

# A Cost And Outcomes Analysis Of Renal Replacement Therapies

## Using Real-World Quality Of Life Data

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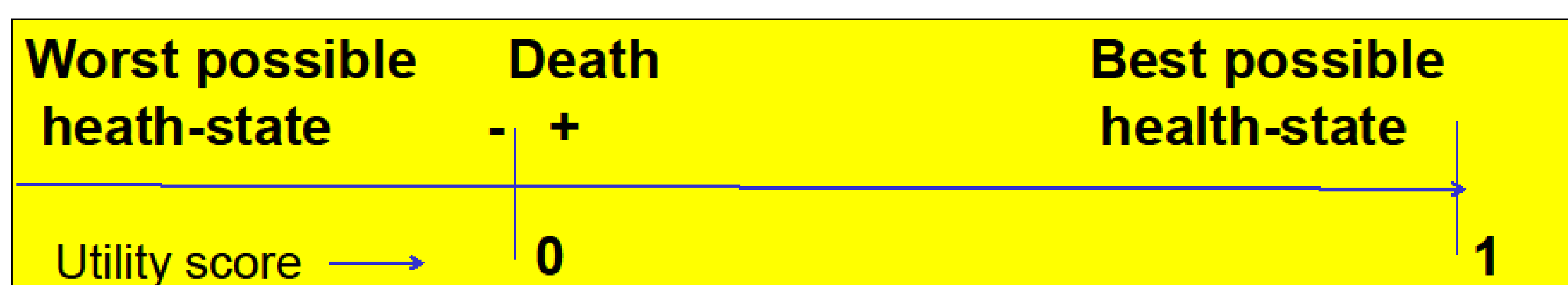


### Introduction and Aims

There is a disproportionately high cost to health-care services in providing renal replacement therapy (RRT) to an ever-increasing prevalence of patients with end-stage renal failure. While it is vitally important that clinical and patient choices are informed by likely clinical outcomes and personal preferences, it is helpful to understand how treatment choices compare in terms of cost utility.

### Methods

- Exploratory cost analysis of RRT in S. Wales with quality-adjusted life years (QALYs) as outcome measures
- Health-related quality of life (HRQOL) data obtained from a survey of prevalent dialysis and renal transplant using SF-36 questionnaires
- SF-36 data converted into SF-6D utility scores (1)
- QALYs calculated using utility scores and survival data
- Estimated survival data for dialysis patients obtained from a NICE document on the cost-effectiveness of PD provision (2)
- Survival data for transplant patients obtained from the ERA-EDTA Registry 2012 Annual Report and cost data from NHS England figures (3)
- Dialysis cost data obtained from a previously published study based in our centre (4)
- Analysis was over a 10-year horizon, with life-years-gained taken as 5.75 for patients on HD, 5.86 for PD and 10 for transplant recipients
- Simplifying assumptions include no switch between modalities, no impact of adverse events on costs and no discounting of costs.



### Calculating QALYs: an example

Treatment A: 4 years spent in health-state 0.75 = 3 QALYs  
 Treatment B: 4 years spent in health-state 0.5 = 2 QALYs

Additional number of QALYs generated by A = 1 QALY

### Results

Modality	N
Unit HD	68
Satellite HD	307
Home HD	49
PD	19
Transplant	54

Table 1 – Quality of life scores and utility scores for all modalities of renal replacement therapy

	Unit HD	Satellite HD	Home HD	PD	Transplant	p
Physical QOL score	32 ± 9	33 ± 10	31 ± 7	32 ± 9	43 ± 11	<0.001
Mental QOL score	42 ± 11	43 ± 11	43 ± 15	41 ± 11	46 ± 10	0.03
Utility score	0.52±0.1	0.54±0.1	0.52±0.1	0.53±0.1	0.65±0.1	<0.001

Table 2 – Costs and QALYs for all modalities of renal replacement therapy

	Lifetime costs (£)	QALYs gained (mean ± 1SD)	Cost/QALY (£) (mean ± 1SD)
Main unit HD	201,382	2.99 ± 0.62	70,105 ± 14,348
Satellite HD	187,846	3.10 ± 0.71	64,662 ± 19,899
Home HD	99,222	2.98 ± 0.87	38,359 ± 19,505
PD	109,066	3.10 ± 0.59	36,747 ± 8895
Transplant	146,180	8.03 ± 1.59	18,915 ± 3,804

### Conclusions

Using real-world HRQOL data, we confirm that amongst all RRT modalities, kidney transplantation costs the least in terms of the number of QALYs gained.

Home-based therapies resulted in similar QALYs to unit-based therapies with significantly lower costs.

Our data re-inforce the notion that we should be striving to increase the proportion of patients who are transplanted or treated at home.

Sensitivity analysis, sub-group analysis and Markov modelling will further improve the robustness of our analysis.

### References

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