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COST EFFECTIVENESS OF A STRATEGY OF PAYING TO INCREASE KIDNEYS FOR TRANSPLANTATION FROM LIVING DONORS: A DECISION ANALYSIS

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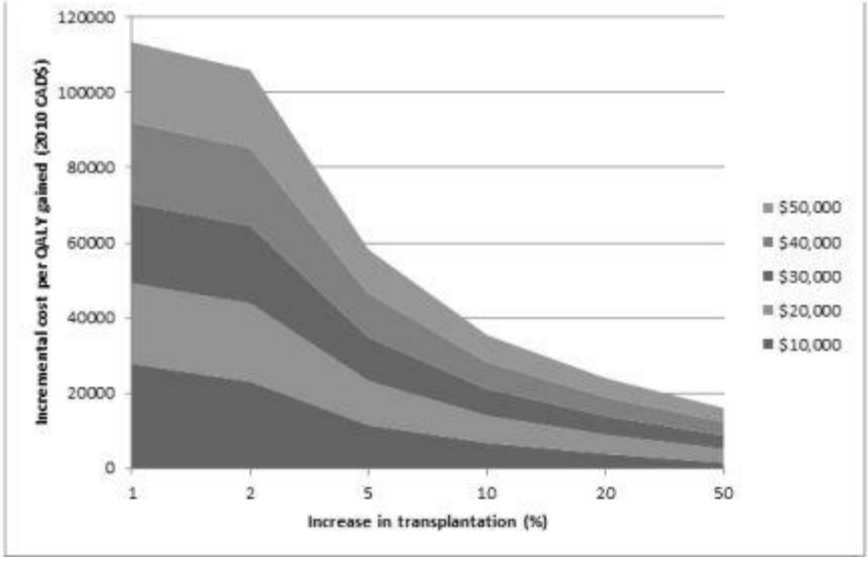
INTRODUCTION AND AIMS: Eligible patients with end-stage renal disease can be treated with a living or deceased donor transplant or dialysis. While kidney transplantation has been demonstrated to be cost-effective compared to dialysis, there is not enough kidneys for transplantation. Decision-analytic modeling was used to determine the cost-effectiveness of a strategy of paying people to give a kidney, assuming that financial incentives would increase the supply of kidneys for transplantation.

METHODS: We compared a strategy of paying living donors to increase the number of kidneys for transplantation with the current organ donation system. Data from the USRDS, CORR, along with published literature was used to estimate the cost (CAD$ 2010) and clinical outcomes associated with dialysis and transplantation over a lifetime horizon for patients waitlisted for transplantation. Decision analysis was then used to model the cost-effectiveness of financial incentives, assuming a financial incentive program would increase the number of kidney transplants by 5% in kidney transplants per year with a payment of $10,000 to living donors. The outcome was the incremental cost per quality-adjusted life year (QALY) gained.

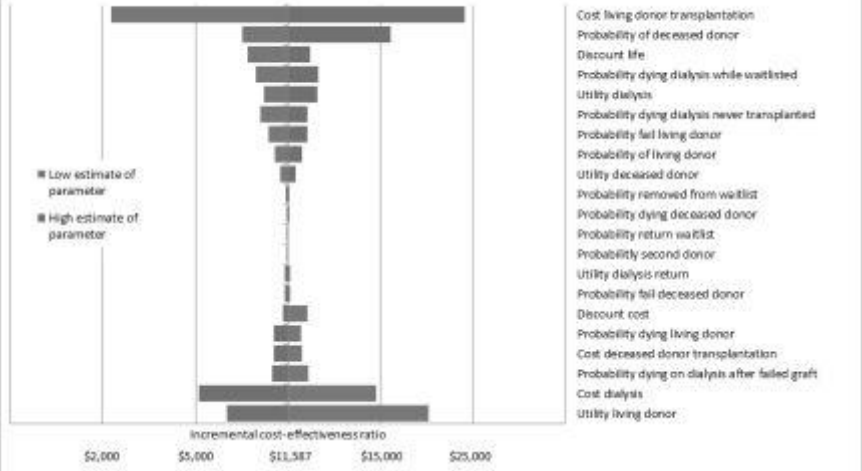
RESULTS: In the base case analysis (transplants increased by 5%; and payment of $10,000), the cost per QALY was $11,587. If payment were to increase donation by 10%, the cost per QALY would be $6,826; at an increase of 20%, the cost per QALY would be $3,924. If the payment were to increase to $20,000 and $50,000 respectively (assuming a 5% increase in donation), then the cost per QALY would be $23,242 and $58,207, respectively.

Figure 1. Two-way sensitivity analysis for varying payments to living donor ($10,000 - $50,000)



The model was most sensitive to the cost of living donor transplantation.

Figure 2. Tornado diagram representing the incremental cost-effectiveness ratios of one-way sensitivity analyses. The axis represents the incremental cost-effectiveness ratio under base case conditions.



Results of a Monte Carlo simulation showed that the paid strategy is more or less costly, but always more effective than the current system.

CONCLUSIONS: Although the impact of payment on donation rates is uncertain, our model suggests that a strategy of incentives to increase kidneys could be

cost-effective, despite small changes in transplantation rates. Future work needs to examine the feasibility of testing these assumptions in a controlled situation with the goal of reducing the transplant waiting list by increasing the pool of potential donors.