

CHAPTER 12

PREDICTORS OF MORTALITY IN HAEMODIALYSIS PATIENTS

Mark Marshall



This report describes which of the clinical and laboratory variables collected by ANZDATA predict outcomes in Australasian haemodialysis patients. Patients included in these analyses were those from March 1997 to September 2002, who were on haemodialysis at 90 days post dialysis inception, and still on haemodialysis at the time of the third survey twelve to seventeen months later. A total of 4270 patients were available for study.

A model was developed by Cox regression analysis to adjust for the effect of the following patient related variables: age, race, body mass index, presence of diabetes, primary renal disease, smoking, hypertension, chronic lung disease, coronary artery disease, and cerebrovascular disease. This model was used to test various treatment related variables, to determine what practice patterns might be associated with mortality.

Results are presented below as graphs of the hazard ratio of death. The reference for comparisons within each treatment related variable is the most prevalent category. The hazard ratio is displayed above corresponding data bar, the *p*-values within the data bar, and the number of patients in each category in brackets also within data bar.

Haemodialysis at a frequency of less than thrice weekly was independently associated with excess patient mortality. Haemodialysis at a frequency of greater than thrice weekly was not associated with any significant change in mortality from the reference category.

Figure 12.1

Treatment Frequency

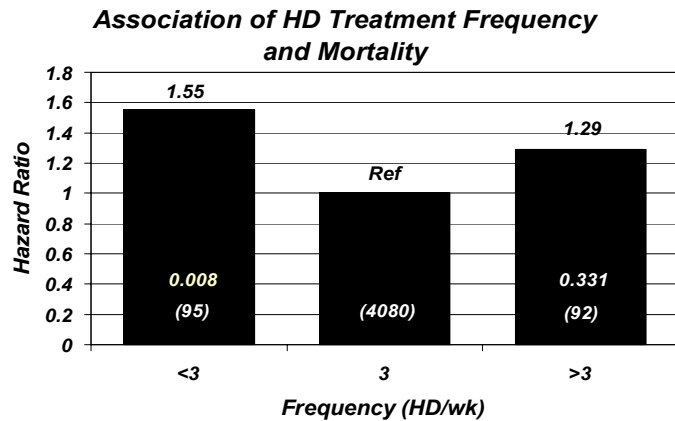


Figure 12.2

Treatment Duration for Patients on Thrice Weekly Haemodialysis

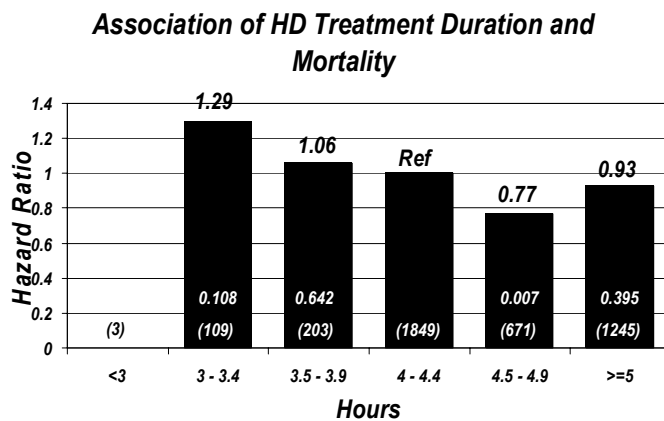
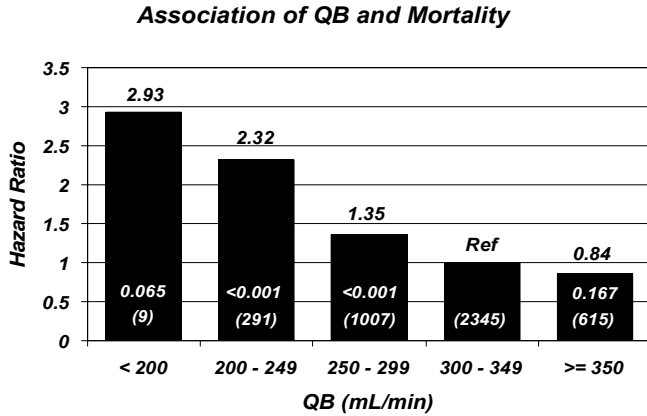


Figure 12.3

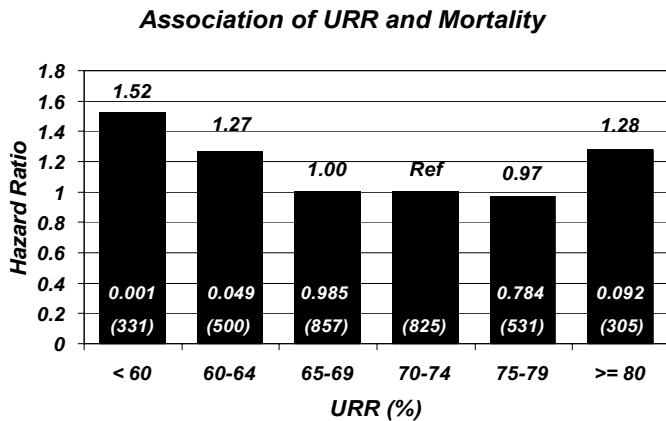
Blood Flow Rate (QB) for Patients on Thrice Weekly Haemodialysis



QB of less than 300 mL/min were independently associated with excess patient mortality. QB of greater than 350 mL/min were not associated with any significant change in mortality from the reference category.

