Accessibility, acceptability, and effectiveness in primary care of routine telephone review of asthma: pragmatic, randomised controlled trial

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Abstract

Objective To determine whether routine review by telephone of patients with asthma improves access and is a good alternative to face to face reviews in general practices.

Setting Pragmatic, randomised controlled trial.

Participants 278 adults who had not been reviewed in the previous 11 months.

Intervention Participants were randomised to either telephone review or face to face consultation with the asthma nurse.

Main outcome measures Primary outcome measures were the proportion of participants who were reviewed within three months of randomisation and disease specific quality of life, as measured by the Juniper mini asthma quality of life questionnaire. Secondary outcome measures included the validated “short Q” asthma morbidity score, nursing care satisfaction questionnaire score, and length of consultation.

Results Of 137 people randomised to telephone consultation, 101 (74%) were reviewed, compared with 68 reviewed (48%) of the 141 people in the surgery group, a difference of 26% (95% confidence interval 14% to 37%; P < 0.001; number needed to treat 3.8). Three months after randomisation the two groups did not differ in the Juniper score (risk difference 0.07 (95% confidence interval –0.40 to 0.27) or in satisfaction with the consultation (risk difference 0.07 (–0.27 to 0.13)). Telephone consultations were on average 10 minutes shorter than reviews held in the surgery (mean difference 10.7 minutes (12.6 to 8.8; P < 0.001)).

Conclusions Compared with face to face consultations in the surgery, telephone consultations enable more people with asthma to be reviewed, without clinical disadvantage or loss of satisfaction. A shorter duration means that telephone consultations are likely to be an efficient option in primary care for routine review of asthma.

Introduction

Guidelines on the management of asthma emphasise the importance of regular review, and systematic recall is integral to the UK chronic disease management programme. Regular review of patients taking medication is not only a professional responsibility highlighted by medical defence organisations: when linked with self management education, it reduces asthma morbidity. Despite proactive asthma care in general practice, only about a third of people with asthma attend for annual review. Non-attenders, however, may have considerable morbidity. It is therefore a good idea to explore innovative, patient centred ways of providing care.

Improving access to healthcare is an NHS priority. With the development of telephone services such as NHS Direct, a culture is evolving in which telephone consultations are increasingly accepted as alternatives to face to face contacts. Many general practitioners now accept calls from patients, with some doctors reserving specific times of day for such consultations. Telephone consultations are safe alternatives in the triage of requests for same day appointments and out of hours care. Patients’ satisfaction with telephone consultations is high.

A large US trial that compared normal clinic visits with a mix of face to face consultations and telephone reviews (the recommended interval for clinic visits was doubled and three telephone reviews took place in the intervening period) showed that telephone review has the potential to reduce morbidity, use of medication, and use of the health service in patients with a range of chronic disorders. We are not aware of any study that has addressed the role of telephone consultations in the routine review of chronic disease in primary care in the United Kingdom. We hypothesised that telephone consultations improve access of patients to care and are an acceptable and effective alternative to face to face consultations for the provision of routine care of patients with asthma.

Methods

Recruitment—All four general practices that took part in the study had nurses who were trained and experienced in providing proactive asthma care (table 1). From their computerised asthma registers the practices identified adults (≥18 years) who had asked for a bronchodilator inhaler prescription in the previ-
ours six months but who had not had a routine asthma review in the preceding 11 months. Patients were excluded if the diagnosis of asthma had been made within the previous year, if they had chronic obstructive pulmonary disease, if communication difficulties made a telephone consultation impossible, or (at the general practitioner’s request) for major social or medical reasons. We wrote to all eligible patients inviting them to take part in the study.

Randomisation—Patients were centrally randomised in blocks of 10 to ensure that approximately equal numbers of patients were allocated to each arm of the study.

Intervention—Patients randomised to the telephone review group were sent a letter from their practice informing them that they had been allocated to receive a telephone review and that they should expect a call from the asthma nurse within a month. Nurses were told to make up to four attempts to contact the patient by phone. The nurses were given no instructions about the content of the review except that it should reflect their normal practice and be appropriate to each patient’s clinical need. Details about the consultation, including failed attempts at phone calls and the duration of the consultation, were recorded immediately after the review on a pilot evaluation consultation record. Nurses arranged any follow up consultations (whether in the surgery or by telephone) they deemed clinically necessary. Patients were free to arrange any consultations they wished.

Control group—Patients randomised to the face to face consultation arm were sent a written invitation to make an appointment to see the asthma nurse within a month. Clinical care and follow up were the same as for the intervention group but without a telephone option.

Outcome measures—Primary outcome measures were the proportion of patients reviewed within three months of randomisation and change in asthma related quality of life, as measured by the Juniper mini asthma quality of life questionnaire. This valid instrument is widely used in asthma research. It has 15 questions (responses are rated on a scale from 1 (greatest impairment) to 7) and is responsive to change with a minimum important difference of 0.5 for both improvement and deterioration in clinical condition.

