

Survey of the impact of nurse telephone triage on general practitioner activity

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SUMMARY

Background: Nurse management of minor illness is a common method of demand management in primary care. Delegation of minor illness management to nurses may result in a change in patients' presenting problems and the consequent consulting behaviours of general practitioners (GPs).

Aims: To assess the impact of nurse telephone triage in primary care on the consulting behaviours of GPs.

Design of study: Survey of patient records.

Setting: Three primary care practice sites in York.

Method: During randomly selected weeks, 1 month before and 6 months after the implementation of nurse telephone triage, we measured the number of presenting problems per patient and the following four consulting behaviours of doctors: the number of consultations during the 4 weeks before and after the index consultation, the number of prescribed items, the number of outside referrals, and the number of investigations.

Results: During standard management 1102 index consultations were identified, and during triage 1080 were identified. Patients seen by doctors in the triage system had significantly more presenting problems and received more consultations, prescriptions, and investigations. Numbers of referrals to secondary care were not different.

Conclusions: Delegating the management of patients with minor illness to nurses in a telephone triage system may result in an overall increase in the number of presenting problems per patient, as well as changing GPs' consulting behaviours. Appointment systems may have to be adjusted to ensure patients receive more GP time. Further work on developing measures of complexity and controlled studies of the impact of new working arrangements on workload in primary care are required.

Keywords: consultation; consultation and referral; primary health care; triage.

Introduction

THERE are increasing pressures on general practitioners (GPs) in the United Kingdom (UK) to deliver rapid access to primary care services.¹ Practice nurses have been trained to replace roles traditionally fulfilled by GPs.² One of the most important nursing roles has been in the increased use of telephone advice, with NHS Direct integral in expanding the use of the telephone for health advice by the public.³ The effect of nurse telephone triage on workload has been reported in a number of trials. Same day or emergency activity by GPs has been reduced by between 25 and 49%, whether in or out of hours⁴⁻⁷ and triage has been shown to be safe in an out-of-hours telephone triage system.⁸

One assumption behind the introduction of nurse telephone triage has been that the GP time saved should increase the time available for more appropriate use of GPs' skills in managing more challenging patients. At a time of shortage of health professionals, appropriate use of skill mix is essential. In a recent trial we demonstrated that nurses alone could manage 40% of same day appointment requests.⁷ However, doctors working within the triage system in this trial perceived that the cases they were seeing during routine surgeries were more challenging following the diversion of 40% of same day appointments from GP workloads to nursing care. The introduction of triage, therefore, gave us an opportunity to investigate the doctors' perceptions by surveying the impact of this new same day appointment management system on GPs' consulting behaviours. The balance of routine and same day requests is altered through the diversion of a proportion of same day appointment requests to nursing care only. If patients diverted to nurse-only care have more minor problems, the numbers of presenting problems per patient receiving GP care may increase. It may be that, as a consequence, GP consulting behaviours will also be different following the introduction of triage. We tested the hypothesis that the introduction of a nurse triage system would result in an overall increase in both the number of presenting problems per patient and in GP consulting behaviours.

Method

A survey of GP consultations was carried out in three surgery sites operated by a large general practice in inner-city York. The sites had an initial list size of 20 800, nine whole-time-equivalent GPs, and a nursing team of one full-time nurse team leader and seven practice nurses (whole time equivalent = 3.3). The three selected sites were those that had participated in the original triage trial.⁷ Data on all patient consultations with GPs from Monday to Friday during data collection weeks were collected. In the original multiple-interrupted baseline research design, triage was introduced

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HOW THIS FITS IN*What do we know?*

Nurse telephone triage results in up to 49% of same day appointment requests being managed by nurses. This is likely to have an effect on the consulting behaviours of general practitioners (GPs).

What does this paper add?

Following the introduction of nurse triage, patients seeing a GP had more presenting problems resulting in more GP activity on three out of four indicators. This increase has implications for the management of GP appointment systems.



sequentially to each site in 3-month intervals, which was shown by autocorrelation analyses to control for potential seasonal effects.⁷ In this study, therefore, data collection was conducted over the course of a year and was also staggered by each surgery site to include a randomly selected week during the month before the introduction of triage and another randomly selected week during the sixth month after implementation (having allowed the triage system to become established). An independent research worker, with experience in the use of electronic patient record systems, conducted the data collection.

