



*Dialysis outcomes in
Australia & New Zealand*



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ANZDATA Registry

Dialysis outcomes

What is collected by ANZDATA:

- Mortality
- Process indicators
 - Urea clearance
 - Haemoglobin

What is not collected:

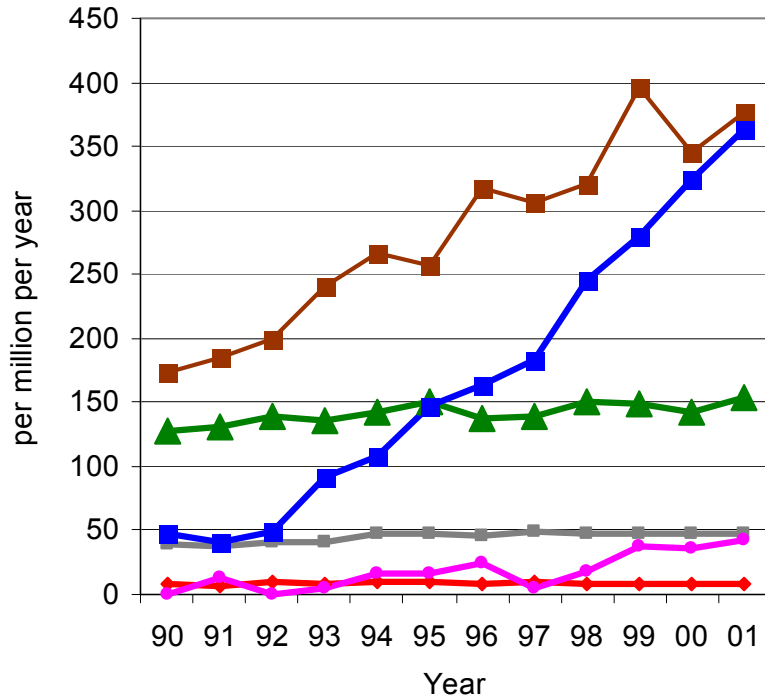
- Indicators of health & functional state
 - Mental health
 - Physical health
 - Surrogate markers of cardiovascular disease (LVH)



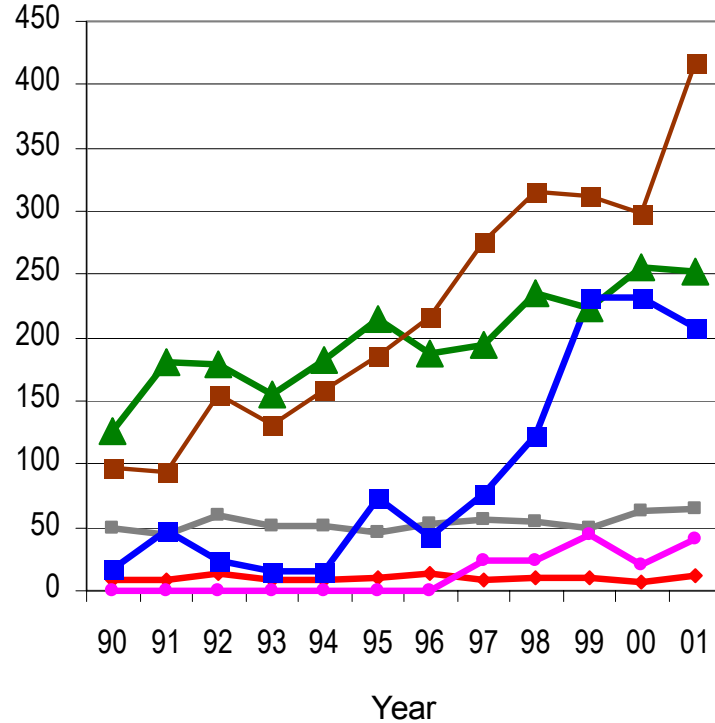
Only Bernard, in the front row, had the nerve to laugh at Death.