To measure asthma morbidity we used the "short Q" a validated score incorporating three questions recommended by the Royal College of Physicians as outcome indicators for routine use in asthma care. We used the nursing care satisfaction questionnaire to measure satisfaction with the consultations. This questionnaire is validated for nurse consultations and has good discriminant validity, permitting comparison of quality of care. Other secondary outcome measures were the duration of consultation, as recorded by the nurses at the end of the consultation, and use of healthcare resources during the three month study period, obtained by the nurses through a search of electronic and paper general practice records. Baseline questionnaires were sent with the initial letter to the patients. Follow up questionnaires on morbidity and satisfaction with the consultation were sent to the patients at three months.

Training and quality control—We gave the nurses standardised training in the study procedure. One member of the research team (JS), who was blinded to allocation, visited each of the practices and validated a random 20% sample of consultation data and data retrieved from records.

Sample size and statistical methods—An 80% power, at the 5% significance level (two tailed test), of detecting a 20% difference in the proportion of patients reviewed

Table 1 Details of the general practices in the study

<table>
<thead>
<tr>
<th>Place</th>
<th>Type of practice</th>
<th>No of doctors</th>
<th>No of nurses trained in care of asthma patients</th>
<th>No of patients</th>
<th>No of (%) of patients on asthma register</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diss, Norfolk</td>
<td>Town practice</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>7,515 (12.2)</td>
</tr>
<tr>
<td>Hyde, Greater Manchester</td>
<td>City practice</td>
<td>4</td>
<td>1</td>
<td>8,567</td>
<td>775 (9.8)</td>
</tr>
<tr>
<td>Ronwich</td>
<td>City practice</td>
<td>7</td>
<td>1</td>
<td>12,355</td>
<td>1,387 (11.2)</td>
</tr>
<tr>
<td>Whitstable</td>
<td>Town practice on two sites</td>
<td>13</td>
<td>3</td>
<td>28,125</td>
<td>2,719 (9.4)</td>
</tr>
</tbody>
</table>

Flow of patients through the trial

- Excluded as per protocol (n=307): Chronic obstructive pulmonary disease or other respiratory disease (n=154)
  - Excluded at GP’s request (n=89)
  - Diagnosed < 1 year ago (n=12)
  - Unable to take part (n=16)
  - Communication problems (n=3)
  - Already been reviewed (n=30)
  - Moved (n=2)

- Did not consent (n=654)
  - No reply (n=415)
  - Refused to participate (n=219)
  - Reviewed (n=7)
  - GP didn’t consent (n=6)
  - Moved (n=5)
  - Died (n=1)

- Randomised (n=278)
- Eligible (n=932)

- Face to face review (n=141)
- Telephone review (n=137)

- Withdrawals (n=5)
  - Died (non-respiratory) (n=1)
  - Patient choice (n=2)
  - Clinical problems (n=2)

- Baseline asthma quality of life and symptom scores (n=113)
- Consultation (n=68)
- Follow up asthma quality of life and symptom scores (n=115)
- Nursing care satisfaction score (n=66/68)
- Consultation record (n=140)
- Data from records (n=135)

- Withdrawals (n=4)
  - Moved (n=2)
  - Patient choice (n=2)

- Baseline asthma quality of life and symptom scores (n=112)
- Consultation (n=101)
- Follow up asthma quality of life and symptom scores (n=114)
- Nursing care satisfaction score (n=103/101)
- Consultation record (n=137)
- Data from records (n=134)
from 30% to 50% required 296 patients. A difference of 0.5 in the Juniper scores (SD 0.78) required 180 patients. Equality in terms of quality of life was regarded as less than a 0.5 difference on the Juniper score. To allow for an anticipated 25% of subjects failing to complete questionnaires, we estimated that we needed to recruit 225 patients. We used Student’s t-test to compare normally distributed continuous data and the Mann-Whitney U test to compare non-parametric measures.

### Results

#### Recruitment

From a total of 56,062 patients we identified 3860 adults on the practices’ asthma registers, of whom 1813 had requested a bronchodilator in the previous six months. Of the 1239 patients (69%) who were due for an annual review, 307 were identified 3860 adults on the practices’ asthma registers, of whom 1813 had requested a bronchodilator in the previous six months. Of the 1239 patients (69%) who were due for an annual review, 307 were.

#### Proportion reviewed

On an intention to treat analysis, 101 of the 137 patients (74%) allocated to the telephone arm were reviewed, compared with 68 of the 141 patients (48%) in the face to face consultation arm (risk difference 26% [95% confidence interval 14% to 37%]; P < 0.001; number needed to treat 3.8 [2.7 to 7.1]).

