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Telephone triage systems in UK general practice: analysis of consultation duration during the index day in a pragmatic randomised controlled trial

Abstract

Background

Telephone triage is an increasingly common means of handling requests for same-day appointments in general practice.

Aim

To determine whether telephone triage (GP-led or nurse-led) reduces clinician–patient contact time on the day of the request (the index day), compared with usual care.

Design and setting

A total of 42 practices in England recruited to the ESTEEM trial.

Method

Duration of initial contact (following the appointment request) was measured for all ESTEEM trial patients consenting to case notes review, and that of a sample of subsequent face-to-face consultations, to produce composite estimates of overall clinician time during the index day.

Results

Data were available from 16 711 initial clinician–patient contacts, plus 1290 GP, and 176 nurse face-to-face consultations. The mean (standard deviation) duration of initial contacts in each arm was: GP triage 4.0 (2.8) minutes; nurse triage 6.6 (3.8) minutes; and usual care 9.5 (5.0) minutes. Estimated overall contact duration (including subsequent contacts on the same day) was 10.3 minutes for GP triage, 14.8 minutes for nurse triage, and 9.6 minutes for usual care. In nurse triage, more than half the duration of clinician contact (7.7 minutes) was with a GP. This was less than the 9.0 minutes of GP time used in GP triage.

Conclusion

Telephone triage is not associated with a reduction in overall clinician contact time during the index day. Nurse-led triage is associated with a reduction in GP contact time but with an overall increase in clinician contact time. Individual practices may wish to interpret the findings in the context of the available skill mix of clinicians.

Keywords

delivery of healthcare; general practice; telephone/economics; triage; workload.

INTRODUCTION

There is an increasing demand for UK primary care services, with workload increasing by 62% between 1995 and 2008.¹ General practices have struggled to meet this challenge and difficulties with access have become a major source of patient dissatisfaction,² and practitioner stress.³ Practices have been encouraged to develop flexible models of access tailored to local needs.⁴ Telephone triage, in which a patient requesting a face-to-face appointment is, in the first instance, offered a call back from a doctor or nurse, is increasingly being adopted in an attempt to manage demand. During the telephone call, the need for an appointment can be assessed and the most appropriate management plan agreed, including a face-to-face follow-up consultation if appropriate. Because a proportion of patients do not immediately require any further contact extending beyond the telephone call, this system would appear to be more efficient than the usual care arrangement in which face-to-face appointments are provided without triage. The ESTEEM trial (ISRCTN 20687662) tested this assumption and investigated the effectiveness and cost consequences of GP-led telephone triage and telephone triage led by nurses supported by decision support software.⁵

The ESTEEM trial enrolled 20 990 patients requesting a same-day appointment with a GP registered with 42 practices across four recruitment sites in England. Practices were randomly allocated to provide GP-led triage, nurse-led triage (supported by computer decision support software), or usual care. Practitioners providing triage had the usual access to the patients' health records. The trial identified that triaged patients were, in fact, more likely to require further consultations over the subsequent 28 days and that, whether the triage was provided by GPs or nurses, the overall health economic costs were almost identical to usual care. There was no cost saving to the NHS afforded by telephone triage, and the workload appeared to have been redistributed rather than reduced.

However, practices may introduce triage mechanisms in order to manage and moderate demands for urgent care from a GP on the same day, rather than to reduce workload overall. Also, telephone triage may mean that subsequent face-to-face consultations (where necessary) are shorter, since some of the history will have already been obtained. This study examines the duration of consultations and overall clinician time provided on the day of the appointment request, with the intent of answering three separate questions:

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How this fits in

Telephone triage is a commonly used approach for handling requests for same-day GP appointments. The ESTEEM trial measured the impact on primary care workload of introducing GP-led or nurse-led telephone triage compared with continuing usual care. This study uses ESTEEM data to measure the impact on clinician–patient contact time on the day of the request. It suggests no overall reduction with telephone triage, although nurse-led triage reduced GP–patient contact time.

