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Preclinic telephone consultations: an observational cohort study

L O'Byrne, NJ Roberts and MR Partridge

ABSTRACT – Patients referred to secondary care for specialist respiratory review frequently undergo multiple hospital attendances for investigations and consultations. This study evaluated the potential of a preclinic telephone consultation and subsequent coordination of tests and face-to-face consultations to reduce hospital visits. Total hospital attendances were recorded for three cohorts (participants, non-participants and comparators) for 6 months from first specialist contact. Patients completed the medical interview satisfaction scale-21 (MISS-21). The study showed that a preclinic telephone consultation can significantly reduce hospital visits over a fixed period without reducing patient satisfaction. In total, 20.8% of the participant group had three or more hospital attendances compared with 42.9% of the non-participant group (p=0.001) and 44.7% of the comparator group (p=0.002). Participants had fewer follow up visits and lower rates of non-attendance/late rearrangement of appointments. This service reduces unnecessary hospital visits, seems to improve patient compliance and may save costs associated with non-attendance and follow up consultations.

KEY WORDS: consultations, respiratory, telephone

Introduction

Nearly a quarter of a million new patients attend hospital-based specialist respiratory clinics in the UK every year following referral from primary care.[1] The initial specialist consultation is often inconclusive, necessitating diagnostic procedures that may require multiple visits. 'One-stop' or 'walk-in' clinics[2,3] can reduce hospital attendances but are usually designed for defined conditions with a clear diagnostic pathway, eg chest pain. General respiratory clinics encounter patients with a wide range of potential pathologies, necessitating an equally wide range of investigations; however, a one- or two-visit referral pathway might still be possible. We have previously shown that investigations required after specialist history taking were rarely altered by clinical examination.[4] Review of the history, carried out via questionnaire, email, post or telephone, thus could streamline the referral process.

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Telephone consultations have been used extensively in primary care[5] and increasingly for review in secondary care,[6,7] but using the telephone to obtain the initial clinical history represents a new use. An observational cohort study was designed to evaluate the effect of a preclinic telephone consultation on hospital attendances for new patients referred to a respiratory outpatient clinic. The aims were to reduce the number of attendances patients require and to enhance patient satisfaction.

Methods

The study was undertaken in a respiratory outpatient department based in a central London NHS teaching hospital and involved a convenience sample of 100 consecutive new referrals addressed to one named respiratory physician or generic 'Dear doctor' referrals. Ethics approval was obtained from the East London and City Ethics Committee 3 (REC: 07/Q0605/19). Postal invitations for the preclinic telephone consultations were sent to patients, with background information about the purpose of the call. For each telephone consultation, the respiratory consultant contacted the patient at a fixed time, took a history and discussed possible diagnoses and necessary investigations with the patient. The list of diagnostic tests was then given to the coordinator (the research nurse), who liaised with the patient to arrange tests prior to or on the day of their first face-to-face hospital appointment.

Those who accepted the invitation formed the participant group. Patients were asked to call a 24-hour telephone number within 7 days and non-responders were returned to the routine system and allocated a standard face-to-face consultation. This group was referred to as the non-participant group. To provide a comparison group unaffected by responder bias, all new patients referred to the participating clinics through the electronic Choose and Book system during the study period were monitored (the comparator group). Choose and Book is a recently introduced national service enhancement that allows patients to choose the hospital, time and date of their appointment.

Demographic and clinical data were collected from patients and patient records. The number of clinic consultations and the type and frequency of investigations were documented for the three cohorts for 6 months from their first contact with the consultant. Hospital attendances and non-attendances (did not attend) were recorded.

Patients were invited to complete the medical interview satisfaction scale-21 (MISS-21)[8] and a nurse-administered questionnaire after their first clinic consultation. The MISS-21 is a well-validated patient-satisfaction questionnaire originally introduced

in the USA but adapted and validated for use in primary care in the UK. Patients from the non-participant group and comparator group were asked to repeat the MISS-21 if they attended for a follow up appointment, thus providing each group with a satisfaction score after two contacts with the respiratory specialist (telephone and face-to-face or two face-to-face consultations).

