

# Evaluation of a computerized appointment system in general practice

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## SUMMARY

Computers have gained rapid acceptance in general practice. A recent development has been the use of computers to run practice appointment systems. This study demonstrates the benefits of installing a computerized appointment system, with improved service for patients, and more efficient use of time by both doctors and receptionists.

**Keywords:** appointment systems; computers; efficiency.

## Introduction

COMPUTERS have gained rapid acceptance as a way of facilitating administrative tasks in general practice.<sup>1-3</sup> A recent development is the use of computerized appointment systems<sup>4</sup> which permit multiple simultaneous access by doctors and staff. This study was carried-out at Rusholme Health Centre, Manchester, a large inner-city general practice, to evaluate the 'Informatica Front Desk' clinical appointments system, which was installed in July 1994. Measurements were taken during November 1993, when the previous manual system was in use, and 12 months later, when staff had become familiar with the computerized system. Measurements were taken at times of comparable workload, with similar numbers of doctors consulting (between six and eight) and similar levels of staffing in reception.

## Method

The data were collected by direct observation of receptionists' patterns of work by a research assistant in reception. Three measures were taken for 5 consecutive weekdays during both study periods: (1) time taken by individual patients to make an appointment by telephone, between 0900 and 1000 hours, the time of maximum 'phoning-in'; (2) time spent by patients making appointments in person between 1000 and 1100 hours; and (3) time spent by patients waiting at the reception desk to be checked-in for their appointments between 1600 and 1700 hours. The research assistant also noted how often doctors entered reception and consulted the appointment board or computerized list. Median times were compared using a Mann-Whitney *U*-test as data on times were highly skewed.

## Results

The new system reduced the median times taken to make an appointment by telephone (81 seconds before, 69 seconds after) and to make an appointment in person (92 seconds before, 88

seconds after). The median time taken to 'check-in' for an appointment was effectively unchanged (26 seconds before, 27 seconds after). There were reductions in the numbers of patients waiting 90 seconds or more to make an appointment by telephone (38% before, 27% after;  $P < 0.05$ ), to make an appointment in person (54% before, 48% after;  $P < 0.05$ ) and checking-in for an appointment (5% before, 1.5% after; not significant). The computerized system reduced the number of doctor movements into reception (410 before, 281 after), and the frequency with which a doctor consulted his/her consulting sheet or surgery screen in reception (262 before, 53 after).

The software costs were £881.25 and the hardware costs were £770 (for two new terminals required for the reception area). The hardware costs would be greater in a practice which did not already have networked terminals in all doctors' consulting rooms. The new system necessitated 122 hours training for reception staff (27 hours for the Manager including training senior staff), 25 hours each for the two senior reception staff (including training other staff) and 7 hours for each of ten receptionists, amounting to £868.15 based on average hourly rates of £7.85, £5.97 and £5.11, respectively.<sup>5</sup> Twenty minutes was sufficient training time for the doctors to familiarize themselves with the relevant aspects of the system, costing £16.40 per doctor.<sup>6</sup>

## Discussion

The study demonstrated benefits from introducing a computerized appointment system into a general practice, other than considerations of time improvements for patients and staff. The benefits to the receptionists include simultaneous multiple access to all surgery appointments and the eradication of the need to produce hand written lists. Day-to-day duties such as introducing extra slots into surgeries or discovering a patient's appointment history are performed more quickly. Receptionists are able to see how individual surgeries are progressing and keep patients informed of potential waiting times.

The benefit for doctors from the new system relates to the availability of information in their consulting room on appointments and patients waiting, enabling them to manage their surgeries more effectively. They can receive messages on screen from receptionists (e.g. if a patient is in severe pain), and can access a patient's medication or treatment history details straight from the surgery list. Doctors also have the ability to cross over to the lists of colleagues, which may be useful to check on a trainee's progress.

The practice evaluated in this study is atypical, being much larger than most. While the benefits in time might be reduced in a practice which was less busy or had a more efficient manual system, this study shows that the benefits of a new computerized system are not limited to reducing the time taken to accomplish day-to-day appointment duties. Major additional benefits lie in the system's ability to offer receptionists and doctors instant up-to-date patient and surgery information, as well as improving communication between doctors and receptionists during surgeries.

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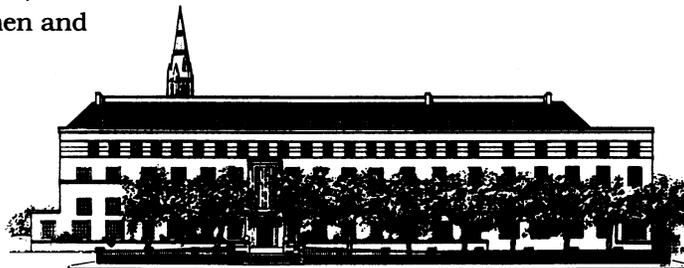


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