- Irrespective of the outcomes over a longer interval, does telephone triage help clinicians complete 'today's work' in a shorter time compared with usual care?
- Is an initial triage telephone call associated with a reduction in the duration of a subsequent face-to-face consultation, where this is needed?
- Does telephone triage reduce the same day workload of GPs by diverting some of this to nurses?

METHOD

The full methods employed within the ESTEEM trial are published elsewhere.⁵ The duration of the telephone triage contact (or first contact, usually face to face in usual care practices) was recorded using a standard case report form, on which clinicians recorded the start and end times of consecutive consultations. In addition, GPs and nurses from all participating practices were asked to record the start and end times of all of their face-to-face consultations on two, randomly selected, days during the study data collection period. The sampling days were chosen to occur during weeks 2 and 3 of a planned 4-week period for the triage intervention, that is, during the middle of the trial recruitment. For each practice, one of the days selected was a Monday or a Friday, and the other was a Tuesday, Wednesday, or Thursday. The recorded durations for patients that had requested a same-day appointment either that day or the previous day (and were thus in the ESTEEM trial) were subsequently identified, and all other patients' face-to-face appointments were excluded from the analysis. This ensured that the small proportion of ESTEEM patients requesting a same-day appointment but not receiving one until the following day would still be included in this analysis. Different contact types were identified:

- initial face-to-face consultation in usual care;
- GP-led telephone triage call; nurse-led telephone triage call;
- face-to-face consultation with a GP following a GP-led or a nurse-led triage call;
- face-to-face consultation with a nurse following a GP-led or a nurse-led telephone triage call; and
- telephone consultation with a GP following a nurse-led triage call.

The duration of face-to-face contacts with a GP that had followed a triage call were compared with those occurring in usual care.

For each trial arm, the overall composite clinician–patient contact time on the index day was estimated, subdivided into contact time with a GP and with a nurse. This estimate was based on the mean duration of the individual components and the frequencies with which each contact type occurred on the index day. The proportion of patients requiring either one contact (the triage call) or two (triage call plus a face-to-face consultation) were measured in the trial through case notes reviews. Only patient management pathways that were experienced by at least 1% of patients managed on the index day contributed to the patient–clinician contact time estimate. Average durations for each contact type were derived from the case report forms or from the sample of face-to-face GP or nurse contacts. In the case of GP telephone consultations following a nurse triage call, duration estimates were not measured in the trial, so an estimate of duration was taken from a source of standard unit timings.⁶ The proportions of patients experiencing each management pathway, and the estimated time per patient for each pathway, were combined to produce the overall estimates of patient time spent with a GP or a nurse on the index day. Because these were composite estimates, it was not possible to derive standard deviations (SD) for these outcomes, even though the SD was known for the individual components.

RESULTS

Consultation duration data were available from the initial contact of 16 711 patients entered into the ESTEEM study.⁵ In addition, 1290 face-to-face consultations with a GP and 176 face-to-face consultations with a nurse on the index day or subsequent day were timed. The estimated composite durations of clinician–patient contact time were informed

Table 1. Distribution of patient characteristics in the sub-study

	Usual care (n= 692), n(%)	GP triage (n= 302), n(%)	Nurse triage (n= 472), n(%)
Sex			
Male	274 (39.6)	120 (39.7)	184 (39.0)
Female	418 (60.4)	182 (60.3)	288 (61.0)
Age category, years			
<5	63 (9.1)	26 (8.6)	51 (10.8)
5–11	39 (5.6)	24 (8.0)	24 (5.1)
16–24	88 (12.7)	31 (10.3)	54 (11.4)
25–59	324 (46.8)	118 (39.1)	204 (43.2)
60–74	118 (17.1)	60 (19.9)	89 (18.9)
≥75	60 (8.7)	43 (14.2)	50 (10.6)
Deprivation (IMD 2010 quintile based on rank)			
Quintile 1 (most deprived)	62 (9.0)	8 (2.7)	42 (8.9)
Quintile 2	146 (21.1)	46 (15.2)	126 (26.8)
Quintile 3	155 (22.4)	90 (29.8)	103 (21.9)
Quintile 4	181 (26.2)	78 (25.8)	119 (25.3)
Quintile 5 (least deprived)	148 (21.4)	80 (26.5)	80 (17.0)

IMD= Index of Multiple Deprivation.

by data for 15 394 patients (5138 in usual care, 5001 in GP triage, and 5255 in nurse triage) for whom data on management on the index day were available and who followed a management care pathway used by >1% of patients in that trial arm.

