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SHORT PAPER

Patients' and carers' preferences in two models of care for acute exacerbations of COPD: results of a randomised controlled trial

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Background: Patients with an acute exacerbation of chronic obstructive pulmonary disease (COPD) were randomised to either hospital at home (HaH) or inpatient management, and patient and carer preferred site of management and satisfaction with care received in the two arms was determined.
Methods: Emergency admissions with an acute exacerbation of COPD were randomised to inpatient care or HaH care. After discharge an independent observer administered a questionnaire to both patients and carers on the preferred site of care and scored satisfaction with the care received.
Results: Of 60 patients recruited, 30 were randomised to receive HaH care. Retrospective patient preference for HaH care was 96.3% in the domiciliary arm and 59.3% in the conventional arm; carer preference figures were 85.7% and 42.9%, respectively. There was a higher preference for domiciliary care by both patients and carers in the HaH arm than in the inpatient arm (p=0.001 and p=0.01, respectively). Patients recorded equal satisfaction with care in the two arms (88.1% in the conventional arm, 91.7% in the domiciliary arm); carer scores were 91.3% and 91.9%, respectively.
Conclusions: The results of this study show that both patients and carers were significantly more likely to prefer domiciliary care if they were in the HaH arm. Since patients had to be willing to be looked after at home, both patients' and carers' perceptions of the benefits of HaH care were reinforced by their experience. HaH care of acute exacerbations of COPD is the preferred option in suitable patients.

Recent studies have shown that hospital at home (HaH) management of selected patients with acute exacerbations of chronic obstructive pulmonary disease (COPD) is a safe[1 2] and cost effective option to inpatient care.[2] As HaH schemes have become increasingly popular in recent years in hospitals across the UK, it is important to know their acceptability to patients and carers.

METHODS

Patients with an acute exacerbation of COPD were admitted to the Medical Chest Unit, Castle Hill Hospital and clinical management was instituted according to the British Thoracic Society guidelines.[3] They were reviewed the following morning for possible inclusion in the trial. Both patients and carers gave informed consent for the study. A carer was defined as a provider of emotional or physical support to the patient during his or her illness. Patients were randomised using sealed envelopes to receive either conventional inpatient care or HaH care under a team of two respiratory outreach nurses (RONs). Recruitment into the study was carried out from Monday to Thursday. The RONs were accessible by telephone between 09.00 and 17.00 hours daily. Outside these times patients could obtain advice from the Medical Chest Unit through a direct line.

Subjects

Inclusion criteria:

- Both sexes
- >18 years
- FEV_1/FVC ratio <70%
- FEV_1 reversibility to salbutamol <15% (obtained on a previous admission or clinic visit)

Table 1 Baseline characteristics of the patients

	Conventional arm (n=30)	Domiciliary arm (n=30)
Age (years)	70.1	69.7
Men (%)	50	53.3
Mean (SD) admission FEV_1 (l)	0.85 (0.34)	1.0 (0.38)*
Mean (SD) admission FVC (l)	1.83 (0.80)	1.99 (0.77)
Mean (SD) symptom score on admission (%)†	63.6 (17.8)	63.0 (13)
Mean (SD) total SGRQ score	67.6 (16.3)	67.9 (10.7)
No living alone	9	9
No in nursing home	1	0
No receiving home help/district nurse	4	4

*p=0.15. †Refer to Appendix 1 on *Thorax* website (www.thoraxjnl.com) for symptoms scored and calculations. The higher the symptom score the better the patient felt.

- Worsening of symptoms with any combination of increased sputum purulence and/or volume, and worsening dyspnoea.

Exclusion criteria

- Concomitant medical conditions requiring admission
- Residence over 15 miles from hospital
- Complications of the exacerbation: acidosis, cor pulmonale, and acute changes on chest radiograph
- Newly diagnosed type 2 respiratory failure
- Social exclusion was discretionary and depended on level of domiciliary support and performance status of the patient.

Assessment

Demographic data, baseline clinical data, and spirometric values were obtained at the first interview. The St George's Respiratory Questionnaire (SGRQ) was also administered at this time. The RONs filled in daily progress charts and symptom score charts (Appendix 1; see *Thorax* website) for patients in both arms of care. The former assessed vital signs, spirometry, oxygen saturation and supplemental oxygen, and nebuliser usage.

