General practitioners' use of magnetic resonance imaging: an open randomized trial comparing telephone and written requests and an open randomized controlled trial of different methods of local guideline dissemination

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
The use of written versus telephone access to magnetic resonance imaging (MRI) was under evaluation for general practitioners (GPs) requesting MRI for knee and lumbar spine investigation. Also under evaluation were different strategies for disseminating new, locally produced guidelines (seminar, feedback, seminar and feedback, or post) on the request of MRI by GPs.

Type of intervention
Other: Training.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised GPs who were willing to participate in the two trials. Specific inclusion and exclusion criteria were not reported.

Setting
The setting was primary care. The economic analysis was conducted in the UK.

Dates to which data relate
The dates to which the effectiveness and resource use data related were not reported. The price year was also not reported.

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

Link between effectiveness and cost data
The costing was carried out prospectively on the same sample of patients as that used in the effectiveness study.

Study sample
Power calculations were reported. For the first trial, a sample size of 100 requests for MRI in each group was necessary to assure a power of 0.80 in the detection of a 20% difference in concordant requests between telephone and written access. Then, the overall proportion of concordant requests in trial 1 was used in the sample size calculation for trial 2. A sample size of 170 requests for MRI overall would be required to assure a power of 0.85 in the detection of a 20%
difference in concordant requests between intervention groups.

All 73 practices in South Glamorgan were invited to participate in the two trials.

Thirty-two practices (123 GPs) agreed to participate in the first trial and were allocated to either the telephone or written access group. A total of 279 requests could be assessed. Of these, 125 requests were made by telephone, 108 by letter, and 46 were unassigned. Of the 279 requests, 238 were successfully followed up by interview.

In the second trial, 9 practices were allocated to each study group and 10 practices were assigned to the control group. Two practices declined to continue into trial 2. Two panel members successfully followed up a total of 182 requests (98 knee and 84 lumbar spine). Of these, 38 requests were notified from a practice-based seminar, 42 from a practice-specific feedback, 49 from practices receiving guidelines from both seminar and feedback dissemination, and 53 from practices receiving guidelines by post.

Study design
The study included two sequential, prospective randomised controlled trials conducted within 32 general practices. The panel members who assessed each request were blinded to study randomisation. The duration of follow-up was one year.

Analysis of effectiveness
Only participants for whom data were available were included in the analysis.

The primary health outcome in both trials was the concordance of requests with the local guidelines. The secondary outcomes in trial 2 were the effects of other potential explanatory variables upon concordance. Such variables were associated with:

the practice (list size, fund holding status and number of full-time equivalent GPs),

the patient (site of investigation and age), or

the intervention (timing of request, seminar intervention and feedback intervention).

The requests from trial 1 provided a baseline for assessing the impact of the local guidelines per se (i.e. before and after dissemination).

The difference in the proportion of concordant requests between telephone and written access groups was assessed using the chi-squared test. The association between practice, patient and randomisation variables with concordance was assessed using stepwise logistic regression. Clustering effects were taken into consideration by using a multi-level model.

Effectiveness results
One hundred and fifty-one (65%) requests were judged concordant with the local guidelines.

There was no difference in concordance rate between the two study groups, or between them and the unassigned access group.

MRI requests for the lumbar spine were more likely to be concordant than knee requests (75% versus 54%; p<0.001).

Seventy-four per cent of examinations (n=135) were considered concordant.

The proportion of concordant requests was 75% in seminar practices and 74% in non-seminar practices.

The proportion of concordant requests was 69% in feedback practices and 79% in non-feedback practices.
Three variables (practice list size, investigation site and timing of request) and one interaction (site by age) were identified as being associated with concordance in both statistical models (p<0.05).

There was no association between method of guideline dissemination and concordance.

Requests from larger practices were more likely to be concordant (odds ratio, OR: 1.18 of 1,000 registered patients; p<0.005), as were requests for MRI of the lumbar spine (OR 0.41; p<0.001).

Requests made after dissemination of the local guidelines were more likely to be concordant (OR 1.62; p<0.05).

