Changes resulting from increasing appointment length: practical and theoretical issues

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SUMMARY. The experience of one urban teaching practice in changing its appointment length from 7.5 to 10.0 minutes is described. Observed benefits to patients attending routine surgeries included an increased consultation time (mean 8.6 minutes before, 9.1 minutes after) and reduced waiting time (mean 19.1 minutes compared with 14.6 minutes). Overall, workload was unchanged but improving the 'fit' between supply and demand was associated with loss of flexibility — a greater number of extra patients required to be seen, apparently because fewer appointments were available at the start of each day. Waiting and consultation times in teaching surgeries and trainee surgeries (booked throughout at 10.0 minute intervals) were unchanged in response to the new arrangements. The changes introduced were well received by medical and reception staff although their response was not formally measured.

Planning the organization of an appointment system requires several distinct decisions to be made. The preferred or actual average length of consultations has to be decided and booking arrangements designed to enable this to take place without the doctors persistently running over time. The number of appointments per week required to meet anticipated demand has to be calculated on the basis of list size and expected annual consultation rate. However, an exact fit between supply and demand will lead to congestion of the system and it appears that flexibility in the form of an overprovision of appointments to projected demand of about 120% should be built in. Sufficient vacant slots must be provided at the start of each day to allow sufficient flexibility to avoid excessive numbers of patients having to be accommodated. In the practice in which this study was carried out, 85 appointments per 1000 patients per week including 11 unbooked appointments per 1000 patients on a Monday would enable the consultation demands to be met without difficulty.

Keywords: appointment systems; consultation length; patient waiting time; workload.

Introduction

MUCH of the recently published work on practice organization has pointed to the advantages of longer as against shorter consultations.[1-3] The benefits of adopting a 10 minute booking interval for surgery work have been described[4,5] and Wilson and colleagues have produced evidence of this change being associated with lower levels of perceived stress among doctors.[6] Howie and colleagues have demonstrated that mismatch between preferred working rates and actual booking rates is a major cause of stress, and also that running late, the main consequence of this, is associated with a fall in the quality of care delivered.[7]

Nevertheless, many practices who would like to increase their appointment length to 10 minutes believe this to be impossible because of the extra workload that would follow. There is no recent definition of the ideal number of appointments to meet average demand, although the recent survey carried out for the Department of Health/General Medical Services Committee suggested that the average general practitioner saw 118 patients in the surgery each week.[8] Neither that report nor any other work-study literature has examined two further key issues, namely day-to-day variation and the amount of flexibility needed to be built into an appointment system to accommodate the extra patients and emergencies that will inevitably occur during routine work.

This paper describes the changes which took place in a university department teaching practice with eight doctors (including one trainee) and 5600 patients (20% of whom attract a deprivation allowance) when it changed from a booking pattern of eight patients per hour to one of six patients per hour. The study practice is atypical in the larger number of doctors seeing patients rather than in the way consultations are organized or conducted. Special arrangements applied to surgeries when students were present ('teaching' surgeries) or where a trainee was consulting and these are described separately.

Method

Using previously described methods of timing patient flow[9] booking patterns, waiting times and consultation length were noted for all patients seen in the surgery (excluding special clinics) for six weeks before the change of appointment system was made and for the first six weeks thereafter (February–May 1991). Documentation involved the use of synchronized stop watches in reception and consulting rooms. The times at which a patient arrived in the surgery, and the times of the start and end of the consultation were documented. Note was made of the age and sex of patients seen, whether appointments were for new episodes of illness, and whether a prescription was issued, an investigation carried out or a referral made. For each day the number of free appointments at the start of the day was noted, and the extra patients seen were identified. The number of new home visits requested was determined, as was the total number of consultations. The long to short consultation ratio — the percentage of consultations lasting 10 minutes or more divided by the percentage of consultations lasting five minutes or less[3] — was calculated for the eight doctors.

In the existing appointment system, surgery length was normally 105 minutes with 14 appointments available for each session (each appointment 7.5 minutes). Occasional double appointments were provided when a problem was anticipated. Extra patients were accommodated during and after the existing appointments as convenient. A total of 35 surgery sessions were provided each week, with eight being scheduled for Mondays. In an emergency, an extra surgery would be provided if required but this was not needed during the six week period. When a student was present, patients were booked at 10.0 minute intervals and the same arrangements applied when a trainee was consulting.