Figure 12.4

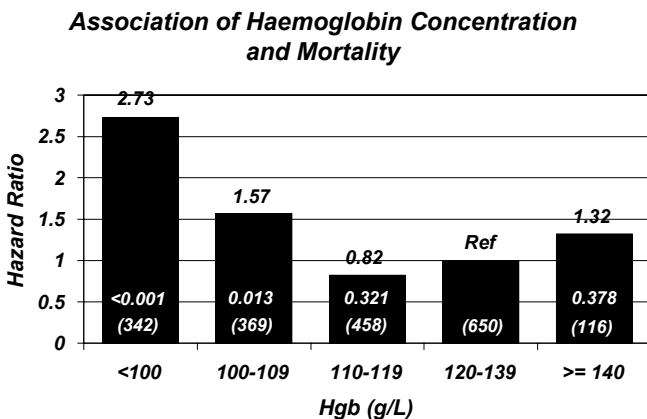
Urea Reduction Rate (URR) for Patients on Thrice Weekly Haemodialysis



URR of less than 65% were independently associated with excess patient mortality. URR of greater than 65% were not associated with any significant change in mortality from the reference category.

Figure 12.5

Haemoglobin (Hgb) Concentration



Hgb of less than 110 g/L were independently associated with excess patient mortality. Hgb greater than 110 g/L were not associated with any significant change in mortality from the reference category.



Figure 12.6

Haemodialyser Flux

High flux haemodialysis is independently associated with reduced patient mortality.

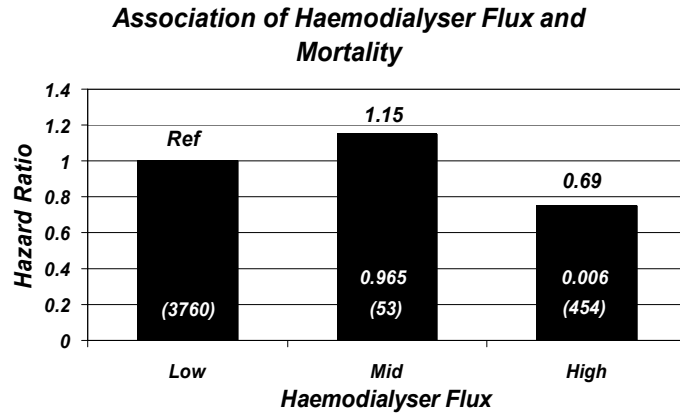
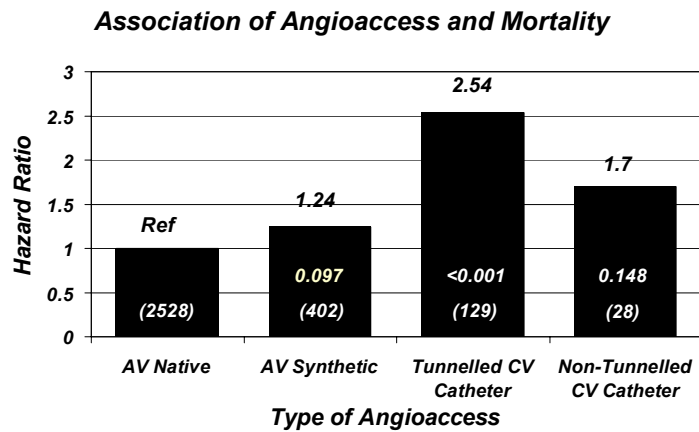


Figure 12.7

Angioaccess (Arteriovenous AV; Central Venous CV)

Tunnelled CV catheters are independently associated with excess patient mortality.



The associations presented above are sensitive to omitted co-variables, and do not adjust for interactions between treatment related variables, for instance between URR and angioaccess, treatment duration, or QB etc. These associations presented above do not prove causality. Sample size does not permit meaningful evaluation of the association between frequent (i.e. greater than thrice weekly) dialysis and mortality, and the association between non-tunnelled CV catheter angioaccess and mortality.

Within these limitations, it can be concluded that AV native angioaccess, Hgb > 110 g/L, high flux haemodialysis, URR > 65%, QB > 300 mL/min, treatment frequency of at least thrice weekly, and a duration of between 4.5 and 4.9 hours are associated with reduced patient mortality.