Triage and standard management

In standard management, receptionists fitted same day appointment requests into extra GP appointments at the end of each surgery. Occasionally, doctors took telephone calls and practice nurses saw some patients on an *ad hoc* basis. In the nurse telephone triage system, six experienced practice nurses, who had received 30 hours of minor illness management training and were supported by a number of computerised management protocols developed by the practice, conducted a telephone assessment of all patients requesting same day appointments. Following triage, patients received one of the following:

- telephone advice only from the nurse or GP,
- a same day nurse appointment,
- a same day GP appointment,
- a home visit, or
- a routine nurse or GP appointment.

Measures

The triage research team of participating GPs, the nurse team leader, a health economist, and academic researchers developed criteria for measuring GP consulting behaviour likely to be related to patients' level of presenting problems. We were unable to find a published consensus or measure of workload complexity in primary care and in a retrospective survey design it was not possible to use health status questionnaires. Therefore, we measured the number of different problems (or diagnoses) with which the patient presented, identified from Read codes and four measures of clinical activity:

- number of consultations with a GP or practice nurse,
- number of prescribed items (including dressings),
- number of referrals to secondary care, including those made to community staff (district nurses, health visitors, community psychiatric nurses, occupational therapy),
- number of investigations.

All same day and routine consultations by doctors during the data collection weeks were identified from the electronic patient record. Data were collected 4 weeks before and 4 weeks after the index consultation date. The practice used EMIS software and all contacts with patients (including telephone advice, surgery consultations, and home visits) by any of the primary health care team were recorded in a standard way using the electronic patient record. Index consultation and repeat prescriptions were also recorded electronically. A standard way of recording new referrals to secondary care and follow-up visits had been developed and was identifiable from the electronic patient record. Haematology and biochemistry results were transferred electronically from the local district hospital and investigations that were received in paper form were entered manually onto the electronic patient record.

Analysis

Using SPSS, means and standard deviations (SDs) for all five indicators were compared using independent *t*-tests. Data were recoded into categories and analysed using χ^2 to detail the distribution profiles and sources of any mean differences between the groups: number of different problems (1, 2, 3, 4+), number of consultations (1, 2, 3, 4, 5, 6+), number of prescribed items (0, 1, 2, 3, 4, 5+), number of referrals (0, 1, 2+), and number of investigations (0, 1, 2, 3, 4+).

Ethical approval

All aspects of the trial were granted ethical approval by the York Research Ethics Committee.

Results

A total of 2182 consultations were identified; 1102 from the standard management weeks and 1080 from the triage weeks, indicating that triage did not appear to have an effect on the numbers of consultation requests during the survey period. There was no difference between the groups for age: mean (SD) = 41.77 (22.83) versus 40.62 (22.66), *t*-value = 1.18, *P* = 0.24; or for sex: 62.1 versus 60.2% female, χ^2 = 0.82, *P* = 0.38. In the triage system, patients had more presenting problems and GP consultation behaviours were greater on three out of the four other indicators (Table 1), indicating that GPs regarded patients as requiring more consultations, prescription items, and investigations per patient. The rate of referral to secondary care was unchanged between the groups. The distribution profiles of the five indicators are detailed below.

Distribution profiles

Presenting problems. There were significant differences in the numbers of presenting problems: χ^2 = 13.45, degrees of freedom (df) = 3, *P* = 0.004. The majority of patients in standard

Table 1. Number of presenting problems and GP consultation activity indicators for patients in standard management and triage groups.

	Standard management mean (SD) n = 1102	Triage management mean (SD) n = 1080	Mean difference (95% CI)	t-value	P-value
Number of different presenting complaints	1.56 (0.78)	1.69 (0.96)	0.14 (0.06 to 0.21)	3.64	<0.001
Primary care consultations	2.30 (1.62)	2.90 (2.26)	0.60 (0.44 to 0.77)	7.18	<0.001
Prescription items	2.24 (2.23)	2.48 (2.53)	0.24 (0.04 to 0.44)	2.37	0.018
Referrals to secondary care	0.23 (0.48)	0.20 (0.45)	0.03 (-0.07 to 0.06)	1.67	0.095
Investigations	1.18 (2.20)	1.54 (2.74)	0.35 (0.14 to 0.56)	3.32	0.001

SD = standard deviation.

management and triage conditions presented with one problem (58.5 versus 54.2%), with the greatest difference between standard management and triage groups in the number of patients presenting with three or more different problems (11.0 versus 16.1%).