Acceptance of New Patients by Age

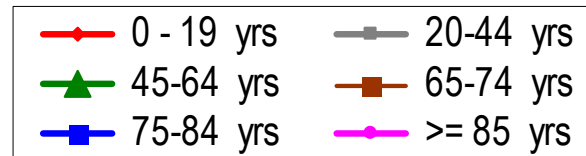
Australia



New Zealand

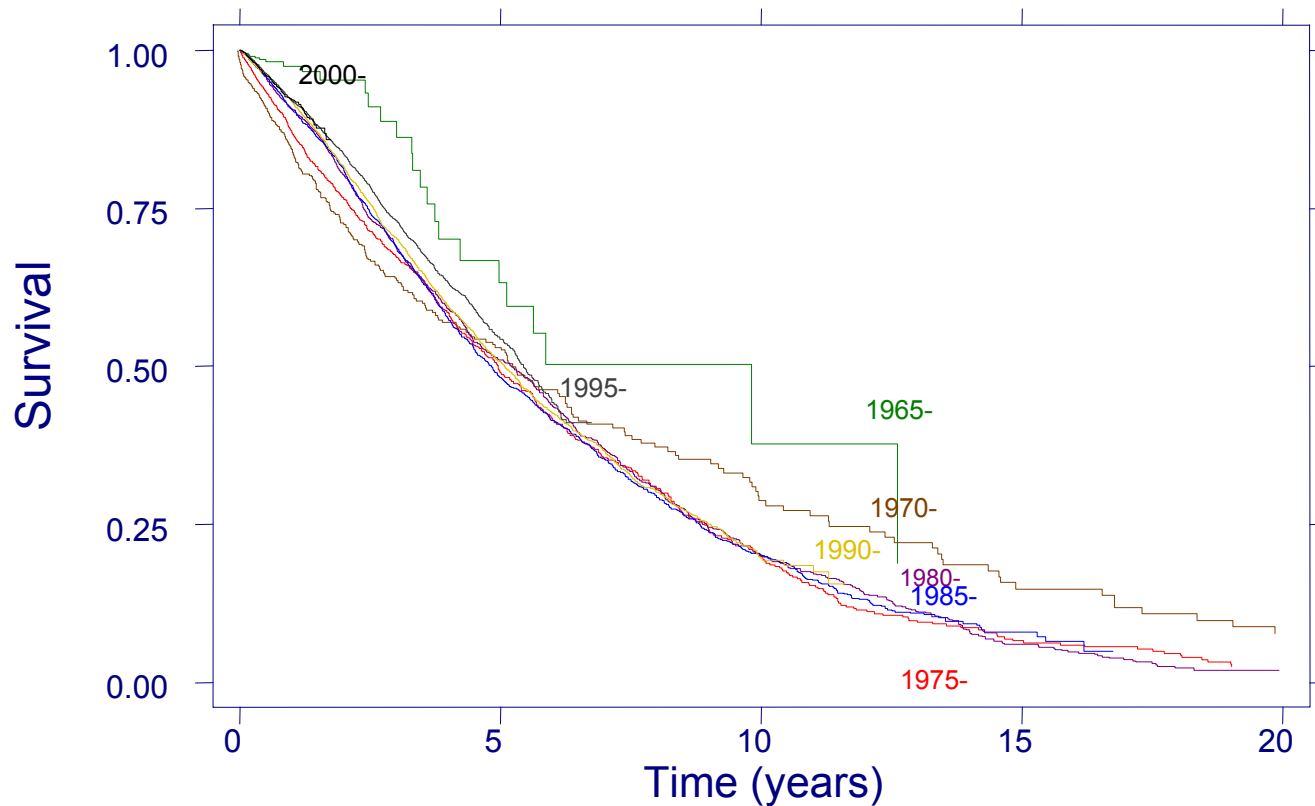


New RRT rates by age group 1990-2001



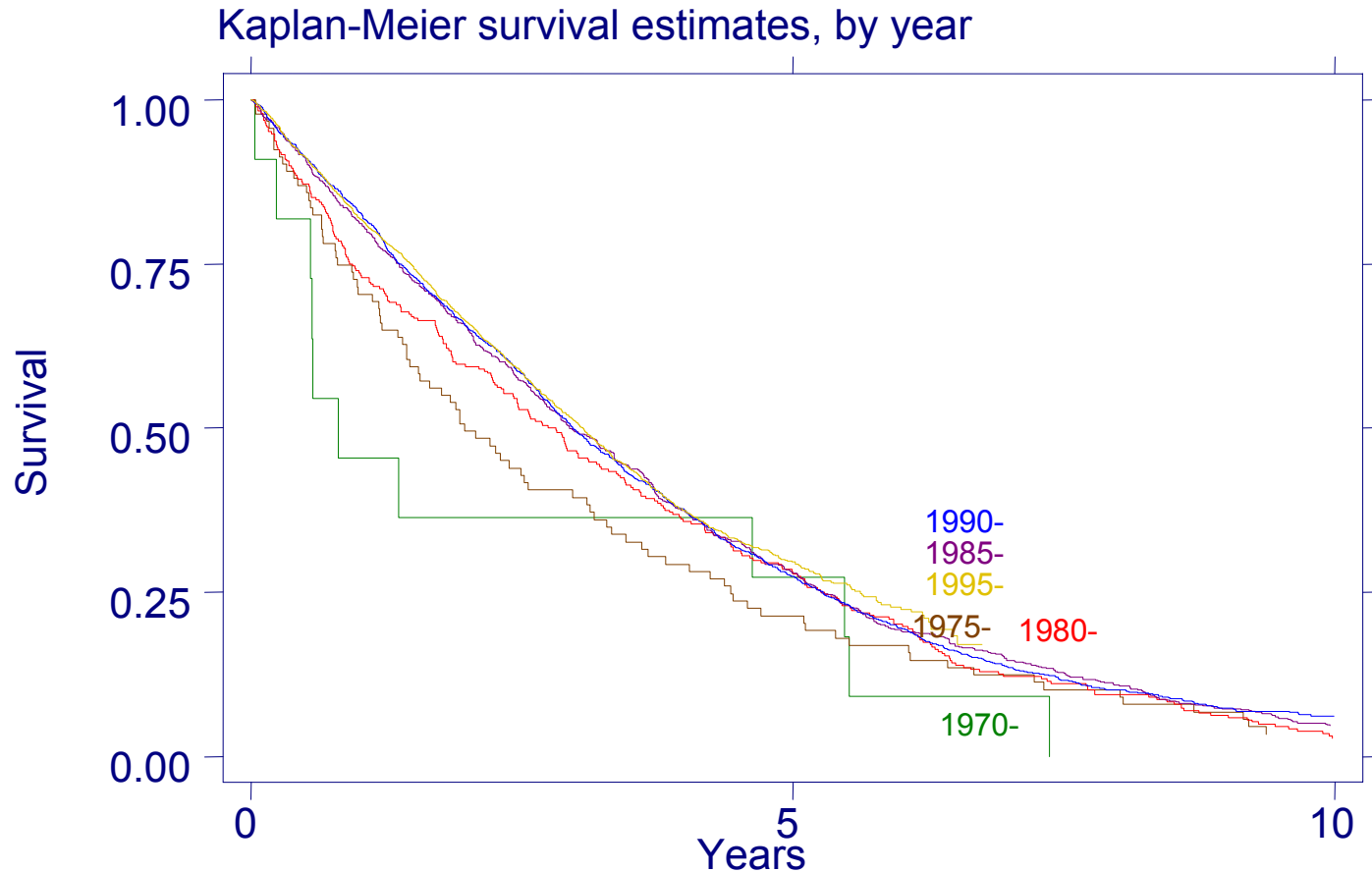
Survival on dialysis – 15-64 yrs

Kaplan-Meier survival estimates, by year



Survival on dialysis, 15-64 years old, at onset of RRT, censored at transplantation

Survival, 65-74 years



Survival on dialysis, 65-74 years old, at onset of RRT

Proportion of CAD by age

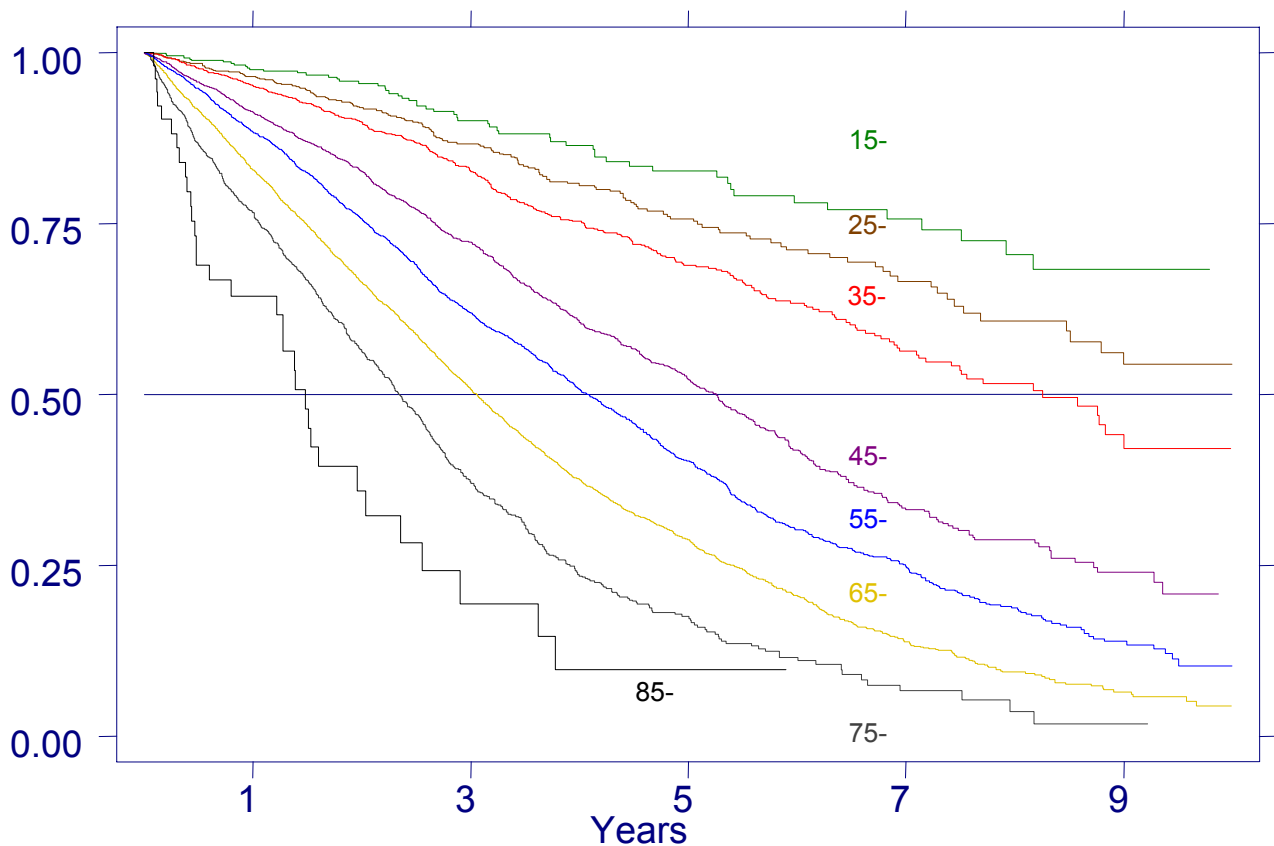


Proportion of new dialysis patient with definite or suspected coronary artery disease (CAD), 1995-2001