Statistical analysis

Data were obtained directly from patients and by accessing medical and electronic records. Non-parametric data analysis of the number of hospital attendances, investigations and satisfaction scores was performed using the Kruskal–Wallis statistical test and Mann–Whitney t-test (with use of the Bonferroni correction as appropriate) to provide between-group comparisons. The number of planned investigations and consultations in each cohort was compared with the number of investigations and consultations patients actually attended or completed (following non-attendances and patient or administrative errors). Paired t-tests (Wilcoxon rank sum test) were used for these within-group analyses. Patient demographics and clinical and social data were compared between groups using χ^2-tests for categorical data. Incomplete datasets for satisfaction scores and specific patient characteristics (English fluency and hearing impairment) were the result of patients declining to complete questionnaires or failing to attend clinic, and analyses were carried out on the existing data. All analyses were undertaken using SPSS software (version 17).

Results

Of 100 consecutive patients, 49 (49%) agreed to have a telephone consultation (participant group), leaving 51 patients in the non-participant group (Fig 1). The comparator group comprised 57 Choose and Book patients.

In total, 48/49 (98%) participants had a preclinic telephone consultation at the appointed time; only one patient misunderstood and attended the clinic. One telephone consultation was terminated by the consultant due to a lack of confidentiality at the place where the call was taken. Following the telephone consultation, one patient (originally referred to the tertiary centre) was referred to another hospital nearer to their home (at the patient's request) and did not have a face-to-face clinic consultation.

Table 1 shows demographic and clinical data for the three groups. Patients were referred with a wide range of respiratory symptoms and conditions; these were broadly similar in each arm, as was the sex distribution. Patients from the comparator group were younger than those invited to participate in the intervention (median 48 (interquartile range 23.5) years vs 61 (20.5) years, p=0.002) but neither age nor sex was observed to have a significant effect on uptake of the service. Fluency in the English language was significantly more likely among participants than non-participants (46/49 vs 32/42, p=0.032) and a higher proportion of non-participants reported a hearing impairment (11/39 vs 10/49, p=0.394). Neither of these factors prevented participation.

Tables 2 and 3 show the total number of clinic appointments and investigations attended by patients in the three study groups in the 6-month period following first contact with a specialist. In the participant group, 48/49 (98%) had a preclinic telephone consultation and 98% attended an initial clinic consultation. Of the 48 participants who attended clinic, 16 (33%) had one or more follow up appointments. In the non-participant arm, 42/51 (82%) attended their first clinic consultation and 29/42 (69%) patients attended one or more follow up appointments. In the comparator group, 47/57 (81%) patients attended the first consultation and 27/47 (57%) went on to attend one or more follow up appointments.

Table 2 also shows the comparatively high rates of non-attendance for first and follow up appointments in the comparator group (seven non-attendances for first face-to-face consultations and eight non-attendances for follow up appointments) and the non-participant group (six non-attendances for first face-to-face appointment and six non-attendances for follow up appointments) compared to the participant group (one non-attendance for the telephone consultation and two non-attendances for follow up appointments). A similar pattern was observed in attendance for diagnostic investigations. Although there were no significant differences in the number of planned investigations between the three groups, a significant number of investigations were not completed as planned in the comparator and non-participant cohorts due to non-attendance or error. No significant difference in planned and completed investigations was observed among participants (see Table 3). This non-compliance necessarily affected the overall hospital attendance rates. However, despite higher non-attendance in the comparator and non-participant groups, patients attending clinic were more likely to have