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After the change in appointment system, surgery length was increased to 120 minutes with 12 appointments available for each session (each appointment 10.0 minutes). Extra patients were limited to one at the end of the first hour and one at the end of the second hour of each session. Once again, an extra surgery would be provided if required, but this was not necessary during the six week period. There was no change in the number of weekly surgery sessions arranged or in their distribution. Consultations in which a student or trainee was involved continued to be booked at 10.0 minute intervals.

Results

There were a total of 4523 consultations with general practitioners over the 12 week study period. Of these 303 (7%) were incompletely catalogued and thus not included in all the analyses.

Total workload

A total of 2310 patients were seen in the six weeks prior to change and 2213 in the six weeks after change (which included a holiday Monday when the surgery was closed). The number of consultations at 'teaching' surgeries was 271 before the change and 305 afterwards; the trainee saw 396 and 296 patients, respectively. The nurse saw 672 patients before the change and 678 after it; the home visiting rate decreased from 1.32 per 1000 patients per day to 1.23 per 1000 patients per day. The number of consultations for new episodes of illness was 1075 and 1027 in the two periods and the number of consultations for existing problems 1048 and 1103 (information on the type of consultation was missing for 270 out of the total of 4523 cases). The percentage of consultations for new episodes of illness at teaching surgeries rose from 40.4% to 47.3% compared with a fall from 52.0% to 48.4% for routine surgeries. The number of patients failing to attend for booked appointments was unchanged in the two study periods (mean 31.9 per week before and 38.6 after the change).

Waiting and consultation times

The mean waiting time for patients seen by an experienced general practitioner at routine surgeries fell from 19.1 minutes before the change to 14.6 minutes after it. The mean consultation length increased marginally from 8.6 to 9.1 minutes. The reduced waiting time was observed for all doctors. Changes in consultation length were less consistent — for four out of the seven experienced doctors an increased mean consultation length was observed, two showed a slight decrease and for one the mean consultation length remained unchanged. Waiting and consultation times remained relatively constant at teaching surgeries (mean of 19.2 minutes before and 19.6 after the change and 10.9 and 11.1 minutes, respectively) and also when the trainee was consulting (mean of 13.9 and 15.6 minutes and 8.5 and 8.4 minutes, respectively). After the change mean waiting times for patients seen towards the end of surgeries were 7.8 minutes per patient less than before the change.

Doctor behaviour

The percentage of consultations at which a prescription was written remained constant (65.1% versus 67.6%) in routine surgeries and rose from 57.6% to 63.8% in teaching surgeries, roughly in line with the increase in the number of patients presenting with new episodes of illness. Before the change, 7.5% of routine consultations were followed by investigation or referral; this rose to 10.2% after the change. The figures in teaching surgeries were 10.0% before and 10.5% after the change. There was a near linear negative correlation (Spearman correlation coefficient −0.81) between prescribing rates and the ratio of long to short consultations for the eight doctors who saw patients during the study.

Supply and demand

Although the number of patients seen remained almost constant (2310/2213), the number of routine appointments available dropped by 12.7% from 2899 to 2532. Thus, the system apparently became more efficient, moving from 79.7% of available appointments filled to 87.4%. In practical terms, this was achieved by a loss of flexibility: a mean of 30.3 appointments available at the start of each day before the change fell to a mean of 17.7 after it, and the difference was greatest on a Monday (63.0 to 43.8) (Table 1). The effect was to move the pressure from Monday to Tuesday and in turn to Wednesday with the result that the mean percentage of appointments filled on a Wednesday increased from 80.6% to 97.1%. The progressive increase in the number of extra patients who had to be fitted into the system as the week progressed peaked on a Thursday when a mean of 17.7 extra patients had to be fitted in after the change compared with 8.5 patients before the change. This extra load was passed on to the following week accounting for part of the loss of available slots at the start of the following Monday.

Subjective reactions

Doctors and reception staff were initially apprehensive about making the change but none would now choose to return to the previous arrangements. There have been some difficulties in

Table 1. Consultation and appointment data before and after changing the appointment length from 7.5 to 10.0 minutes.

