Reducing non-attendance at specialist clinics: an evaluation of the effectiveness and cost of patient-focused booking and SMS reminders at a Scottish health board

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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
This study investigated the costs and effects of a patient-focused booking system, with or without short message service (SMS) or email reminders or both, for consultant appointments, at a hospital or outlying clinic in rural Scotland. Notification no more than six weeks in advance and reminders were economical and effective ways to reduce non-attendance, while opt-in was unnecessary, except to collect contact information. The methods and results were clearly reported and the conclusions appear to be reasonable.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The aim was to assess the costs and effectiveness of a patient-focused booking system, with short message service (SMS) or email reminders, for patients due to attend specialist appointments. A cohort of patients from a wide-range of non-psychiatric specialities was assessed and first or return appointments were included.

Interventions
Full versus partial patient-focused booking were compared. The full system involved contacting patients close to their appointment date (within six weeks), to ask them to opt in by phoning the service provider to confirm an appointment date, time, and place or to arrange an alternative more convenient appointment. The partial system did not involve this opt in component and patients were sent their appointment close to their appointment date. The usual system was to send an appointment when requested, with no opt in.

The addition of SMS reminders, email messages, or both, sent two days before the appointment, using the NHS network, was assessed.

Location/setting
UK/secondary out-patient care.

Methods
Analytical approach:
One observational study provided patient-level data that were analysed using multivariate logistic regression. The time frame was from the booking the appointment to the appointment date. The author did not state the perspective.

Effectiveness data:
The primary outcome was non-attendance and the reminder services were designed to reduce the number of patients who did not attend their appointment. The observational study was of NHS consultant out-patient appointments, in Dumfries and Galloway, Scotland, over 14 months from August 2004. This included 25 specialties in one main hospital and several outlying clinics. There were 38,215 first appointments and 73,979 return appointments. Logistic regression was applied to the outcome of did or did not attend, which was adjusted for priority of the appointment, waiting time, and patient socio-demographics.

Monetary benefit and utility valuations:
Measure of benefit:
The measure of benefit was avoided appointments that were not attended.

Cost data:
The costs included those of the NHS service provider for making appointments, including staff time, stationery, and postage, and excluded the establishment costs, such as software and expansion of the call centre. The costs were presented per 100 appointments and calculated incrementally starting with the partial system, adding the full system costs, and adding the SMS and email reminder costs. All costs were reported in UK pounds sterling (£) for the price year 2009.

Analysis of uncertainty:
One-way sensitivity analyses were undertaken for different rates of non-attendance, and the lower and upper confidence limits were produced for each option. The results were presented in tables for the alternative scenarios.

Results
The recurrent costs, over the usual system, for the partial system were £45 per 100 appointments. The additional costs, compared with the partial system, for the full system were £330 per 100 appointments. No additional costs were incurred for the reminder SMS and emails via the NHS network (£5.75 for a commercial network).

For new appointments, compared with a probability of one for the usual system, the probability of non-attendance was reduced to 0.258 (95% CI 0.227 to 0.291) for the partial system, 0.149 (95% CI 0.124 to 0.179) for the full system, and 0.373 (95% CI 0.303 to 0.448) for all reminders.

For new appointments, with a baseline (usual system) non-attendance rate of 5%, the mean cost per non-attendance avoided was £12.13 (95% CI 10.58 to 14.35) for the partial system. The incremental cost per non-attendance avoided for the full versus the partial system was £402 (95% CI 253 to 930), and with reminders versus the full system alone was £30.26 (95% CI 25.00 to 35.94).

Authors' conclusions
The author concluded that SMS or email reminders and booking appointments no more than six weeks in advance were effective and low-cost ways to reduce non-attendance. Opt in might not be required, unless it was the best way to collect contact information.

CRD commentary
Interventions:
The three strategies were fully described, including the context and rationale for the elements of appointment booking. These options might be available in other settings, with similar mobile phone and email usage among patients.

Effectiveness/benefits:
The effectiveness outcome, of avoided non-attendance, was from a large observational study of a wide range of medical speciality appointments. The main purpose of the logistic regression was to uncover the determinants of non-attendance, by booking option, adjusting for potential confounding variables. These analyses did not directly contribute to the cost per non-attendance ratios, but they confirmed the favourable negative relationship between the three strategies in reducing non-attendance rates.

Costs:
The perspective was not explicitly stated, but appears to have been that of the UK NHS. The set-up costs were not included as the author stated that they were sunk costs and only recurrent costs were relevant, which was appropriate. The resource quantities, items, and costs were not provided, which limits the transparency of the analysis. Discounting was not necessary for the short time horizon.
The author discussed a number of issues with these findings, including the coverage of mobile phone ownership, text messaging usage, and the benefits of communication technologies. The findings were compared with those of other studies, which found reduced non-attendance rates using similar techniques with much smaller samples. The results from the one-way sensitivity analyses were reported and showed that as the non-attendance rate dropped, the cost per non-attendance increased as expected.

Concluding remarks:
The methods and results were clearly reported and the conclusions appear to be a reasonable assessment of the findings.

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