

Waiting time in an urban accident and emergency department—a way to improve it

F L Lau, K P Leung

Abstract

Objective—To determine how the introduction of a new small team consultation system could reduce the average waiting time of patients in the busy accident and emergency (A&E) department of a Hong Kong hospital.

Methods—1264 and 1319 A&E cases, respectively, were sampled during the four months before and after the introduction of a new small team consultation system. The data collected included the average and the range of the patients' waiting time as well as the number of patients in different triage categories and their average waiting time. Also recorded in the study were the average daily attendance, the admission rate, the number of complaints, and patient reattendance rate.

Results—Before and after the introduction of the new system, the average waiting time of the patients was 35.19 minutes and 22.04 minutes respectively (range 0 to 134.0 minutes and 0 to 106.3 minutes, respectively). The difference of 13.15 minutes in the average waiting time was clinically and statistically significant ($t = 2.81$; $P = 0.004$). There were no significant changes in other variables affecting the patients' waiting time and the quality of service.

Conclusions—A small team consultation system can reduce the average waiting time of patients without compromising the existing quality of service.

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Keywords: waiting time; consultation system; continuous quality improvement

The accident and emergency (A&E) department of the United Christian Hospital is one of the three busiest A&E centres in Hong Kong, with a daily patient attendance of around 400 to 500. The patients' waiting time in this department had been deteriorating since 1993, largely because of the ever increasing patient attendance without any corresponding increase in manpower. The average waiting time was lengthened to more than 30 minutes, and sometimes patients had to wait for over two hours before being seen by a medical officer.

As one of the continuous quality improvement programmes in the A&E department, a new consultation system using a small team approach was adopted in January 1994 with the aim of reducing patients' waiting time by improving motivation of the medical staff.

The old consultation system—better known as the common patient pool approach—which is still being practised in most emergency departments in Hong Kong has many shortcomings. Under this system, patients are put into a common pool after initial triage. They are placed in a queue chronologically based on the time that they register with the A&E department, and the duty medical officer will see one patient after another from the queue. This means that the more efficiently a medical officer works, the more patients he or she has to see. The main problem of this system is that it relies heavily on the conscientiousness and sense of responsibility of the medical officers concerned. As a result, poor work motivation becomes prevalent because working hard simply brings along the penalty of more work. Other drawbacks of the old system include an uneven case mix distribution among medical officers, little job flexibility, and difficulty in monitoring the performance of medical officers.

Hence, the objective of the small team consultation system is to boost job motivation among medical staff through a better allocation of workload, with the ultimate goal of providing quality patient care and reducing the average patients' waiting time to below 30 minutes, a standard set out by the Hospital Authority of Hong Kong in 1992.¹

Methods

The objective of this study was to determine the effect of a new small team consultation system on patients' waiting time, which is defined as the interval between the time the patient registers and the time the patient is actually seen by a doctor.

The new small team consultation system was implemented in January 1994. The time frame under study was the four months before (September to December 1993) and after (January to April 1994) implementation of the new system.

The first seven days of each of the eight months were studied, and in each of the seven days, patients with a registration number ending with the digit "0" were sampled. From the sampled cases, the average and the range of waiting time were collected, as were the numbers of patients in different triage categories and their average waiting time.

The admission rate, the number of complaints, the average daily patient attendance, the 72 hour reattendance rate, and the manpower status during the period were also studied. As it was a retrospective study, the doctors were blinded of the sampling method as well as the study itself.

Accident and
Emergency
Department, United
Christian Hospital,
Hong Kong
F L Lau
K P Leung

Correspondence to:
Dr F L Lau, Consultant,
Accident and Emergency
Department, United
Christian Hospital, 130 Hip
Wo Street, Kwun Tong,
Hong Kong.