Requests for older patients with knee complaints were less likely to be concordant (OR 0.95; p<0.005).

Clinical conclusions
The method of accessing MRI did not affect concordance rates. Similarly, the method of guideline dissemination did not result in different rates of concordance.

Measure of benefits used in the economic analysis
The effectiveness analysis showed no significant differences in clinical effectiveness between the two methods of accessing MRI and between the methods of guideline dissemination. Thus, the economic analysis was based on the difference in costs only (i.e. cost-minimisation analysis).

Direct costs
Discounting was not relevant as all the costs were incurred during less than 2 years. The cost/resource boundary of the study was not reported. The direct costs included the extra cost of telephone access, and the extra cost of seminar and feedback. The extra cost of telephone access covered GP time in contacting the radiologist, and GP and radiologist time in discussing the case and the call. The extra cost of seminars covered travel, the opportunity cost of the trainer, and trainee time plus the cost of video. The extra cost of audit feedback covered time to collect and analyse the data, postage, and GP time in considering the feedback. The unit costs and the quantities of resources used were not presented separately. The resource use data were estimated using actual data coming from the sample of patients involved in the effectiveness study. The source of the unit costs and the price year were not reported.

Statistical analysis of costs
The costs were presented as mean values with standard deviations (SDs).

Indirect Costs
The indirect costs were not included.

Currency
UK pounds sterling (£).

Sensitivity analysis
Sensitivity analyses were not performed.

Estimated benefits used in the economic analysis
See the 'Effectiveness Results' section.
Cost results
Telephone access cost 4.86 (SD=3.35) more per request than written access.

Compared with the control group, the costs per practice were 1,911.33 (70.79 per GP) higher in seminar group, 1,543.25 (61.73 per GP) higher in the feedback group, and 3,578.04 (132.42 per GP) higher for those receiving both.

Synthesis of costs and benefits
The authors did not produce a summary measure that combined the costs and effectiveness, as they concluded there was no difference in clinical effectiveness between the two methods of accessing MRI and between the methods of guideline dissemination. Therefore, the economic analysis included only costs.

Authors’ conclusions
Methods of access did not affect concordance. Written access was less costly than telephone access. Seminars and feedback were no more effective in modifying practice than guidelines alone, but they were more expensive.

CRD COMMENTARY - Selection of comparators
The choice of the comparator within each trial (written access and guidelines alone) was explicitly justified. These comparators represented the standard approach for GPs’ requests for MRI and for guideline dissemination. You should decide whether it represents a valid comparator in your own setting.

Validity of estimate of measure of effectiveness
A prospective randomised study was performed, which was appropriate for the study question. Power calculations were carried out and these justified the size of the sample used in the study. The investigators were not blinded to the allocation of patients to the study groups. Therefore, assessment biases might have had some impact on the results of the analysis. The data came from a single centre and the method of selecting the sample was unclear (such as the number of individuals who refused to participate or who were excluded from the initial study sample).

Validity of estimate of measure of benefit
The authors conducted a cost-minimisation analysis on the basis of equal effectiveness of the two alternatives.

Validity of estimate of costs
The perspective of the study was not stated, thus it is not possible to assess whether all the relevant categories of costs were included in the analysis. Details of the unit costs and quantities of resources used were reported, which may ease the transfer of the economic analysis to other settings. However, the price year was not reported, which limits reflation exercises. The cost estimates were derived from a single centre and were specific to the study setting. Discounting was not relevant and was not carried out. Sensitivity analyses were not performed on the costs.

Other issues
The authors compared their results with other published studies, showing consistent effectiveness results. However, they did not address the issue of the generalisability of the study results to other settings. The results were not reported selectively and the effectiveness conclusions reflected the scope of the study. The authors did not report any limitations of their study. Sensitivity analyses were not performed to account for variability in the cost or effectiveness data. Consequently, caution should be exercised when extrapolating the study results to different contexts.

Implications of the study
The findings of the study support GP access to MRI using postal requests rather than telephone requests. The authors added that such access should be supported by the dissemination of guidelines by post, which focused on the particular
needs of the GPs.

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