Methods

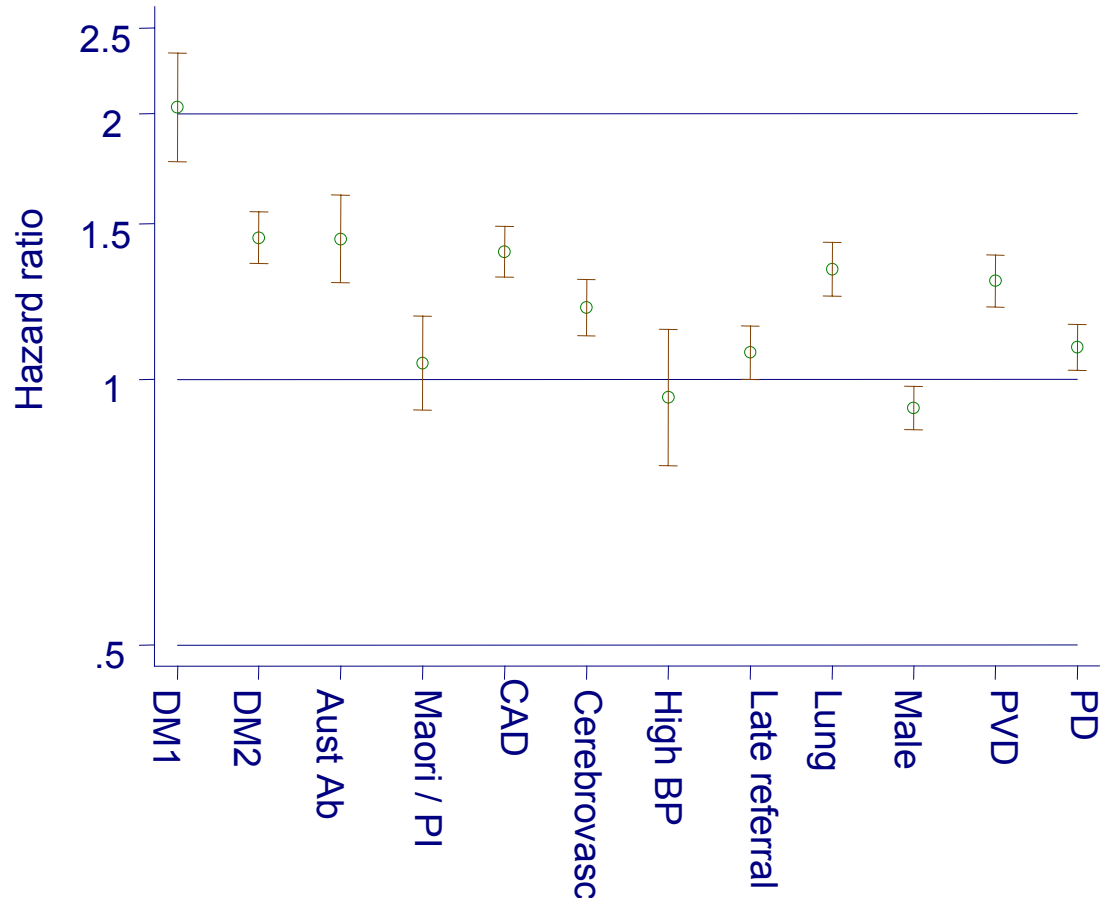
- All patients who began RRT in Australia or NZ since 1 October 1991
 - Commencement of collection of co-morbid data
 - Periods of transplant function excluded
 - Censored at death
- Cox regression
 - Time dependent covariates for dialysis modality
 - Co-morbidities ascertained at RRT start

Outcomes by age



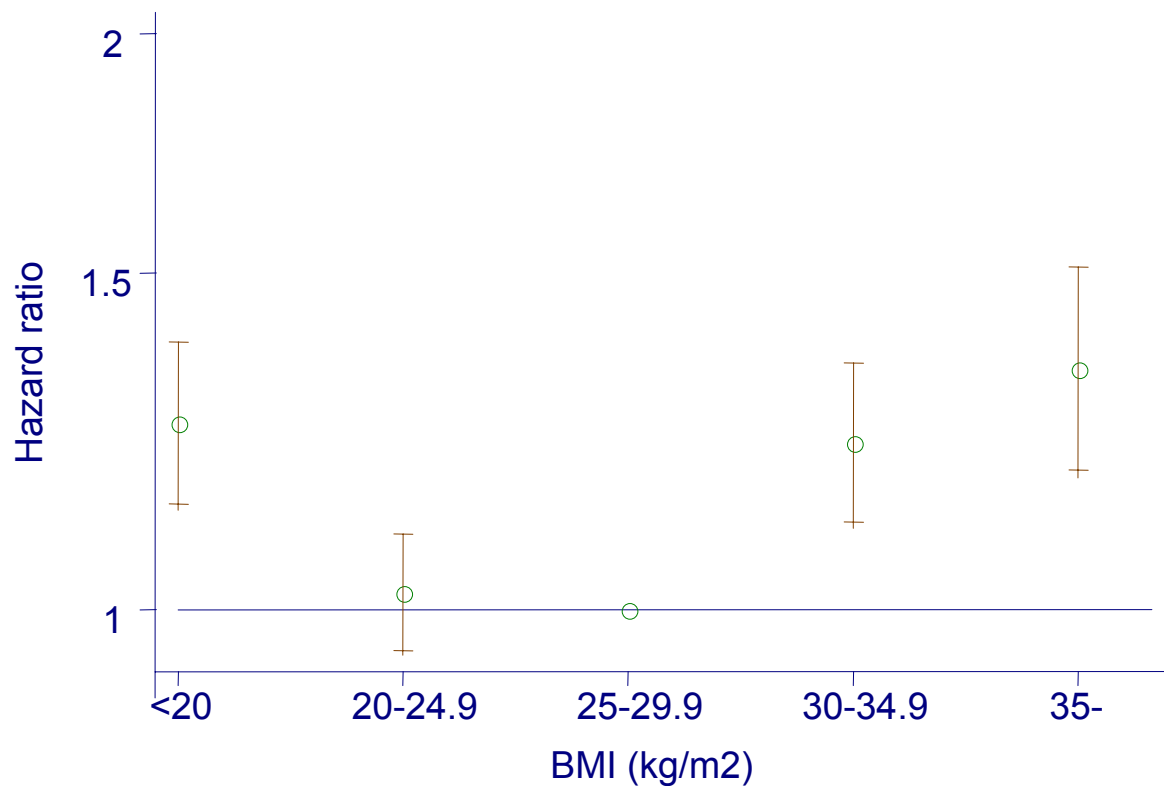
Kaplan Meier survival curves by age group for patients treated with dialysis who began RRT treatment in Australia or New Zealand 1 Jan 1991 - 31 Dec 2000. Periods of transplant function excluded.