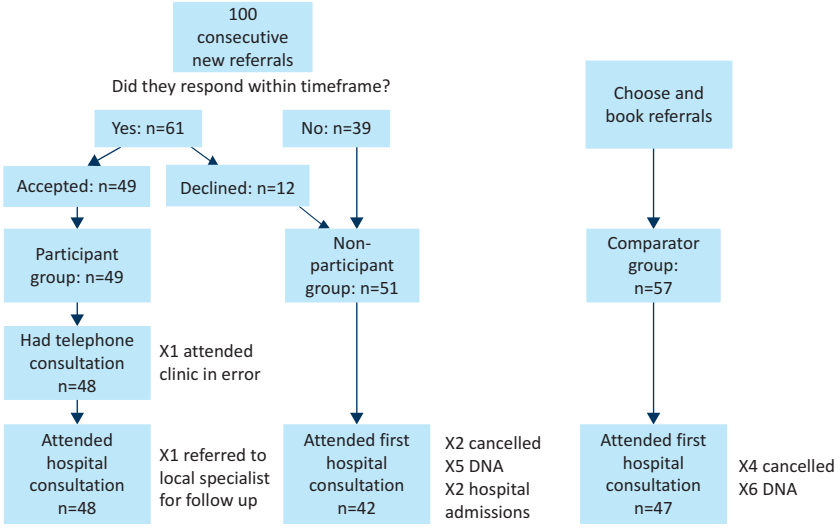

Fig 1. Patient flow.

Table 1. Demographic and clinical data.

	Participant (n=49)	Non-participant (n=51)	Comparator (n=57)
Sex			
Male	22	23	29
Female	27	28	28
Mean age (SD) (years)	62.0 (13.7)	57.4 (16.7)	50.9 (17.0)
Reason for referral			
Suspected/definite OSAS	4	3	6
Suspected/definite restrictive disorder	6	5	1
Suspected/definite obstructive disorder	9	12	14
Unexplained breathlessness or chest pain	11	13	11
Unexplained cough	7	9	12
Abnormal chest x-ray	4	4	6
Haemoptysis	2	1	1
Suspected malignancy	1	0	1
Suspected/definite infective disorder	4	4	3
Other	1	0	2

SD = standard deviation; OSAS = obstructive sleep apnoea syndrome.

Table 2. Attendance at clinic appointments in the 6-month period after first contact.

	Participant (n=49)	Non-participant (n=51)	Comparator (n=57)
Consultation (n (%))			
Telephone consultation	48	N/A	N/A
Non-attendance	1	N/A	N/A
Rearranged appointment	0	N/A	N/A
First face-to-face clinic appointment	48	42	48†
Non-attendance	0	6‡	7‡
Rearranged appointment	3	8	5
Follow up clinic appointment	19	38	46
Non-attendance	2	6	8
Rearranged appointment	0	2	2
Attendance (n (%))			
Attended initial (telephone or face-to-face) consultation	48	42	47
>3 hospital attendances in 6 months (for clinic appointments plus investigations)	10/48 (20.8)	18/42 (42.9)	21/47 (44.7)
>2 hospital attendances in 6 months (for clinic appointments plus investigations)	38/48 (79.2)	24/42 (57.1)	26/47 (55.3)

†One patient in the comparator group attended a 'new referral' (first face-to-face) appointment, failed to attend a follow up consultation, was re-referred and attended a second 'new referral' appointment within the 6-month time period. ‡One patient in the non-participant group and one in the comparator group failed to attend a first clinic appointment, re-booked and failed to attend a second time.

Table 3. Planned, booked and completed investigations.

Investigations	Participant (n=49)	Non-participant (n=51)	Comparator (n=57)
Planned (total)	147	114	128
Median per patient (IQR)	3 (2)	3 (1.25)	3 (3)
Booked investigations that patients failed to attend	1	5	6
Planned investigations that patients failed to book	0	2	2
Planned investigations for which patients failed to complete test or provide results	2	5	5
Completed†	145	105	116
p value for difference between planned and completed investigations	(0.157)	(0.003)	(0.005)
Investigation category			
1: laboratory/pathology	31	38	34
2: imaging	46	31	33
3: functional assessment	68	36	49

IQR = interquartile range. †In some cases, patients who initially failed to book or attend planned investigations re-booked and attended as originally planned.

more than two hospital visits in six months if they had not received a preclinic telephone consultation (10/48 (20.8%) participants vs 21/47 (44.7%) comparators, p=0.002; 10/48 (20.8%) participants vs 18/42 (42.9%) non-participants, p=0.001).