Number of consultations. There were significant differences in the numbers of consultations: $\chi^2 = 54.25$, $df = 5$, $P < 0.001$. The majority of patients in both groups received one or two consultations (67.0 versus 55.5%) with the greatest difference between the groups in the number of patients requiring four or more consultations (10.0 versus 28.6%).

Number of prescription items. Although the mean number of prescription items was significantly different between the groups (Table 1), χ^2 analysis did not identify any significant differences in the frequency of item distribution: $\chi^2 = 8.31$, $df = 5$, $P = 0.14$.

Number of referrals to secondary care. There were no differences between the groups: $\chi^2 = 3.13$, $df = 2$, $P = 0.21$, with 21.1% of patients in the standard management condition requiring referral compared to 18.1% in the triage condition.

Number of investigations. There were significant differences in the numbers of investigations: $\chi^2 = 11.96$, $df = 4$, $P = 0.018$. The majority of patients in both groups required no investigations (60.1 versus 55.5%), with the greatest difference between standard management and triage groups in the number of patients requiring four or more investigations (11.3 versus 15.6%).

Discussion

This survey has shown that GPs working in practices within which a nurse telephone triage system operates behave as if their caseloads are more challenging when compared with the same practices where a standard same day appointment management system had previously operated. GPs identified more presenting problems per patient and increased their consulting behaviours on three out of four activity indicators — consultations, prescriptions and investigations — under a triage system.

That patients were identified as having more problems and three out of four indicators demonstrated increased workload behaviours in the triage group may confirm the subjective view of GPs of the impact of triage on the nature of their daily work. Although the differences between the two

groups of patients on the indicators may be regarded as quite small, they were clearly noticeable and clinically significant to GPs. The implications of these data are that changes to the mixture of skills in primary care, where nurses are used in managing some same day appointments, may result in the need for GPs to change their consulting behaviours to accommodate an increase in the mean number of problems presented per patient, as those patients with self-limiting illnesses are seen elsewhere in the primary care team. This potential for nurse triage resulting in change in GPs' consulting behaviours has consequences for the time necessary for each GP consultation. Nurse telephone triage reduces the number of extra same day appointment requests that have to be fitted into GPs' surgeries by 40%.⁷ In a stable situation, the time freed up by this reduction in GP same day activity could be used to increase the time for routine appointments, given that the remaining patients are more likely to have more presenting problems. That this was not seen in the practice in this study may have been because there was a 5% increase in practice list size during the study. Triage had been introduced precisely to manage increasing patient numbers registered with the practice. This increase may have absorbed some of the additional GP time freed up through triage, whereas the rest may have been utilised by patients diverted from same day to routine appointments through the triage system.

Limitations

This study is limited by its retrospective survey design. It did not directly measure patient morbidity using a recognised prospective measure. Further, we were unable to take into account psychosocial factors that may lead to greater difficulties for patients and GPs. The measures that we chose were those that members of the primary care team, particularly GPs, identified as pertinent indicators of the complexity of their working lives. However, apart from the number of presenting problems, they were proxy process measures of GP activity only, rather than objective measures of increased case complexity or health status. Furthermore, although the data were sampled at several different time points (owing to the sequential introduction of triage in the three sites), the survey is limited by the non-contemporaneous sampling procedure and may not control for other potentially confounding factors causing the effect observed. However, we are not aware of other factors that may have led to an increase in patient problems and per-patient GP activity during the study period.

Further research

This survey highlights the need for further research on case complexity in primary care. The indicators used in this study were those that were considered by the research and practitioner team to be the most relevant and most easily measured. They neither take account of social circumstances that often lead to GPs having greater difficulty managing patients' care, nor are they confirmed by independent measures of patient health status. Further work on the development of complexity indicators, objective correlation of workload activity and health status, together with controlled studies of the impact of new working arrangements on workload in primary care, are required.

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