The MODEL project: a scoring system to manage demand for cataract and joint replacement surgery

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Introduction

CATARACT surgery and hip and knee replacement are among the most cost-effective procedures that the NHS offers. However, waiting times are often lengthy and there is evidence of inequity of access to these services. General practitioners (GPs) and consultants have varying thresholds for referral and treatment. As a result, the patients seen and treated surgically may not be those most able to benefit: a mismatch of need and supply. Waiting times are not systematically related to degree of need or capacity to benefit.

A group of 12 Hampshire practices decided to evaluate the use of scoring systems to improve demand management, ensuring speedier assessment and treatment for patients with greater need and deferring treatment for those with the least to gain from surgery. The project was named MODEL (Managing Orthopaedic and ophthalmic Demand for Equity in Localities).

The objectives of the project were to identify suitable scoring systems for cataract, hip, and knee replacement surgery, to investigate the feasibility of using the systems routinely, to measure the scores and the correlations between GPs’ and surgeons’ scoring behaviour, and to set thresholds for accelerated and deferred referrals. Here we report the degree of agreement between GPs’ and surgeons’ scores.

Method

We used a scoring system developed in New Zealand which had strong face validity, including the most important factors in determining severity of illness and expected benefit from treatment. The scoring system for joint replacement assesses pain, maximum tolerable duration of walking, functional limitation, impact on social role, involvement of other joints, and findings on examination. The system for cataract assesses visual acuity, glare, functional limitation, impact on social role, and the presence of other disability. Scores in both systems could lie between 0 and 100. We altered the relative weights given to these factors from those determined subjectively by the originators to reflect local views.

We sent scoring sheets (available from the authors) to all GPs, asking them to complete one when contemplating referral of a patient for the designated operations. The five surgeons who participated in MODEL (all three ophthalmologists at the local hospital and two of the five orthopaedic surgeons) were asked to complete a form for all patients they saw who had been referred for consideration for those operations. Surgeons were unaware of the GPs’ scores when they completed the form.

Scoring began on 1 August 1998; we report here the first year’s results.
Results
Fifty-five cataract patients and 28 joint replacement patients were scored by both a GP and a surgeon (Figures 1 and 2). This is a minority of all patients scored because many patients scored by GPs were still waiting to be seen by a consultant, while consultants had scored patients referred by their GP before MODEL began. Both sets of doctors used the scoring system similarly, with correlation coefficients of 0.74 for cataracts \( (P<0.0001) \) and 0.45 for joint replacement \( (P = 0.016) \). Linear regression confirmed that the scoring behaviour of the two sets of doctors was similar, with regression coefficients of 0.85 (95% confidence interval \( [CI] = 0.64–1.07 \)) for cataracts and 0.55 (95% \( CI = 0.11–0.98 \)) for...

**Figure 1.** Scores for cataract patients scored by GPs and surgeons.

**Figure 2.** Scores for joint replacement patients scored by GPs and surgeons.
joint replacement. GPs tended to give slightly higher scores (cataracts: GP mean score = 27.8, surgeon mean score = 24.4, two-tailed t-test for paired data \( P = 0.006 \); joint replacement: GP mean score = 55.9, surgeon mean score = 47.5, \( P = 0.01 \)).

**Discussion**

There are potential benefits to patients from the use of scoring systems such as MODEL. By allocating rapid access to surgical assessment and treatment more appropriately, the system ensures that the patients with the greatest needs are dealt with most promptly. The lowest scoring patients are unlikely to be offered an operation and, by showing this at the GP consultation, MODEL prevents an potentially unnecessary outpatient attendance for the patient. The clinic appointments released could provide faster access for the remaining patients.

The MODEL project demonstrates both the feasibility of scoring patients for elective surgery and its technical success: both sets of doctors used the full range of scores and tended to rank patients in the same order. There was a tendency for GPs to give slightly higher scores, perhaps because of greater knowledge of the patient or less experience of the disease in question, and not to reach low scores for joint replacement patients.

Our scoring system is not ideal: it is not yet satisfactorily validated against health outcomes, it was used somewhat differently by different doctors and not all patients referred by participating practices were scored. We intend to improve the scoring sheet by clarifying the questions that produced the greatest variation between doctors. We also intend to make its use mandatory, linked to thresholds for accelerated operation and deferred referral and the introduction of an admissions booking system to provide patients with more information on timing of their treatment.

MODEL has introduced greater explicitness into selecting patients for referral and admission, made the process more objective and transparent and should in time improve the equity of access to these important forms of surgical rehabilitation.

**References**


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