Following the preclinic telephone review, further action (in addition to diagnostic investigations) was undertaken on 11 occasions prior to the first face-to-face consultation in the participant group. This included commencing or altering medication (n=2), obtaining specialist review of previous test results (n=8) and referring to other services (n=1). On two occasions, relevant clinical information was not identified during the telephone consultation and required face-to-face clinical assessment to be established (one patient diagnosed with ankylosing spondylitis and one patient with bradycardia).

In total, 44 completed MISS-21 questionnaires were obtained from the 48 participants who attended a face-to-face clinic consultation (Table 4). Of the 42 non-participants who attended their first clinic appointment, 29 completed the satisfaction questionnaire, with 17 questionnaires completed at follow up; 41 of the 47 patients who attended a first clinic consultation in the non-comparator group completed the satisfaction questionnaire, with 11 questionnaires completed at follow up. Higher satisfaction scores were recorded in the participant group than in the comparator group after their first face-to-face clinic appointments (p<0.0001); this trend continued when comparing satisfaction after two contacts with the consultant (telephone and face-to-face consultations or two face-to-face consultations), but the scores at this stage were not significantly higher in the participant group. Similarly, higher satisfaction scores were recorded among participants than non-participants after their first face-to-face consultations and participant scores remained higher after two contacts with the consultant, but the differences were not statistically significant. Analysis of these results is likely to have been affected by the small number of completed satisfaction questionnaires, particularly at follow up.

Discussion

This study trialled a preclinic telephone consultation for new patients and coordination of tests and future hospital appointments to streamline care. The results show that this can achieve a reduction in the number of hospital attendances while maintaining patient satisfaction. More than 40% of patients in the non-participant and comparator (Choose and Book) groups had more than two hospital attendances in the study period compared with just over 20% in the participant group. This is despite the fact that non-attendance levels for consultation and investigation were significantly lower among participants. It is difficult to determine the impact of the telephone consultation as distinct from the role of the coordinator, and comparable effects on hospital attendances may be achievable by a coordinator taking a similar role at a first face-to-face hospital appointment. However, the preclinic telephone consultation facilitated a one- or two-visit pathway by enabling the pre-booking of tests on the day of or prior to the first face-to-face hospital appointment and still allowing a face-to-face discussion of test results. This might be difficult to achieve if coordination did not take place until after the initial hospital appointment. Comparative analysis indicates that participants were neither over- nor under-investigated and that the process was safe and effective. However, the identification of clinical issues at the face-to-face consultation stage reinforces the fact that a preclinic telephone consultation in this setting can enhance, but should not replace, face-to-face consultations.

Participant satisfaction scores were consistent with previous evaluations of patient satisfaction using the MISS-21 in other

Table 4. Medical interview satisfaction scale -MISS-21.

	At first clinic appointment			At follow up appointment	
	Participant after two contacts (n=44)	Non-participant after one contact (n=29)	Comparator after one contact (n=41)	Non-participant after two contacts (n=17)	Comparator after two contacts (n=11)
Communication comfort	6.07 ± 0.83	5.85 ± 0.77	5.57 ± 0.91	5.91 ± 0.73	5.59 ± 1.03
Rapport	5.97 ± 0.82	5.93 ± 0.66	5.52 ± 0.69	5.64 ± 0.53	5.49 ± 0.95
Compliance intent	5.57 ± 1.07	5.51 ± 1.00	5.11 ± 0.98	5.06 ± 1.03	5.25 ± 1.00
Distress relief	5.69 ± 1.03	5.30 ± 0.88	4.77 ± 1.04	5.15 ± 0.67	5.10 ± 1.33
Global score	5.85 ± 0.73*†	5.67 ± 0.68	5.26 ± 0.70*	5.47 ± 0.53	5.36 ± 0.98†

