

# PREDICTING SURVIVAL OUTCOMES FOR ELDERLY PATIENTS STARTING DIALYSIS

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## Introduction & Aims

For many patients with advanced kidney disease, dialysis prolongs life and improves quality of life. However there are some patients, particularly those who are elderly and have other co-morbidities, who may not derive such substantial survival benefits and dialysis can reduce their quality of life for the time that they have left. It is therefore important for clinicians and patients to weigh the benefits and disadvantages of dialysis.

This decision-making process is likely to be influenced by the patient's expected survival on dialysis, however there is currently no survival outcome prediction tool that is approved for use in the UK. Several scores have been developed in other countries for the purpose of predicting survival outcome for elderly patients who are considering starting dialysis. These tools may help patients to make more informed decisions about their treatment options.

The aims of this study:

- To compare the prediction scores to determine the most reliable one
- To validate the selected score in a sample of patients at BSUHT in order to determine whether it has a potential future use in clinical practice in the UK.

## Methods

A literature search was carried out to identify all of the prediction scores that estimate survival outcome in elderly patients starting dialysis. The content of these scores and their predictive power were compared. The score developed by Couchoud<sup>[1]</sup> was identified as being the most relevant to our population sample group and also having the greatest accuracy in predicting survival outcome.

In order to validate this score for BSUHT patients, the score value was calculated for each patient and this was compared to their survival outcome to determine whether there was a correlation. In order to be included in this study, patients had to have started dialysis between November 2011 and October 2015, and be aged 75 years or over at the start of dialysis. Data was collected from clinical vision 5, which is the database used by renal physicians to record patient information. Data collected included age at start of dialysis, gender, mode of dialysis, relevant co-morbidities, albumin level at the start of dialysis and survival outcome. Data was entered into an anonymised spreadsheet and then converted into categorical data in order to reduce recording errors and aid analysis.