Comorbid factors and outcome



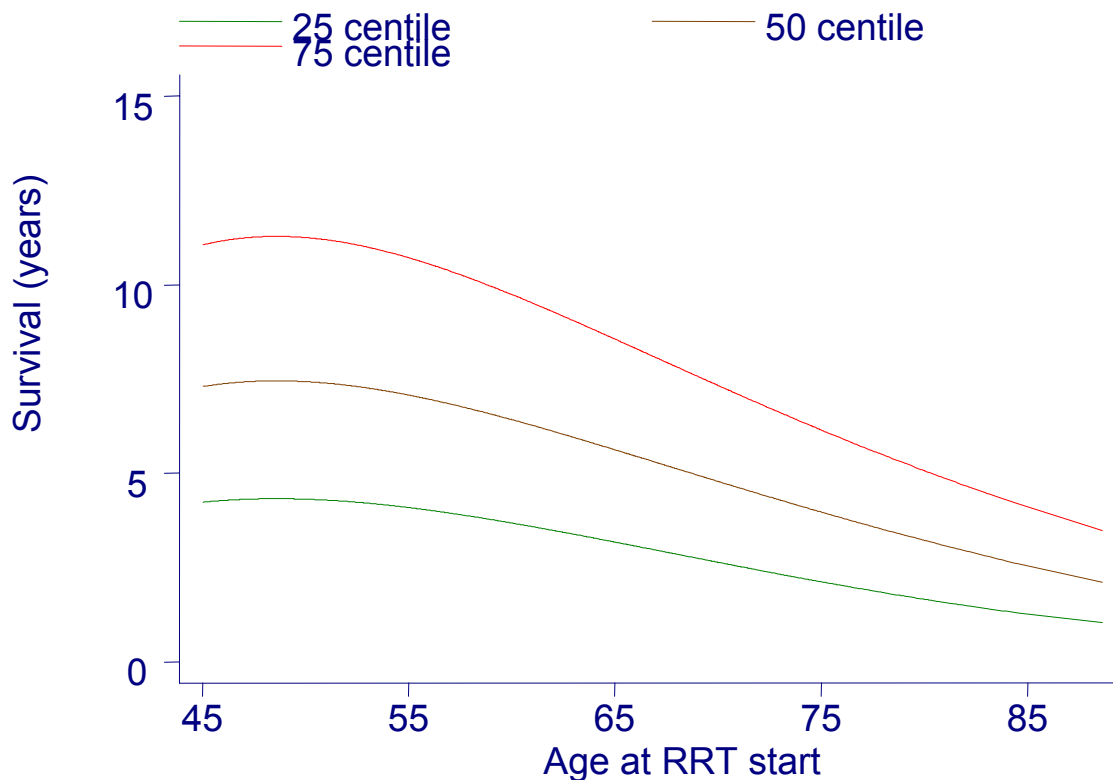
Hazard ratios for mortality on dialysis, dialysis only, 1991-present, adjusted for age and gender

Effect of BMI on outcome



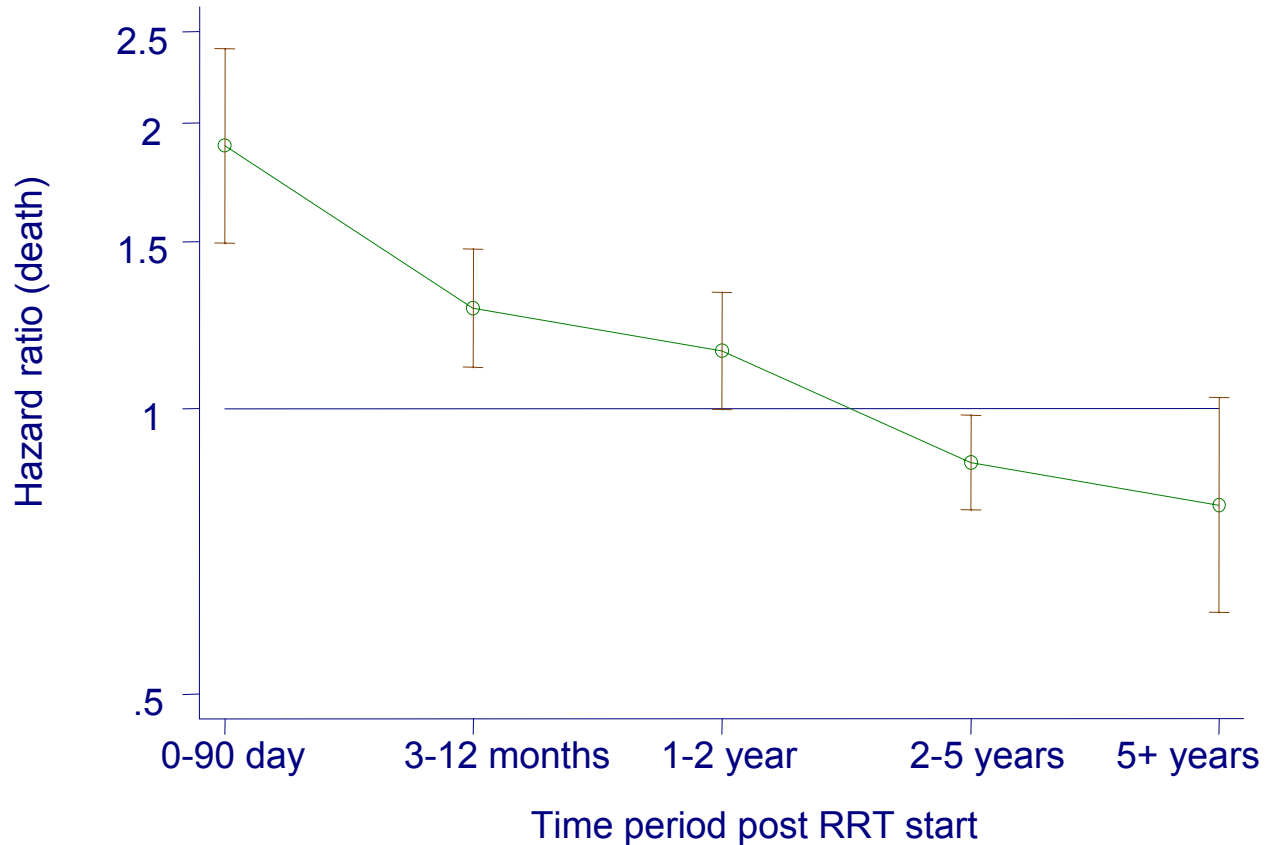
Hazard ratios for mortality by BMI at entry, dialysis only, 1991-present, adjusted for age and gender and other comorbidities.

Predicted median survival



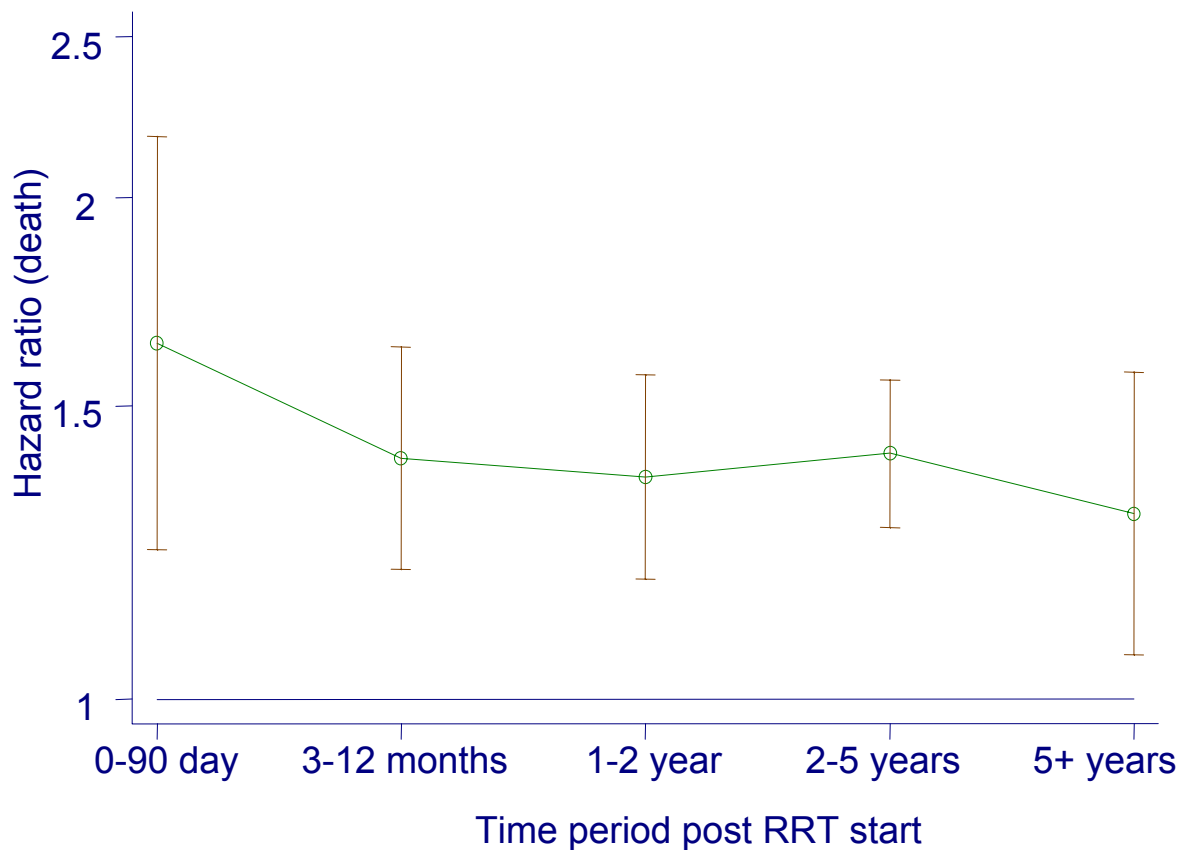
Median [IQR] survival by age. Age modelled as fractional polynomial, adjusted to 0 comorbidities & non-indigenous male