±Standard deviation. *Global mean satisfaction scores were significantly higher in the participant group than the comparator group at the first clinic appointment ($p<0.0001$). †The higher mean satisfaction scores in the participant group compared with the comparator group *after two contacts* did not reach significance ($p=0.06$ uncorrected; $p=0.18$ using Bonferroni correction).

areas[9–11] and equivalent to, or higher than, scores for alternative referral systems in the current study. The higher satisfaction scores among participants at their first face-to-face consultation probably reflect the increased input they had received at this stage of the process. Importantly, this study does suggest that equivalent satisfaction can be obtained after two contacts with the consultant regardless of whether these are both face-to-face consultations or include a telephone consultation. However, the lower satisfaction scores of the comparators compared with the non-participants (who had received no service enhancement) are difficult to account for and the service would benefit from repeating these evaluations in larger numbers.

This new system may provide a more efficient referral process than traditional systems. In addition to streamlining tests and clinic appointments, the hospital-led coordination ensured that all tests were booked as planned and served as a reminder to patients to attend. Detailed history taking and diagnostic planning meant that tests that required pre-booking (such as sleep studies) or an extended time period (eg home-recorded peak expiratory flow rates) could be completed so that the results were available at the first face-to-face specialist review. Test results from other healthcare settings could also be obtained and reviewed in advance of the first clinic consultation, avoiding repetition and delay. This permitted a fully informed assessment and efficient use of time and resources, reducing the overall number of consultations despite the extra telephone consultation received by participants.

The preclinic telephone consultation was found to be suitable for patients with a wide variety of respiratory conditions and was accepted by about 50% of those patients invited to participate. Acceptance rates may have been negatively affected by the short time period allowed for patients to respond to our letter of invitation and ongoing postal strikes in the area during the study period. Nevertheless, the initial acceptance rate of nearly 50% for an unfamiliar service remains encouraging and would probably increase if this became an established service. Severe hearing impairment and linguistic barriers were perceived by some as obstacles but did not prevent participation. Relatives or carers frequently attend clinic appointments with patients to interpret and assist; this continued for telephone consultations and was, for some, the preferred option. Employment and family commitments were cited as reasons for both acceptance and non-acceptance of the service. Some commented that protected time for a 20-minute telephone consultation at work or home would be difficult to arrange, although rearranging work and other commitments to attend clinic was acceptable. This may reflect a need for greater awareness of the telephone as a means for accessing and, indeed, expediting healthcare.

Studies have shown that increased contact between appointments improves compliance and recall for future appointments,[12] and this was evident in our participant group, although other factors may also have influenced attendance rates. The high levels of non-attendance in patients referred through the Choose and Book system have been observed previously[13] and suggest that improvements in attendance anticipated through this referral system have not materialised. The participant group was a self-selecting cohort not matched for age, employment status or ethnicity, which has previously been associated with variations in attendance rates,[14] and responder bias may have improved compliance in the participant group. Long intervals between referral and appointment can also affect attendance,[14] and the short wait for telephone consultations may have improved telephone consultation completion rates compared with previous evaluations of pre-booked follow up telephone consultations.[9,15] Nevertheless, the overall high compliance observed among patients receiving a preclinic telephone consultation, if reproducible, suggests a significant advance in efficiency.

Even with advance history-taking, a two-stop referral process is not possible for all new respiratory referrals. The nature and variability of respiratory disease dictate that some patients will require more frequent review and that initial results of investigations may lead to repeat or more-detailed investigations. An effective referral process should, therefore, maintain flexibility but reduce unnecessary attendance to provide a streamlined service. This study suggests that a preclinic telephone consultation

and coordinated process for new referrals can meet these objectives and demonstrates that telephone consultations are an effective means of obtaining the clinical history for a high proportion of newly referred patients. This coordinated process also seems to improve patient compliance, reduce non-attendance rates and result in fewer follow up consultations. In order to further investigate the effects of the intervention not only on the number of hospital attendances but also on patient compliance and satisfaction, a randomised controlled trial examining the impact and relative merits of both the preclinic telephone consultation and the coordinator is required. The results from this pilot trial suggest that this is a service enhancement worth exploring further.

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