentary

By Professor Richard Glassock

Tools for predicting outcomes in incident and/or prevalent patients undergoing dialysis therapy (hemodialysis or peritoneal dialysis) for end-stage renal disease (ESRD) are of potential value in clinical research and perhaps also for clinical care. Chua and colleagues from Singapore have developed a relatively simple tool (called UREA5) directed at predicting one-year mortality (from any cause) in incident dialysis patients. Data on 983 subjects (712 hemodialysis and 271 peritoneal dialysis) starting dialysis between 2005 and 2010 were used for construction of the predictive tool. The model included plasma urate levels (<500 or >600 $\mu\text{m/l}$), left ventricular ejection fraction (LVEF) <45%, age >70 years, cerebrovascular or peripheral vascular disease, serum albumin <30 g/l and serum alkaline phosphatase >80 U/l. Three points were assigned to LVEF, 2 points to age and 1 point each to the remainder (maximum points = 9). First-year mortality rates were 6, 8, 22, 31 and 46 % for those with a score of ≤ 1 , 2, 3, 4, ≥ 5 , respectively, and an area-under the curve analysis gave a C-statistic of 0.74 showing modest predictive accuracy. Not surprisingly, age was the strongest element in the scoring system. As others have noted, an increased eGFR at the initiation of dialysis was associated with earlier mortality. Cardiovascular causes accounted for 19% of the deaths. Overall one-year mortality was 17.2% (6.7% at <30 months and 10.5% between 3 months and 1 year).

The predictive tool has not been validated in another set of subjects, but is likely to be equally applicable to hemodialysis and peritoneal dialysis subjects. No objective measures of frailty were included in the analysis, which I believe is a major weakness of this study overall (see Bao, Y.; Dalrymple, L.; Chertow, G.M.; Kaysen, G.A.; Johansen, K.L.: Frailty, dialysis initiation, and mortality in end-stage renal disease. Arch Intern Med 2012;172:1071–1077. In addition, no analysis of the net reclassification index was performed. I would like to know if the scoring system outperformed the simple question asked of the treating physician – ‘would you be surprised if this patient were alive in 12 months?’s. This and other such predictive tools may have value in clinical research, but they are not yet ready for application to clinical decision making at the individual patient level, at least in my opinion.

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