Interactions with time



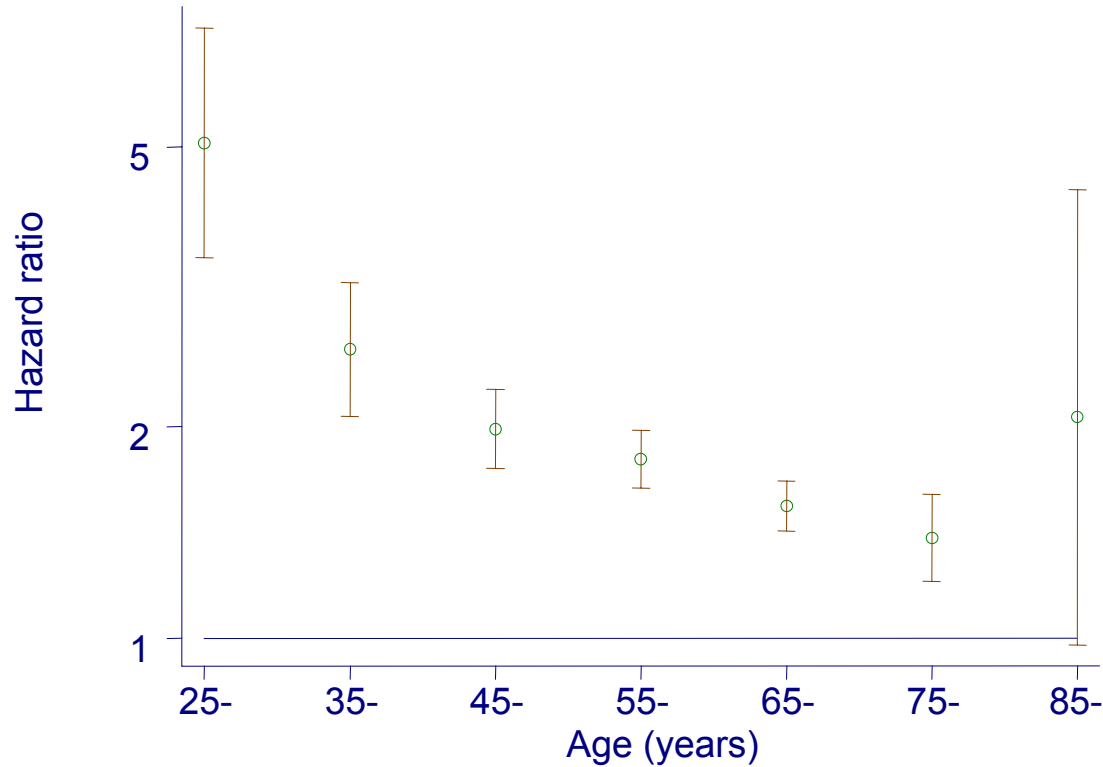
Hazard ratios for late referral for mortality on dialysis, 1991-present, adjusted for age and gender and other co-morbidities

Interactions with time - 2



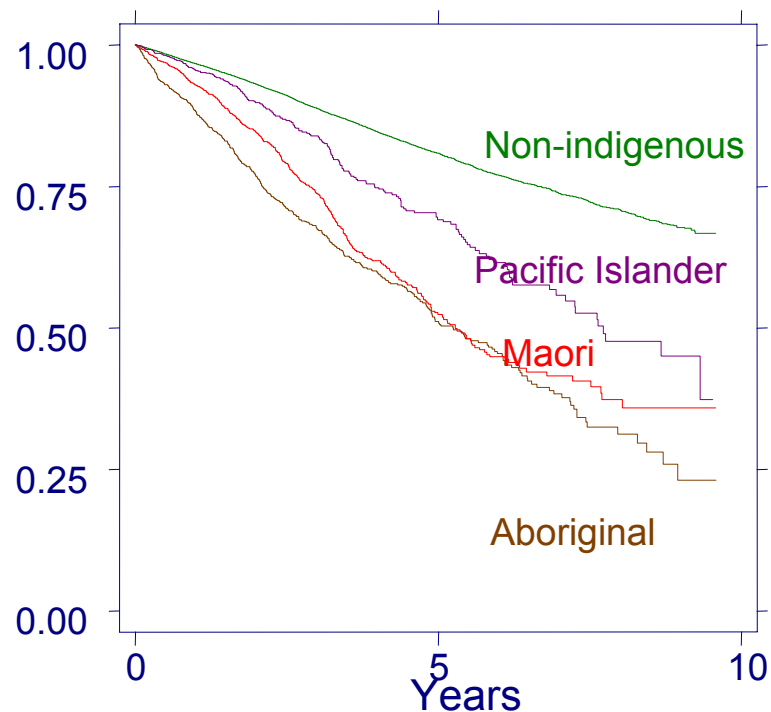
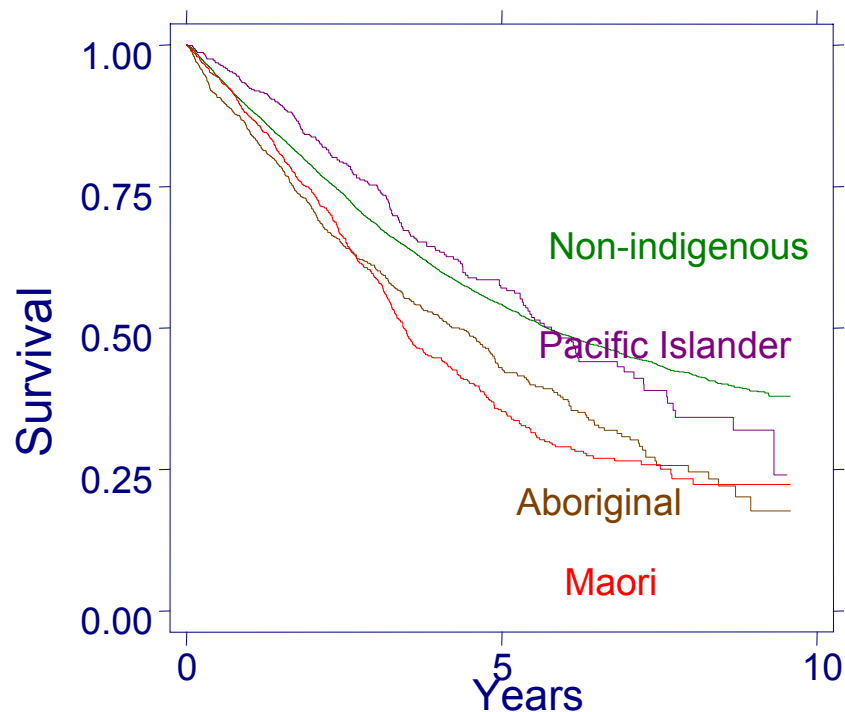
Hazard ratios for coronary artery for mortality on dialysis, 1991-present, adjusted for age and gender and other comorbidities

