

Scottish Renal Registry

Removing lead-time bias from survival data

Definitions (Lead Time Bias)

Lead-time is the period between an observation starting and the start of an intervention or end-point. In the context of survival on renal replacement therapy (RRT), LTB can occur when survival is timed from start of RRT rather than a distinct point such as eGFR of 20 mL/min. For example, if a renal unit has a policy to start RRT at higher levels of renal function and survival is timed from start of RRT then this unit's apparent survival will look better than the unit which delays initiation of RRT until symptoms indicate starting even if there is no real difference in patient survival.

Calculated rate of progression of renal failure

In an attempt to remove LTB from report of patient survival from the SRR we first calculated the slope of decline of eGFR for each of the 5 ERA-EDTA Primary Renal Diagnoses (PRD) Groups. This was done using patients from the electronic patient records at Glasgow Royal Infirmary. 989 patients had at least 6 eGFR records prior to starting RRT and therefore met our inclusion criteria. A rate of deterioration of renal function was calculated for each PRD as shown below.

Primary Renal Diagnosis	ml/min/day	ml/min/month
PRD 1 (Glomerulonephritis)	-0.023444502	-0.70333506
PRD 2 (Interstitial disease)	-0.010565397	-0.31696191
PRD 3 (multi-system disease)	-0.02224748	-0.6674244
PRD 4 (Diabetes)	-0.019307523	-0.57922569
PRD 5 (unknown)	-0.014054763	-0.42164289

These slopes were then applied to each patient using eGFR at start of RRT to work back and estimate when eGFR would have equalled 20 mL/min. Survival was then calculated from this date rather than from the date of 1st RRT.

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