#### Duration and content of review and patients’ satisfaction

Telephone consultations were shorter than surgery consultations (mean durations 11.2 and 21.9 minutes, a difference of 10.7 minutes (8.8 to 12.6; P < 0.001)). This difference remained even when the 141 abortive telephone calls and five missed appointments were allowed for. Table 3 shows aspects of asthma care addressed during the consultations. The groups were equally satisfied with the consultation (table 4).

### Morbidity

Quality of life scores and symptom scores measured three months after randomisation were similar in the two groups (table 5). The number of acute asthma exacerbations and use of healthcare resources did not seem to differ between the groups (table 6), though the trial did not have adequate power to detect differences in these secondary outcome measures.

#### Discussion

Telephone consultations improve access and are an acceptable alternative to face to face consultations for reviewing patients with symptomatic asthma. Nearly three quarters of the patients allocated to the telephone consultation arm had a routine asthma review, a substantial improvement on the proportion of patients reviewed by traditional means. The shorter duration of telephone consultations makes them an efficient option for primary care.

### Limitations of the study

It was not possible to conduct a blinded study, so bias may have been introduced. To minimise the risk of allocation bias we opted for centralised randomisation by an independent company, and to minimise
information bias we gave standardised training on all the study procedures to the nurses. A blinded quality assessment that checked completeness and accuracy of data extracted from records in a random sample of participants from each practice failed to detect any systematic errors in data extraction.

Despite the broad entry criteria, two factors limit the generalisability of our findings. Our practices were all “asthma interested”—they all had specialist nurses with considerable experience of providing asthma care, potentially enhancing their skills to undertake telephone consultations. Also, our participants were slightly older than the total eligible population and may not be wholly representative of all adults with asthma in these practices.

Our study was of short duration and so we can’t comment on the long term impact of telephone assessments. The Short duration of follow up should, however, have maximised the chance of detecting a change in quality of life, as the impact of a clinical assessment would tend to dissipate over time.

Main strengths of study
Our study aimed to reflect, as far as possible, normal care of patients with asthma in the participating practices. We asked nurses not to change their clinical practice. Consultations were generally incorporated into the normal workload, although nurses observed that the end of the day was often a good time to make phone calls. Using validated instruments we obtained data on several clinical and practice related outcomes.

Interpretation of findings in relation to other studies
Neither telephone reviews nor face to face reviews resulted in improvement in asthma related quality of life or morbidity, and it may be tempting to conclude that routine reviews of asthma patients are ineffective. However, it may be that the educational and supportive role of nurses might be better reflected if a broader range of outcome measures—such as enablement (how well patients understand and cope with their illness and treatment), self efficacy, or knowledge—were evaluated. A second possibility is that in our practices, with their special interest in asthma, many of the patients’ asthma may already have been relatively well controlled, leaving limited scope for improvement. This is supported by the observation that treatment was changed in only a quarter of consultations, which compares with a change to 80% of prescriptions in a survey of the effect of introducing an asthma clinic in a practice.

In keeping with other studies, telephone reviews were of shorter duration than the face to face consultations, though the content was similar, apart from practical procedures such as peak flow measurements. The distribution of the timings of the consultations in the two groups suggest that surgery consultations may have been paced to use the available 15, 20, or 30 minute appointments, whereas a telephone review could take as short or as long a time as needed. Time may be saved during a telephone review, as patients do not have to enter or leave the room, and computer templates and medical records can be completed during the course of the consultation. The nurses who undertook the reviews observed that the telephone consultations felt more “focused,” which may reflect the recognised tendency for telephone interactions to be more goal oriented, with fewer digressions and achieving shared tasks faster.

Patients’ satisfaction was equally high with both modes of consultation. The nursing care satisfaction questionnaire included a domain that reflects “perceived time,” and it is reassuring that despite the shorter duration of telephone consultations there was no evidence of dissatisfaction with the time spent. Studies have associated longer duration of consultation with greater satisfaction, but our data do not support this conclusion, suggesting that the dynamics of the two modes of consultation might be different.

Conclusions
Telephone consultations enabled 26% more people with asthma to be reviewed than surgery consultations, without any apparent clinical disadvantage or loss of satisfaction. Because of their shorter duration, telephone consultations could be an efficient option in primary care for the routine review of people with asthma. Future studies exploring the role of telephone consultations for asthma should include a formal cost effectiveness analysis and a qualitative assessment of the perceptions of health service users and providers of care.

What is already known on the topic
Regular review of patients with asthma reduces morbidity and is endorsed as good practice by UK and international guidelines, but only about a third of patients attend for their annual review

What this study adds
Telephone consultations enable more people with asthma to be reviewed
Telephone consultations are shorter than face to face consultations, without any apparent clinical disadvantage
Patients are satisfied with telephone consultations
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Competing interests: None declared.

Ethical approval: The study was approved by all relevant ethics committees. All participants gave their fully informed consent.

5 Partridge M. Consultation by telephone and e-mail. Asthma Journal 1999;4:103.