Interactions of CAD with age



Hazard ratios for mortality of coronary artery disease by age category, adjusted for gender, dialysis patients

Indigenous outcomes

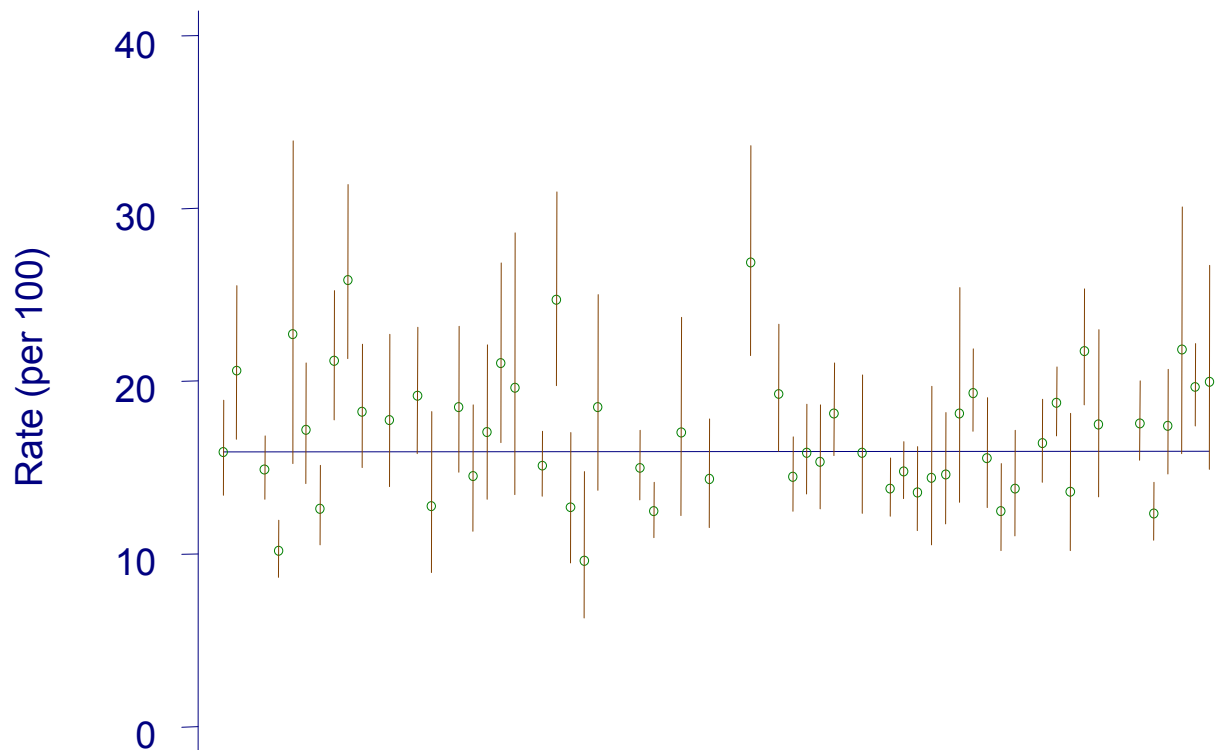


Survival of new ESRD patients, 1991-2001, crude (left) and adjusted to age 40 (right), censored at transplantation. PI includes TSI

Centre effect

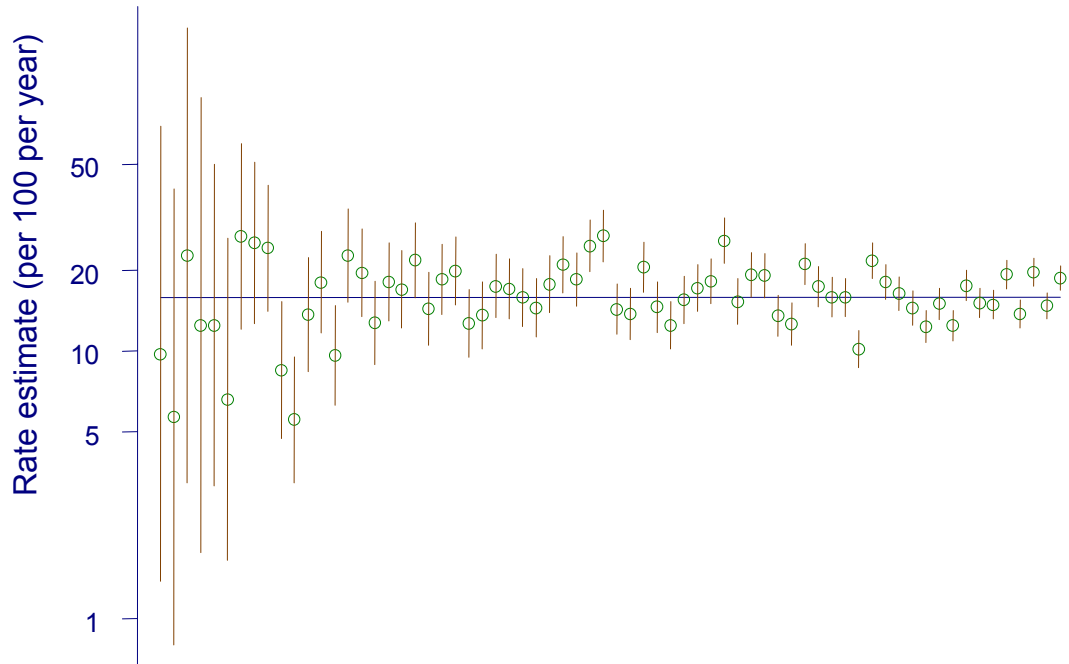
- What is the aim?
 - making comparisons?
 - meeting a standard?
- What is a centre?
 - How do you handle transfers?
- What do you adjust for
 - ? Role of dialysis dose
 - ? Access

Crude death rates



Death rates of patients treated with dialysis, 1991-2001, by hospital of initial treatment, for centres with >20 deaths over the period.

Centre effect - 2



Death rates of patients treated with dialysis, 1991-2001, by hospital of initial treatment, for all centres, sorted by number of new patients over that period.

