Interpretation by radiologists of orthopedic total joint radiographs
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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.

Health technology
Interpretation by radiologists of orthopedic total joint radiographs.

Type of intervention
Diagnosis.

Economic study type
Cost-effectiveness analysis.

Study population
A cohort of patients scheduled to undergo primary or revision total hip or knee joint replacement during one calendar year.

Setting
University teaching hospital. The economic study was carried out in London, Ontario, Canada.

Dates to which data relate
The main effectiveness data were taken from a clinical trial conducted in 1992. Resource and cost data were mainly derived from 1992 sources. Resource were measured in 1992 values.

Source of effectiveness data
Estimates of effectiveness were derived from a single study.

Link between effectiveness and cost data
The costing was undertaken prospectively on the same patient sample as that used in the effectiveness study.

Study sample
A cohort of 524 cases were entered into the study (n not given). Power calculations to determine the sample size were not included. The sample was divided into 4 groups: primary total knee replacements, primary total hip replacements, revision total knee replacements and revision total hip replacements.

Study design
Retrospective study. The duration of the follow up was 1 year. The loss to follow up was 8 cases due to incomplete records.
Analysis of effectiveness
The analysis of the clinical study was based on treatment completers only. The primary health outcome used in the analysis were the pre and postoperative estimates of the differences in interpretation of radiographs by radiologist and orthopedic surgeon.

Effectiveness results
For preoperative radiographs, no discrepancies existed between the radiologists and orthopedic surgeons with respect to primary joint replacement. For 100 revision procedures there were an estimated 15 discrepancies, but in all cases the orthopedic surgeon's interpretation proved to be correct. For the postoperative radiographs, there were no discrepancies in the group of revision hip replacements. For the other three groups there were a total of 6 discrepancies and in all cases the orthopedic surgeon's interpretation was estimated to be correct. In 2 cases conditions were estimated to be present which were not recognized by staff from either the radiology department or orthopedic department.

Measure of benefits used in the economic analysis
The estimates of the differences in interpretation of radiographs by radiologist and orthopedic surgeon.

Direct costs
The costs of radiographies and professional fees were included. Quantities/costs were not reported separately. No discounting was applied due to the time of follow-up being less than 1 year. The quantity/cost boundary adopted was not stated. The price year was 1992.

Currency
Canadian dollars (Can$).

Sensitivity analysis
Not stated.

Estimated benefits used in the economic analysis
For preoperative radiographs, no discrepancies existed between the radiologists and orthopedic surgeons with respect to primary joint replacement. For 100 revision procedures there were an estimated 15 discrepancies, but in all cases the orthopedic surgeon's interpretation proved to be correct. For the postoperative radiographs, there were no discrepancies in the group of revision hip replacements. For the other three groups there were a total of 6 discrepancies and in all cases the orthopedic surgeon's interpretation was estimated to be correct. In 2 cases conditions were estimated to be present which were not recognized by staff from either the radiology department or orthopedic department.

Cost results
For a standard anteroposterior pelvis and lateral radiograph of one hip, the technical fee was estimated to be Can$27.77 and the professional fee Can$7.67. For standing anteroposterior, lateral and axial patellofemoral knee radiographs the technical fee was Can$22.94 and the professional fee Can$7.50. The professional fees for radiologists' interpretation of the x-ray films totalled approximately Can$23,000 for the study period.

Synthesis of costs and benefits
The estimated benefits and costs were not combined. An incremental analysis was not performed.

Authors' conclusions
Interpretation by radiologists of total joint radiographs in patients who undergo primary or revision total hip or knee
replacement arthroplasty is neither necessary nor cost-effective.

**CRD COMMENTARY - Selection of comparators**

The reason for the choice of comparator is clear as radiographers, as well as surgeons, routinely examine radiographs.

**Validity of estimate of measure of benefit**

The estimate of measure of benefit used in the economic analysis is likely to be internally valid. The data have not been used selectively to prove the necessity and cost-effectiveness of interpretation by radiologists of orthopedic radiographs.

**Validity of estimate of costs**

Adequate details of methods of quantity/cost estimation were not given. Costs were not itemized.

**Other issues**

The authors' conclusions were not justified, given the uncertainties in the data. The issue of generalizability to other settings was not addressed. Appropriate comparisons were not made with other studies. The results were not presented selectively. A synthesis of benefits and costs could have been reported in a more detailed way (such as cost per misdiagnosis).

**Implications of the study**

More research is required into the orthopedic management of patients undergoing these types of procedures as a consequence of interpretations of radiographs by radiologists versus orthopedic surgeons.

**Source of funding**

None stated

**Bibliographic details**


**Original Paper URL**


**Other publications of related interest**


**Indexing Status**

Subject indexing assigned by NLM

**MeSH**

Canada; Cost-Benefit Analysis; Costs and Cost Analysis; Hip Joint/radiography; Hip Prosthesis; Humans; Knee Joint/radiography; Knee Prosthesis; Prospective Studies; Radiography/economics

**AccessionNumber**

2199600976

**Date bibliographic record published**

30/09/1998
Date abstract record published
30/09/1998