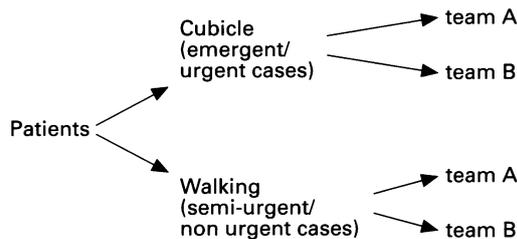
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Table 1 Numbers of samples and average patient waiting time in each triage category

	Emergency		Urgent		Semiurgent		Non-urgent	
	No of samples	Average waiting time (min)	No of samples	Average waiting time (min)	No of samples	Average waiting time (min)	No of samples	Average waiting time (min)
1/9/93—31/12/93	4	0	110	13.2	1046	34.9	104	68.1
1/1/94—30/4/94	3	0	131	11.6	1077	23.8	108	42.1

ORGANISATION

The duty roster was constructed in such a way that between 9 am and 11 pm of the day, four medical officers were available except at meal times. The medical officers were divided into two teams (A and B). Patients were triaged in the usual manner into cubicle (emergency/urgent) cases and walking (semi-urgent/non-urgent) cases and were evenly assigned to each team in terms of number and case complexity. The two doctors in each team only needed to see the patients assigned to their own team. They could take a rest officially if they finished seeing all their assigned patients. Because of the smaller pool of patients each doctor would have to see, the line of responsibility of each doctor was much clearer and staff were more motivated to work efficiently. The new small team structure is illustrated in the diagram.



While the job of the senior staff member was mainly to supervise and screen the admission cases, they would intervene to redistribute the cases if the waiting time disparity between the two teams was greater than 30 minutes. They would assist in seeing the patients if the waiting time exceeded one hour.

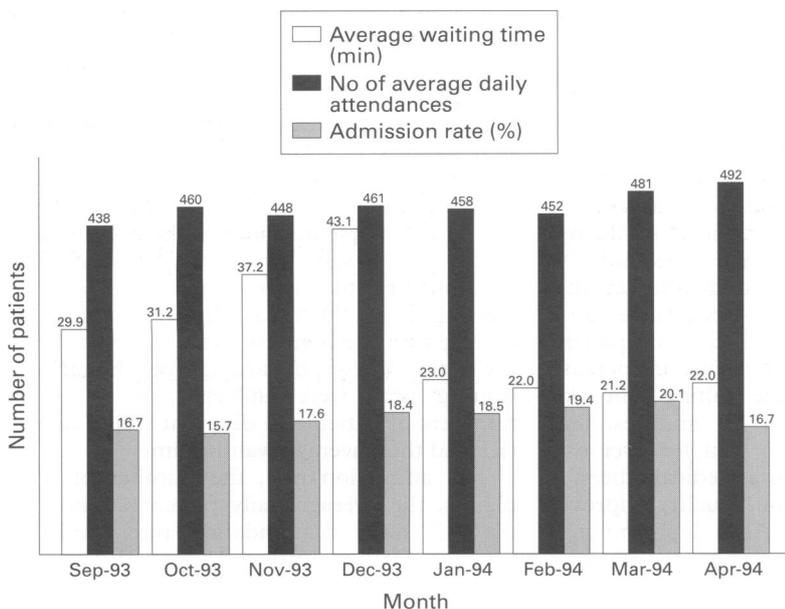


Figure 1 Average waiting time, average daily attendance, and admission rate.

Results

From 1 September 1993 to 30 April 1994, 110 699 patients were seen in the A&E department and 2583 of these were sampled in the study, 1264 during the first four months using the old consultation system and the remaining 1319 during the following four months using the new system. The mean waiting time was 35.19 minutes (range 0 to 134 minutes) and 22.04 minutes (range 0 to 106.3 minutes), respectively. The difference in waiting time of 13.15 minutes is clinically and statistically significant ($t = 2.87$; $P = 0.004$).

The proportion of cases per triage category and the average waiting time in each category are shown in table 1. The monthly breakdown of average waiting time in the eight months under study can be seen in fig 1.

The daily attendance was between 400 and 500 throughout the study period, with a slight increase of about 4% in the latter half of the study, after the implementation of the new system (see fig 1). The reattendance rates were 6.48% and 6.46%, respectively, in the two four month periods. The admission rate was below 20% throughout the time frame (fig 1). Two written complaints regarding staff attitude were received before and after the start of the new system. The number of staff members working in the department remained constant throughout the study.

