The cost-effectiveness of routine follow-up after primary total hip arthroplasty

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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 aim was to compare the effectiveness and economic outcomes of three follow-up strategies for patients after total hip arthroplasty. The authors concluded that abandoning routine follow-up after total hip arthroplasty would save resources and assessment strategies that require fewer resources should be considered. The methods and reporting were satisfactory and the results appear to be reliable.

Type of economic evaluation
Cost-effectiveness analysis, cost-utility analysis

Study objective
The aim was to compare the effectiveness and economic outcomes of three follow-up strategies for patients after a total hip arthroplasty.

Interventions
The three follow-up strategies were: two-yearly routine follow-up; follow-up at least after three months and at one-to-two years; and no follow-up.

Location/setting
Australia/secondary care.

Methods
Analytical approach:
A state-transition Markov model was constructed to determine the clinical and economic impact of the alternative follow-up strategies. A seven-year time horizon was specified and the authors stated that the study perspective was that of the Australian health service.

Effectiveness data:
The clinical data for the rates of total hip arthroplasty and subsequent revision surgery were from the Australian Orthopaedic Association's National Joint Replacement Registry. The probability of delayed revision was based on four values estimated by experts and each of these values was tested to assess its impact on the results. The key clinical parameters were the number of procedures, number of revisions, mortality, and quality of life.

Monetary benefit and utility valuations:
The utility estimates were from a published study of the effectiveness of knee and hip replacement (Rasanen, et al. 2007, see ‘Other Publications of Related Interest’ below for bibliographic details). The estimates were assessed using the 15-dimension health-related quality of life (15D) questionnaire.

Measure of benefit:
The benefit measure was the number of quality-adjusted life-years (QALYs), which were discounted at a rate of 3% per year.

Cost data:
The analysis included the direct medical costs of follow-up of patients after surgery, including consultations, X-rays, outpatient visits, and revisions. These costs were from Australian Medicare benefits schedules and Australian national cost data. The currency was Australian dollars (AUD) and an annual discount rate of 3% was applied.
Analysis of uncertainty:
Probabilistic sensitivity analysis was performed to assess the impact of the uncertainty around the key transition probabilities and the utility estimates for the health states in the model.

Results
The cost of biennial routine follow-up was higher than that of minimum follow-up and of no follow-up. The QALYs were higher with no follow-up than with minimal or biennial follow-up.

Assuming 50% of revisions were delayed with no follow-up, the costs were AUD 26,917,080 with biennial follow-up, AUD 21,742,144 with minimal follow-up, and AUD 17,790,559 with no follow-up. The QALYs were 148,008 with no follow-up, 147,919 with minimal follow-up, and 147,919 with biennial follow-up.

No follow-up saved costs (AUD 9,126,521) and gained benefits (88.2 QALYs) compared with biennial follow-up. This pattern was observed for all assumed percentages of delayed revision (1, 5, 10 and 50%).

Authors' conclusions
The authors concluded that not providing routine follow-up after total hip arthroplasty would save resources and assessment strategies that require fewer resources should be considered.

CRD commentary
Interventions:
The different follow-up strategies were described well and were compared with no follow-up, which seems appropriate. These interventions are likely to be relevant in other settings.

Effectiveness/benefits:
The use of registry data, relevant to the study setting, was appropriate and should have provided the most accurate estimates for the incidence of complications after total hip arthroplasty. The number of delayed revisions was estimated, but was varied across a wide range to assess its impact. The authors did not discuss the sensitivity and specificity of any tests used at follow-up; they appear to have assumed that these were 100%. As the follow-up strategies were not cost-effective assuming 100% sensitivity and specificity, reducing these values would strengthen the conclusions. The source and type of utility data used in the calculation of the QALYs was provided, and the reference of the source was given. QALYs were appropriate for measuring the benefit as the intervention could affect survival and quality of life.

Costs:
The perspective was clearly defined and it seems that all the relevant costs were considered. The costs were presented in categories that might aid replication for other settings. The authors did not report the price year, nor whether prices had been adjusted, but future costs were discounted.

Analysis and results:
The analytic approach was satisfactorily reported, with the model structure and a diagram. The results were fully and clearly reported and probabilistic sensitivity analysis was performed to assess the impact of parameter uncertainty on these results. The reporting was good and the costs and QALYs of alternative scenarios were presented. The authors acknowledged and highlighted the key strengths and weaknesses of their analysis.

Concluding remarks:
The methods and reporting of the study were satisfactory and the results appear to be reliable.

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