Table 2. Duration of consultations during trial

	Usual care	GP triage	Nurse triage
Duration of consultation (based on clinician form^{ab} data), minutes			
First management/triage contacts only; ^c mean, (SD), n	9.5 (5.0) 5693	4.0 (2.8) 5508	6.6 (3.8) 5510
Duration of face-to-face consultations for the sample of ESTEEM patients^d, minutes			
Duration of GP face-to-face consultations on the day of, or the day after, index consultation request; mean, (SD), n	9.8 (5.1) 631	12.4 (7.1) 244	11.5 (6.4) 415
Duration of nurse/nurse practitioner face-to-face consultations on the day of, or the day after, index consultation request; mean, (SD), n	11.0 (6.6) 61	13.9 (8.8) 58	11.0 (8.1) 57
Estimated composite patient–clinician contact duration on the index day^e, minutes			
Overall estimated patient–clinician contact duration	9.6 ^f	10.3	14.8
Estimated patient–GP contact duration	9.1	9.0	7.7
Estimated patient–nurse contact duration	0.6	1.3	7.1

^aClinician form data included only if dated within 7 days of the index day (usual care) or on the index day (GP triage/nurse triage). ^bIncludes 98 clinician forms recorded as 'patient did not attend', but did include duration data. ^cA triage contact is defined as a GP telephone contact on the index date, or a nurse telephone or GP telephone contact on the index date. A first management contact in usual care is defined as any contact within 7 days of the index date.

^dDurations of face-to-face consultations recorded by form completion or electronically from practice computer system. ^ePatients who did not attend any within practice contacts on the index day, or who were first managed outside the practice, were excluded. ^fRounding up discrepancy.

All 42 practices in the trial contributed to the sample of face-to-face consultation durations. In one case a practice collected data on just 1 day (a Tuesday, without sampling a Monday or Friday).

Table 1 gives the demographic characteristics with respect to age, sex, and deprivation status of the 1466 patients for whom face-to-face consultation duration was collected in this sub-study. No differences were found between the characteristics of this group when compared with the entire population of trial participants.

Table 2 gives the durations of initial contact (telephone triage in triage arm practices, mostly a face-to-face contact in usual care practices);⁵ the estimated overall clinician–patient contact time for all patients; and the duration of face-to-face contacts following triage in the triage arms. The mean (SD) of an initial telephone triage contact for GPs was 4.0 (2.8) minutes and for nurses 6.6 (3.8) minutes. This compared with 9.5 (5.0) minutes for an initial contact (usually face to face) in usual care. The estimated composite overall duration of clinician–patient contact on the day of the request was 10.3 minutes for GP-led triage, 14.8 minutes for nurse-led triage, and 9.6 minutes for usual care. In nurse-led triage, more than half the duration of contact (7.7 minutes) was with a GP. This was less than the 9.0 minutes of GP contact time observed following introduction of GP triage and the 9.1 minutes observed in usual care. There was no clinically significant difference in the overall GP time required between GP-led triage and usual care. The mean estimated duration of a GP face-to-face consultation that followed a GP triage call was longer than the duration of a GP face-to-face consultation in usual care (12.4 versus 9.8 minutes). For those that followed a nurse-led triage call, the estimated mean duration was 11.5 minutes.