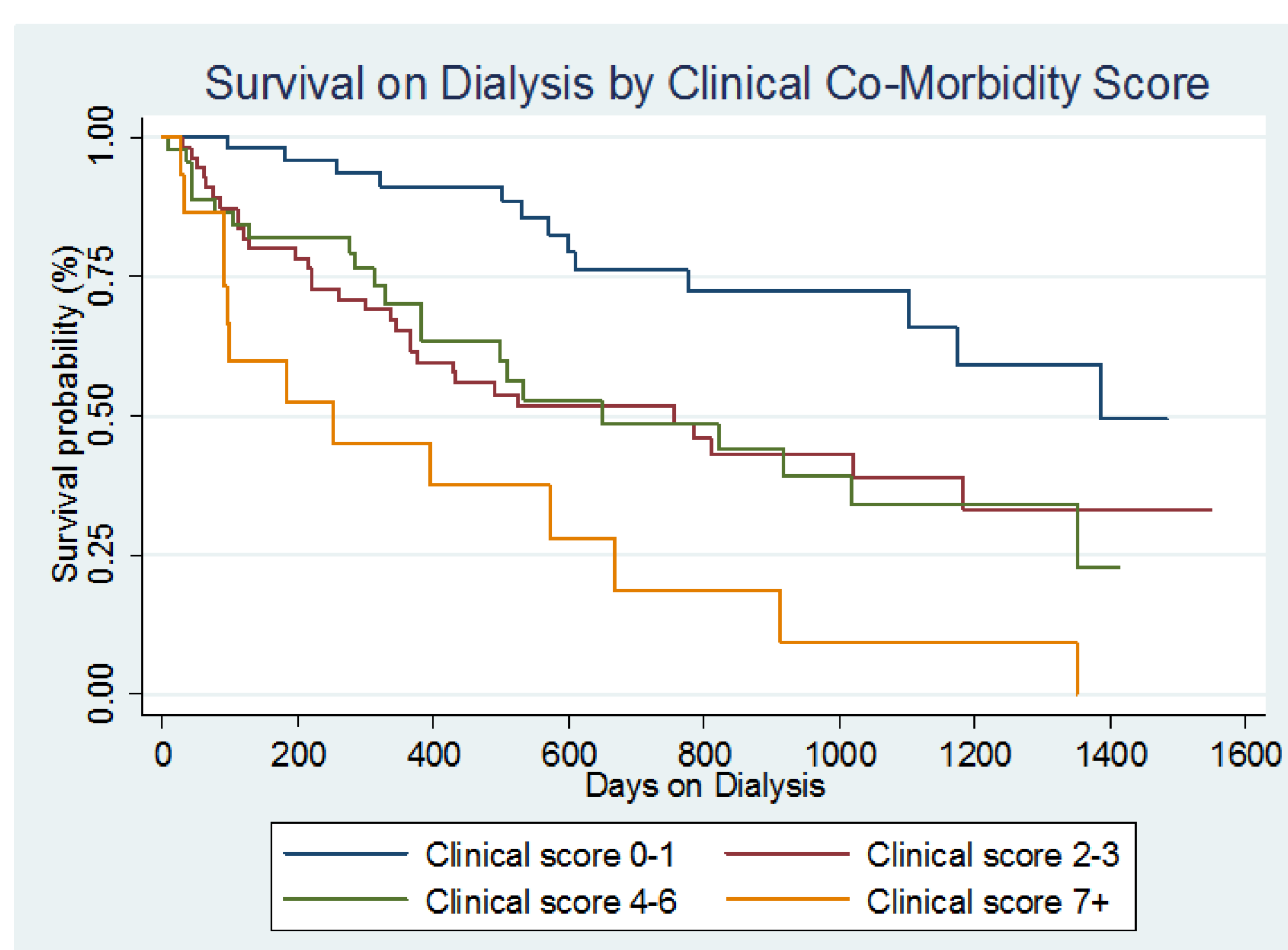


Figure 1. Survival curves for each of the patient groups based on score.

## Results

164 patients, of whom two-thirds were male, were included in this study. They ranged in age from 75-92 years at the start of dialysis (mean age 80 years). Just over half of the patients survived until the end of the study, with only 10% dying within 90 days of starting dialysis.

A logistic regression was calculated and this demonstrated that for every 1-point increase in prediction score there was a 27% higher risk of mortality within 90 days of starting dialysis.

Figure 1 demonstrates that the patients with the lowest score had the best survival outcomes with half of them surviving until approximately 1,500 days. However, 50% of the patients in the group with the highest scores survived only 250 days after starting dialysis. This is a significant difference in survival and shows the association between high prediction score and poor survival outcome.

Figure 2 compares the average prediction scores of patients for each survival outcome category. It demonstrates that the patients who died within 90 days of starting dialysis had almost double the clinical prediction score value to those patients who survived to the end of the study. However there is little difference in clinical prediction score between patients who died within 90 days and those who died at any point during the study, which perhaps indicates that this tool is useful for predicting overall mortality but less able to distinguish between very early mortality and death a year or more after starting dialysis.

The factors that most commonly contributed to the patients' scores included dysrhythmia, cancer, low albumin and age. Most patients had a low score with very few patients scoring more than 7 points.

	Patients who died during the study	Patients who survived
Average number of days survival	407	736
Average prediction score value	4.22	2.54

Figure 2. Comparison of average prediction score value for patients categorised by survival outcome

## Conclusions

In summary, this study shows that the scoring system designed by Couchoud gives a reasonably accurate prediction of survival outcome and therefore it may have a potential use in the future for enabling patients to make more informed decisions about their management options. However, before this scoring system can be implemented for clinical use in the UK further research needs to be done. This should include a significantly larger number of patients from across the UK. Given the particularly low numbers of patients on haemodialysis in this project it would be useful to study this patient group separately. A prospective study into the impact of the clinical use of the score on decision-making and patient outcomes is another potential area for research.

## References

<sup>1</sup> Couchoud CG, Beuscart JB, Aldigier JC, Brunet PJ, Moranne OP, REIN registry. Development of a risk stratification algorithm to improve patient-centred care and decision making for incident elderly patients with end-stage renal disease. *Kidney Int.* 2015 Nov;88(5):1178-86.