Cost analysis of traditional follow-up protocol versus MRI for radiographically occult scaphoid fractures: a pilot study for the Accident Compensation Corporation

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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 of the study was to assess the cost-effectiveness of early magnetic resonance imaging (MRI) for suspected radiographically occult scaphoid fractures in patients presenting to the Emergency Department. The authors concluded that the use of MRI in this situation is cost-effective. The methodology of the study was satisfactory, given that it was a pilot study. However, the level of reporting was poor and the results, whilst reflecting the analysis conducted, should be considered with caution given the 'pilot' status of the study.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The aim of the study was to assess the cost-effectiveness of early magnetic resonance imaging (MRI) for suspected radiographically occult scaphoid fractures in patients presenting to the Emergency Department.

Interventions
The study evaluated MRI for patients who demonstrated clinical symptoms of scaphoid fracture despite having a negative X-ray result. This was compared with standard treatment. Standard treatment involved clinical assessment, a plain radiograph and below-elbow plaster; this was followed by a review after the removal of the plaster at 10 to 14 days. Those patients who still had clinical signs of scaphoid fracture, but had negative X-rays, were re-plastered and reviewed with another X-ray after a further 2 to 4 weeks. MRI scanning was conducted on a group of patients with negative X-rays. A positive MRI was followed by standard treatment, whilst a negative MRI resulted in the patient being discharged.

Location/setting
New Zealand/primary care.

Methods
Analytical approach:
The economic evaluation was based on a single clinical study. The authors did not report the time horizon or study perspective.

Effectiveness data:
The effectiveness data were derived from a pilot cohort study, which comprised a total of 90 patients. Further details on the study design were not reported. The main clinical effect parameter was the identification of fracture.

Monetary benefit and utility valuations:
None.

Measure of benefit:
The primary outcome was fracture identification.

Cost data:
The direct cost categories included X-ray cost, plaster cost, assessment cost and MRI cost.
Analysis of uncertainty:
No analysis of uncertainty was undertaken.

Results
Of the 40 patients included in the standard treatment group, 38 were reviewed, 32 were discharged after the 2-week assessment, and 4 were re-plastered after the 2-week assessment and subsequently proven not to have fractures at the 4- to 6-week review, so were discharged. Two patients were identified at 2 weeks to have fractures. Reasons for exclusion were reported.

Of the 50 patients in the MRI group, 44 were reviewed, 30 had scans showing no fracture, and 14 had scans demonstrating fractures. The authors reported that 7 patients were excluded. (NOTE: the numbers in the MRI group sum to 51, not 50 as expected.)

The average medical cost was NZD 470 for the standard treatment group and NZD 533 for the MRI group.

The average cost to exclude a fracture was NZD 459 for the standard treatment group and NZD 437 for the MRI group.

Authors' conclusions
The authors concluded that the use of MRI in this situation is cost-effective.

CRD commentary
Interventions:
The interventions evaluated were both well described, included current standard practice in the authors' setting and appear appropriate.

Effectiveness/benefits:
The effectiveness evidence was derived from an observational study, limited details of which were provided. Given the limitations of this type of study design there is a high possibility of the presence of bias. This was a pilot study and further more rigorously conducted analysis may be required to reach robust conclusions.

Costs:
The perspective of the study was not reported, although it is likely to have been that of the third-party provider. Resource use was collected from those patients included in the study. Neither the source of the unit costs nor the price year was reported. Overall, the level of reporting regarding the costs was limited, although this may be due to the fact that this was a pilot study.

Analysis and results:
The analysis appears appropriate and the results were reported clearly. However, the issue of uncertainty was not addressed and there was a general lack of detail in the reporting. The authors did not identify limitations, although they did clearly state that this was a pilot study; they suggested that a larger patient group and patient consent to enable clear separation of individual data should allow savings, related to reduced compensation through the use of MRI, to become apparent.

Concluding remarks:
The methodology of the study was satisfactory, given that it was a pilot study. However, the level of reporting was poor and the results, whilst reflecting the analysis conducted, should be considered with caution given the 'pilot' status of the study.

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