	Mean number of:							
	Patients seen		Appointments provided		Free appointments at start of day		Extra patients	
	Before change	After change	Before change	After change	Before change	After change	Before change	After change
Monday	95.5	81.0	115.2	105.6	63.0	43.8	16.3	13.0
Tuesday	77.2	82.8	98.0	92.0	35.2	19.8	12.5	12.2
Wednesday	70.3	75.7	87.2	78.0	18.0	3.8	12.7	17.3
Thursday	68.7	71.3	85.0	78.0	23.5	13.0	8.5	17.7
Friday	73.3	71.5	97.8	86.0	12.0	8.0	12.5	14.3
Total	385.0	382.3	483.2	439.6	–	–	62.5	74.5

giving as many patients an appointment on the same day as they contacted the practice, but the lower waiting times once patients have arrived at the surgery have resulted in a substantially reduced feeling of stress in the reception and waiting area.

Discussion

As this study was carried out between February and May 1991, care should be taken before directly extrapolating the results to a different time of the year. In addition, the socioeconomic mix of the patients registered with the practice, the practice's higher than average doctor to patient ratio and the number of teaching surgeries carried out should also be taken into consideration.

In this practice the mean consultation length before the change of 8.6 minutes exceeded the allotted time of 7.5 minutes, while after the change this imbalance was reversed (consultation length 9.1 minutes; allotted time 10.0 minutes). Given these figures, and the fact that the total number of patients seen remained about the same, the actual time spent consulting remained largely unchanged. The time patients waited in the waiting room fell substantially but although the new consultation length was less than the allotted appointment time, patients still had to wait 15 minutes to be seen.

The change involved making a smaller number of longer appointments available. This had two results. First, fewer planned slots were left unfilled (an apparent increase in efficiency with a higher concordance between supply and demand). Secondly, a loss of booking flexibility resulted and more extra patients had to be accommodated, especially later in the week. Given that the actual length of consultations increased only slightly, it was not perhaps surprising that those aspects of clinical care which were noted remained fairly constant. However, rather more consultations resulted in an investigation or a referral and this may reflect a more comprehensive assessment of patients' problems.

The amount of consultation time required in a practice is a product of the consultation rate per patient per year and the expected length of each consultation. Whether the consultation rate should be taken to be 2.3 per patient per year,[10] 3.8 per patient per year, the figure for the United Kingdom as a whole,[8] or over four per patient per year, as found in Scotland,[11] is a debate beyond the scope of this paper. The evidence in favour of 10 minute consultations is strong, and if longer is better, then self evidently better care takes longer to provide.

The construction of an appointment system required consideration of three elements: demand, efficiency and flexibility. The data presented here project an annual surgery consultation rate of 3.6 consultations per patient per year for the 5600 patients on the practice list. This represents a demand of 69 consultations per 1000 patients per week. This basic figure for demand takes no account of patients who fail to attend or who require double length appointments. In the perfectly managed setting supply and demand should balance exactly but this of course is not possible. In this study, before the change 483 appointments were provided each week while 385 patients were seen (80% efficiency) and after the change the figures were 440 and 382 (87% efficiency). However this increase in efficiency was associated with more patients requiring to be seen as extra patients. Empirically an intermediate figure of about 475 appointments offered per week (85 per 1000 patients per week) would have been optimal: if 382 patients were seen this would represent an efficiency of 80% and an overprovision of appointments to projected demand of about 120%. Flexibility requires appropriate differences in allocation of appointments by weekday. It is essential to provide sufficient vacant appointments to allow expected demand to be largely met on the day requested. In this study the number of free appointments at the start of a Monday was reduced from 63 to 43 with the result that similar loss of vacant appointments accumulated as the week progressed and the number of extra patients having to be accommodated increased. Sixty three free appointments (11 per 1000 patients) would appear to be required on a Monday to prevent the problem of congestion of the system later in the week.

Deciding the total quantity of consulting time required raises issues of both the effectiveness of consulting technique and the quality of care being delivered. Ensuring that booking patterns reflect realistic consulting speeds brings advantages to both doctors and patients in terms of improved patient flow; changing to an efficient 10.0 minute appointment system from an inefficient 7.5 minute system will not necessarily require much new working time.

The planning of an appointment system that works in the interests of patients, reception staff and doctors requires consideration of the separate elements of quality and organization; organization includes the concepts of demand, efficiency and flexibility. A decision has to be made about how long the doctor wishes to spend face-to-face with each patient and booking arrangements should be built around this. The total provision of appointments is based on a prediction of the number of slots required to meet the demand perceived to be appropriate. To do this without running into difficulties requires a modest overprovision of appointments and the guarantee that an adequate number of vacant appointments are available at the start of each working day.

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