Dialysis mortality

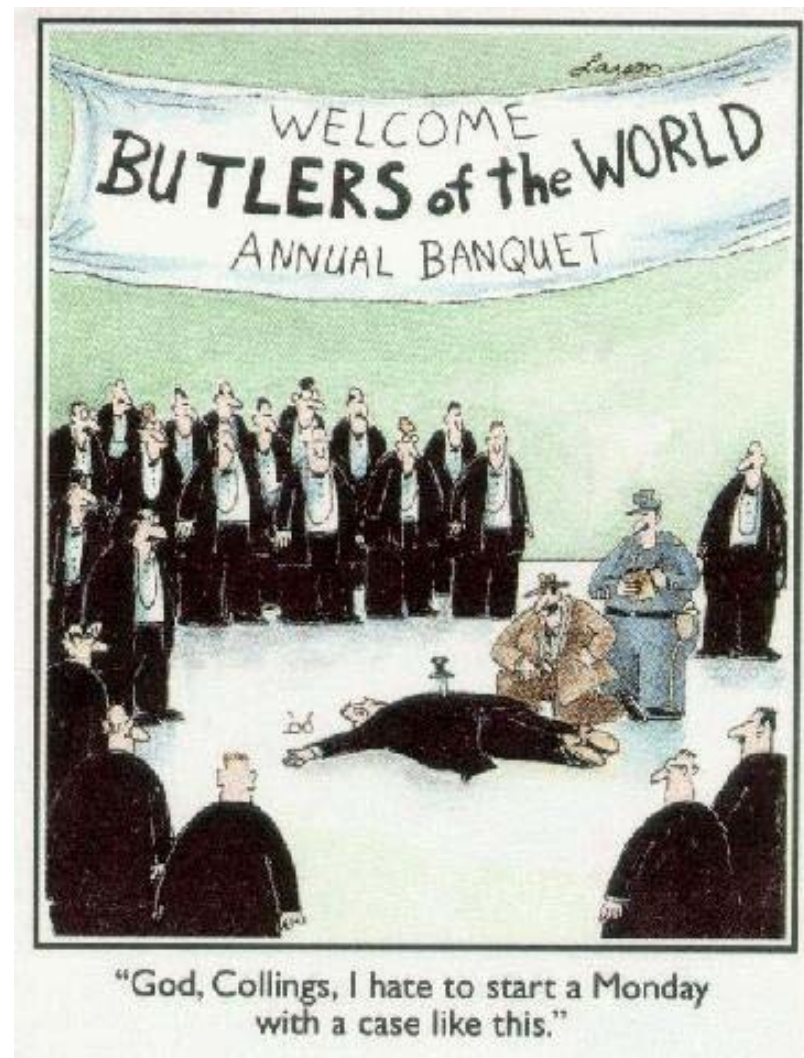
- Dialysis mortality is strongly related to variables which are known at time of RRT start
 - The influence of these varies over time
- Age is strongly and progressively related to outcome
- Adverse prognosis of indigenous groups
 - Remains after adjustment for comorbidities

Areas of further investigation

- This work provides the basis for developing and validating a predictive set of equations
- How to incorporate factors such as dialysis dose and Hb into analyses
 - Vary with time
 - Cause or effect?
- Centre effect
 - Planned for presentation at D & T 2003

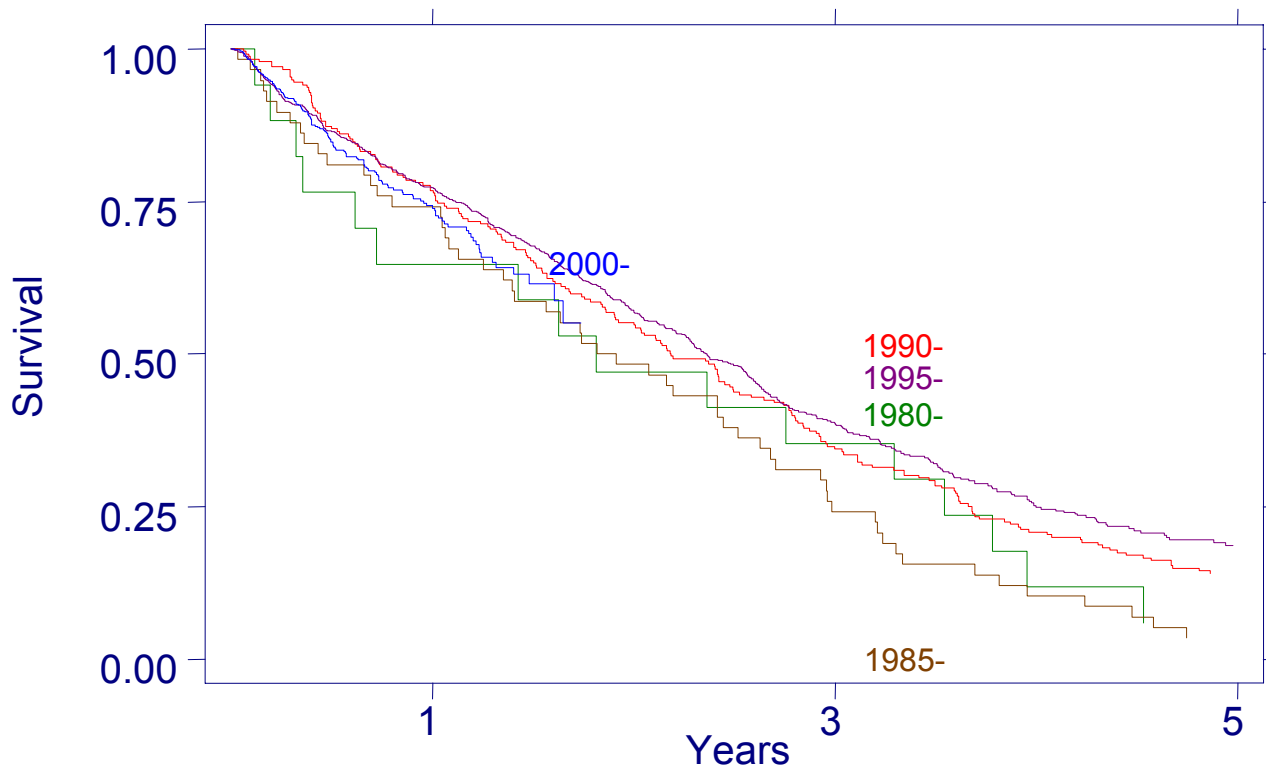
Acknowledgements

- The ANZDATA Registry is a collaborative effort of the Australian / New Zealand renal community, and could not exist without the dedicated support of the renal units and the individuals therein.



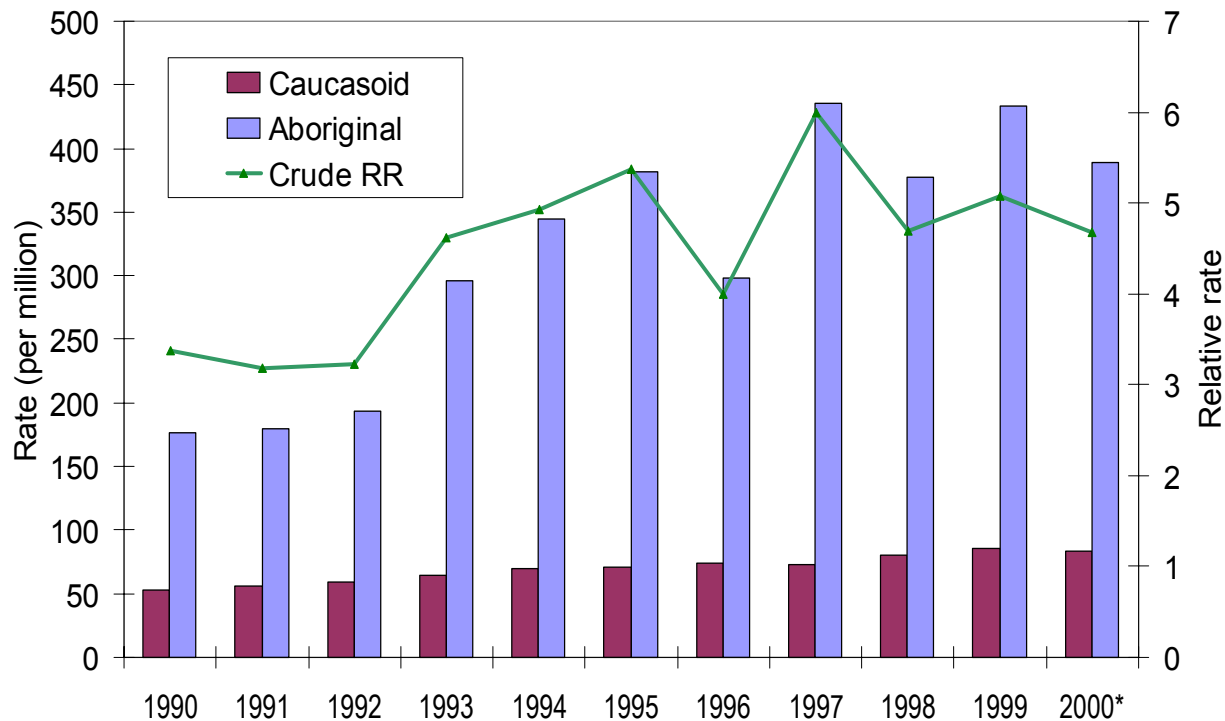
And still older...