Discussion

Waiting is inherently dissatisfying for people, and patients attending emergency units are more likely to expect speedy care and attention than most. It is for this reason that waiting time has long been used as one of the main indicators of quality of service in most emergency centres.

The treatment waiting time in emergency medical care facilities is an important quality that very much determines a patient's satisfaction or otherwise.² In one survey conducted by Hunt and Glucksman in England, it was found that long waiting time accounted for 32% of the complaints in their seven year analysis.³ In Hong Kong, Luk and Cheung, in their four year analysis of patients' complaints, noted that 10% of the complaints were due to long waiting time.⁴ Prolonged waiting is also potentially detrimental, since delayed intervention may result in higher risk of morbidity and mortality.⁵ Long waiting time was also found to be one of the most important reasons for patients leaving without treatment from the emergency department.⁶⁻⁸

As one way to reduce waiting time, almost one third of the A&E departments in England have emergency nurse practitioners authorised to diagnose, treat, and discharge patients,

following a protocol.⁹ Nurse practitioners do not exist in Hong Kong for medicolegal and other reasons.

With the introduction of the triage system, A&E patients in Hong Kong are categorised as emergency, urgent, semi-urgent, and non-urgent cases. In the A&E department under study, emergency patients will be seen immediately and urgent patients within a target time of 15 minutes. For semiurgent and non-urgent cases, the target is to see them within one hour. In this regard, the average patients' waiting time was used in this study to monitor the overall efficiency and service quality of the A&E department.

There are many factors affecting patients' waiting time, including staff motivation, patient to staff ratio, proportion of emergency and urgent cases, consultation time spent by doctors on each patient, and availability of supporting service and space. While we conclude that the improvement of waiting time was largely due to better staff motivation, efforts were made to ensure that the consultation time was not reduced to such an extent that it affected the quality of service. Although we did not measure the consultation time, we can calculate it from the number of doctors and the number of attendances. This calculation gave values of 12.9 and 12.2 minutes, respectively, in the four months before and after implementation of the new small team consultation system. The small difference should not have any effect on the quality of patient care. This is also evidenced by the consistent rates of admission and unscheduled patient reattendance, and the same number of complaints resulting throughout the two four-month periods under study.

The admission rate is taken as an outcome indicator because A&E doctors have full admission rights in Hong Kong. Hence the more confidence the A&E doctors have in treating their patients, the lower the admission rate would be and the more resources could be saved by the hospital by managing their patients without admission. In Hong Kong, unscheduled patient reattendance within 72 hours is generally assumed to be due to poor patient management at the first time of consultation.

One drawback of the new system is the difficulty in managing the two queues of the two teams. Patients may compare themselves to patients in the other queue and may complain if they have to wait much longer. This can be resolved by keeping the two queues in separate locations so that patients cannot see each other.

Our A&E department adopted the system with good results until we moved to a new

building in September 1995. Because of the move, we had to resume the old system for two reasons: firstly, it was difficult to keep two queues for each triage category of patients because of the limitations of layout of the new waiting area; second and more importantly, by keeping the patients' waiting time below 30 minutes, even for semiurgent cases—coupled with the fact that the A&E service in Hong Kong is practically free—we attracted an excessive number of patients, many of whom should have gone to general practitioners. Our daily attendance around September 1995 exceeded 600, more than 75% of whom were semiurgent and non-urgent cases. The reason for the high proportion of inappropriate attendance is that in Hong Kong patients have to pay more than 130 dollars (around £10) to see a general practitioner, and they usually have to wait for more than half an hour, even with a prearranged appointment.

After we had moved to the new building, we changed our strategy by setting our target to maintaining only the waiting time of urgent cases to below 15 minutes. To avoid morbidity, we ensured that the triage is performed accurately so that all genuinely urgent cases are categorised as such, with a second triage conducted to determine whether any of the semiurgent and non-urgent cases waiting for over one hour should be upgraded to urgent cases.

CONCLUSION

The new small team consultation system can produce significant improvement in average patient waiting time without compromising the quality of service. However, the potential side effects of keeping a short waiting time for semiurgent and non-urgent cases should be studied further, since a rise in total caseload was noted as a probable result.

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