Screening for renal cancer in recipients of kidney transplants

Wong G, Howard K, Webster AC, Chapman JR, Craig JC

Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
The objective was to assess the cost-effectiveness of annual or biennial screening for renal cancer in patients undergoing kidney transplant. The authors concluded that routine screening for renal cancer in kidney transplant patients might not be cost-effective, but targeting high-risk patients might be. The methods were good and the results were sufficiently reported. The conclusions appear to be appropriate, but there were some limitations.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The objective was to assess the cost-effectiveness of annual or biennial screening for renal cancer in patients undergoing kidney transplant.

Interventions
The two interventions were annual and biennial screening, using ultrasonography, compared with no screening.

Location/setting
Australia/primary and secondary care.

Methods
Analytical approach:
A Markov model was used to simulate the costs and effects of the screening options over a lifetime, using data from published literature and other sources. The authors stated that the study was carried out from a health care funder perspective.

Effectiveness data:
The effectiveness estimates for the screening strategies were identified by a literature review. The main source of data was the Australian and New Zealand Dialysis and Transplant Registry. The main clinical effectiveness estimates were the sensitivity and specificity of the ultrasonography.

Monetary benefit and utility valuations:
Not relevant.

Measure of benefit:
The measure of benefit was life-years saved (LYS) and the benefits were discounted at 5% per annum.

Cost data:
The economic analysis considered the costs of the screening tests (imaging tests and pathology), procedures for kidney transplant and dialysis, treatment of renal cancer, consultations, and the treatment of relapses. The unit costs were from Australian diagnosis-related group (AR-DRG) data, the Medicare Benefits Schedule, the Cancer Institute of New South Wales, and published data. The costs were discounted at 5% per annum and adjusted to 2008 Australian dollars (AUD), using the Medicare component of the Consumer Price Index and purchasing power parity data.

Analysis of uncertainty:
One-way and two-way sensitivity analyses were conducted to test how robust the model outcomes were to variation in
the inputs, including the participation rate, the prevalence of disease, the probability of graft failure, the screening test accuracy, the discount rates, the cancer-stage distribution, and the probability of survival with renal cancer. Two scenario analyses were undertaken, in which patients with failed a kidney transplant who returned to dialysis did or did not continue routine screening for renal cancer. The results of these analyses were presented in bar graphs.

**Results**
The costs were AUD 303,000 with annual screening, AUD 302,600 with biennial screening, and AUD 301,700 with no screening. The health benefits were 13.64598 LYS with annual screening, 13.64550 LYS with biennial screening, and 13.64193 LYS with no screening.

Compared with no screening, the incremental cost-effectiveness ratio (ICER) was AUD 320,988 per LYS for annual screening and AUD 252,100 per LYS for biennial screening. Screening resulted in a relative cancer-specific mortality reduction of 25% with annual or 12.5% with biennial screening.

The sensitivity analyses showed that the ICER was most sensitive to the costs and test specificity of ultrasonography, the prevalence of disease, and the risk of graft failure. In general, at a willingness-to-pay threshold of AUD 100,000 per LYS, both annual and biennial screening for renal cancer were not cost-effective, except in high-risk populations.

**Authors' conclusions**
The authors concluded that routine screening for renal cancer in kidney transplant patients might not be cost-effective, but screening targeted at high-risk patients might be.

**CRD commentary**
**Interventions:**
The interventions were described and appear to have been appropriate comparators. No screening seems to have been the usual practice.

**Effectiveness/benefits:**
The effectiveness data were from a review of the literature, but this review was not described, making it difficult to assess whether it was systematic and if all the available evidence was analysed. The sources of the effectiveness data were reported, but not described, so the quality of the data was unclear. Life-years saved were appropriate as the benefit measure, but quality of life might have been significant for these patients. Discounting was appropriately conducted.

**Costs:**
The cost categories and the sources of data were consistent with the stated perspective. Other aspects, such as the price year and discounting, were reported.

**Analysis and results:**
The decision model was well presented in its pathways and transition patterns, and it appropriately synthesised the costs and benefits. The results were combined into incremental cost-effectiveness ratios, which were generalisable to other settings. Extensive deterministic sensitivity analyses were conducted, but a probabilistic sensitivity analysis, in which the uncertainty in parameters is tested by varying the parameters simultaneously, would have been useful. The authors discussed some of the limitations of their study.

**Concluding remarks:**
The methods were good and the results were sufficiently reported. The conclusions appear to be appropriate, but there were some limitations.

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