Kaplan-Meier survival estimates, by year



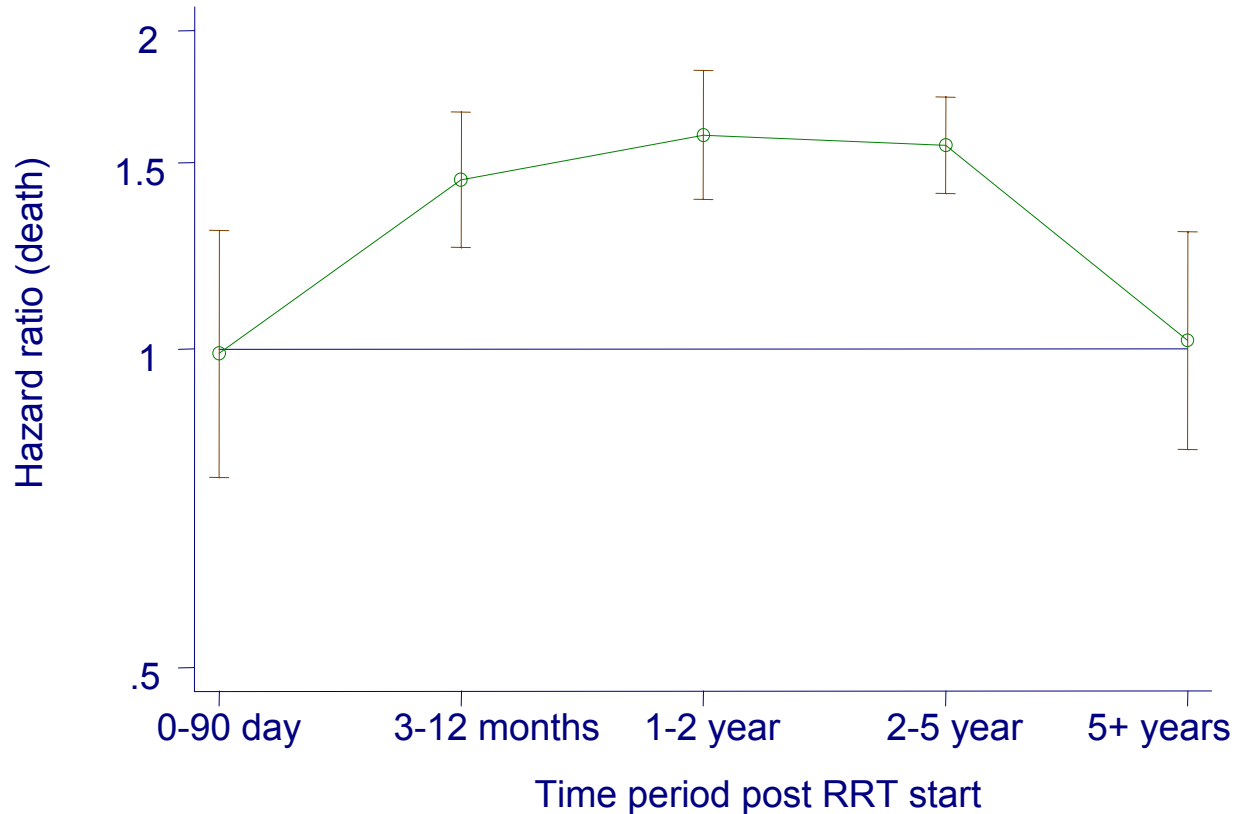
Survival on dialysis, 75+ years old, at onset

Indigenous ESRD incidence



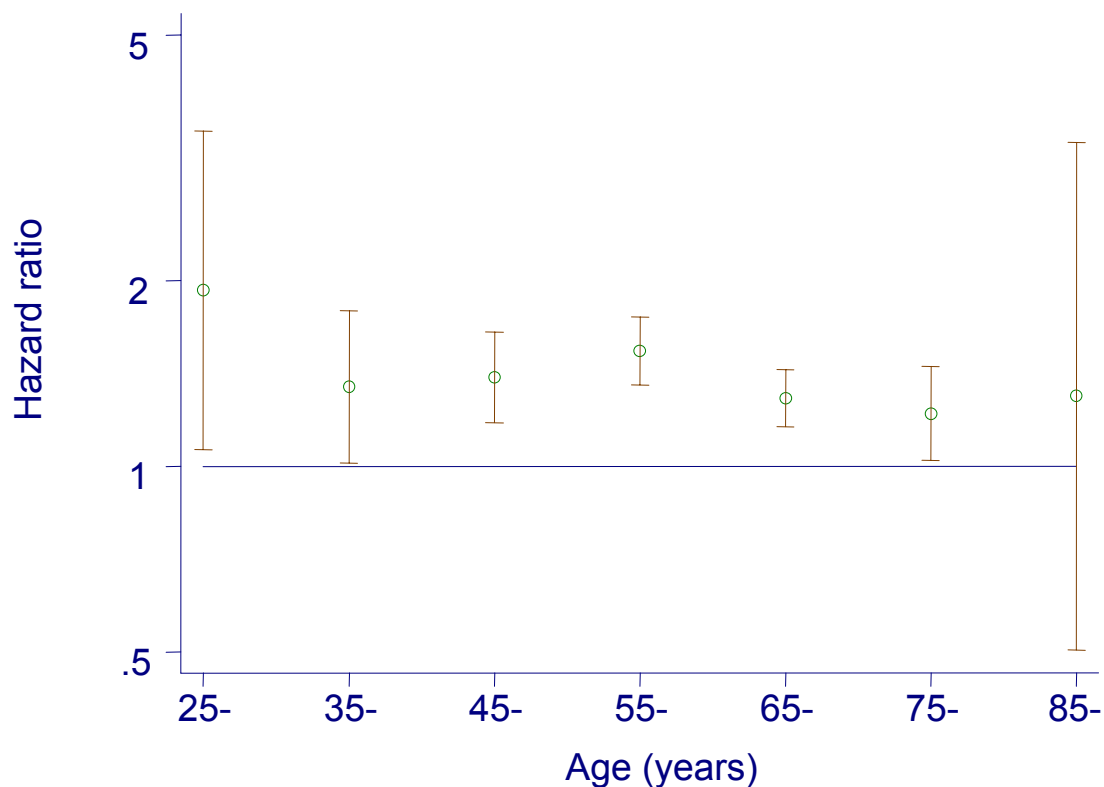
*New ESRD patient (Australia) by racial origin 1990-2000.
For 2000, age standardised incidence rate ratio=7.8 [6.6-9.2]*

Interactions with time – 3



Hazard ratios for type 2 diabetes for mortality on dialysis, 1991-present, adjusted for age and gender and other comorbidities

Interactions of CAD with age - 2



Hazard ratios for coronary artery disease by age category, adjusted for gender, all other co-morbidities and indigenous status