DISCUSSION

Summary

Despite the possibility that telephone triage may be a more time-efficient way of managing workload on the index day, this analysis of ESTEEM trial data indicates that there is no overall clinician time saved when comparing GP-led or nurse-led triage with usual care. Nurse-led triage saves GP time on the index day, even though overall clinician (GP and nurse) contact time is increased. Although it might be reasonable to speculate that face-to-face consultations may be completed in less time if preceded by a telephone triage call (as a clinician

has been made aware of the problem, and a preliminary consultation undertaken), this study suggests that the face-to-face consultation duration is longer for triaged patients than for those seen in usual care. However, in some cases the patient may have consulted a different clinician face to face from the one providing the triage contact, and it is not clear whether or how the recording of a patient's history could impact on the subsequent use of time. It is also difficult to compare the two groups directly, because the first (face-to-face consultations following triage) only included patients whose problems were not, for whatever reason, resolved by a telephone consultation, while the latter included people with all types of problem, some of which may have been possible to resolve by telephone.

Strengths and limitations

This analysis involved a large sample of consultations from contemporary UK practice collected in the context of a large cluster randomised controlled trial. The numbers available from the sampling of face-to-face contacts was more limited, particularly for nurse consultations. The clinicians involved in gathering the data had received standardised training in study processes, including documenting consultation duration during a 4-week run-in period before beginning live data collection for the trial. The duration data for the face-to-face contacts following triage used in this analysis were gathered during days selected randomly in the middle of the trial. However, there will inevitably be some inaccuracy in measurement resulting from time pressures during busy, routine care being associated with some incomplete recording and subsequent missing data. For the sample of face-to-face consultations, it was not known how many consultations were expected to occur, and so, while practices were actively encouraged to record timings for all such consultations on the sampling days, the completeness of this process could not be evaluated. For the composite estimate of overall clinician contact time, published estimates were relied on for GP telephone consultation duration that followed a nurse triage call, although this applied to a very small percentage of contacts (~1%). For the purposes of estimating mean consultation duration, consultations that had occurred on the day after, as well as on the index day were included in the sample, but consultations scheduled over longer intervals were not included.

Comparison with existing literature

A number of studies have investigated telephone triage systems, but relatively few have measured consultation duration as an outcome.⁷ Jiwa and colleagues reported a telephone consultation duration of less than 5 minutes in over 92% of calls following introduction of a telephone triage system.⁸ Richards *et al* studied the impact on workload and costs following introduction of a nurse-led triage system using a multiple interrupted time series analysis.⁹ They reported a reduction in GP time, but a substantial increase in overall time involved in managing the patient (mean increase 1.7 minutes, $P < 0.001$). Mohammed and colleagues reported the duration of 128 717 telephone triage calls in an out-of-hours provider service in England and Wales in 2012.¹⁰ They also found that GP telephone triage calls were shorter than those provided by a nurse practitioner. However, this study population was different from the current study, which investigated consultations during normal working hours and involved clinicians who had access to the patients' complete health records. McKinstry and colleagues randomised two general practices to provide GP-led telephone triage or usual care without triage, adopting use of doctor time as the primary outcome.¹¹ They found that telephone triage consultations were shorter than face-to-face consultations in usual care, but that those managed through triage were more likely to re-consult over the following 2 weeks. This finding concurs with the results of the main ESTEEM trial, which confirmed this greater tendency to re-consult in patients managed by triage (GP-led or nurse-led) compared with usual care, with no difference between the three arms in total NHS costs.⁵

Implications for practice

The ESTEEM trial⁵ has yielded large amounts of data investigating the workload implications of telephone triage arrangements in current practice. This study adds to the message of the main trial, that telephone triage, whether undertaken by a doctor or a nurse, appears not to offer added efficiency in terms of resource use than usual care. Nurse-led triage, supported by decision support software, is associated with a reduction in overall GP contact time during the index day, even though overall clinician contact time is increased compared with usual care. However, individual practices may wish to interpret the findings in the context of the available skill mix of clinicians.

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Ethical approval

Research ethics approval was obtained from South West No 2 Research Ethics Committee (reference number 09/H0202/53).

Provenance

Freely submitted; externally peer reviewed.

Competing interests

The authors have declared no competing interests.

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