HaH care

Patients were sent home within 48 hours of admission on a discharge package that included nebulised or inhaled bronchodilators, oral and inhaled steroids, antibiotics, and oxygen as necessary. The patients' GPs were aware of, but were not involved with, the HaH patients. The RONs monitored the treatment of these patients daily and carried out patient and carer education and reassurance.

Satisfaction questionnaire (Appendix 2)

Within 2 weeks after discharge an observer not otherwise involved in the trial administered the satisfaction questionnaires to the patient and main carer as a structured interview at the patient's home.

Statistical analysis

Fisher's exact *t* test was used to test for an association between patient/carer preference and the site of care group. Satisfaction scores were compared using the Mann-Whitney test. Admission and discharge parameters were compared using a two sample *t* test.

Ethical approval was obtained from the Hull and East Riding local research ethics committee.

RESULTS

Between May 1999 and February 2000 328 patients were admitted on the recruitment days with an acute exacerbation of COPD. Of the 117 (35.7%) medically eligible patients, 22 were excluded on social grounds (living alone with no telephone or living outside the 15 mile radius) and 35 patients/carers withheld consent. The remaining 60 patients took part in the trial and were randomised to receive HaH or inpatient management (30 to each arm). None of the patients had had prior experience of HaH care. All carers were relatives of the patient except in one case where the carers were professional staff in a nursing home.

Six patients failed to complete the trial, three because of clinical deterioration (two in the domiciliary arm were readmitted), one was found to have predominantly asthma, one withdrew consent, and one patient self-discharged from hospital. The questionnaire was not administered to these patients. Twenty seven patients in each arm completed the trial.

Baseline and social characteristics were similar in the two groups at randomisation (table 1). One patient in each arm lived alone with no close family nearby.

The outcome of care given is summarised in table 2. There was no difference between the two arms. Sixteen of the 27 patients (59.3%) in the conventional arm and 26 of the 27 (96.3%) in the domiciliary arm would have preferred domiciliary management. No preference data were available from one patient in the HaH arm. Thirty four carers completed the questionnaires and the respective carer preference figures were 6/14 (42.9%) and 17/20 (85.7%). The patients and carers in the HaH arm were significantly more likely than those in the conventional arm to prefer domiciliary care (Fisher's exact p values 0.001 and 0.01, respectively).

Table 2 Efficacy of care given

	Conventional arm	Domiciliary arm	p value
Mean (SD) improvement in FEV_1 (l)*	0.06 (0.27)	0.16 (0.26)	NS
Mean (SD) improvement in FVC (l)**	0.12 (0.65)	0.17 (0.55)	NS
Mean (SD) improvement in symptom score (%)†	11.6 (12.8)	12.1 (17.3)	NS
Mean no of days in care	5.9	7.4	0.14
Mean (range) no of readmissions per patient at 3 months	0.8 (0–3)	0.4 (0–2)	NS
Readmission rate at 3 months (%)	44.4	33.3	NS
No (%) deaths at 3 months	3 (11%)	1 (3.7%)	NS

*Discharge FEV_1 – admission FEV_1. **Discharge FVC – admission FVC. †Discharge symptom score – admission symptom score.

Calculation of the satisfaction scores is outlined in Appendix 2 (available on the *Thorax* website). The mean patient satisfaction score with the care package was 88.1% in the conventional arm and 91.7% in the domiciliary arm. Carers' satisfaction scores with the care package were 91.3% and 92.7%, respectively. There were no statistical differences in either score. Transfer between wards and the hospital food were each cited twice as causing dissatisfaction among the inpatients. No other comment was cited more than once by either group.

There was no association between preferred site of management and age or sex of patient, treatment with maintenance steroids, home nebuliser or oxygen, frequency of admissions in the preceding year, symptom score at admission, and whether the patient lived alone or had a partner.

DISCUSSION

No randomised controlled trial has compared patient and carer preference and satisfaction with the domiciliary management of acute exacerbations of COPD and conventional care. High satisfaction scores with domiciliary care in both patients and carers were found in a diverse group of mainly elderly patients studied by Caplan *et al*.[4] However, these observations may not be applicable to potentially life threatening conditions such as acute exacerbations of COPD. In a randomised controlled trial of the efficacy of HaH, Shepperd *et al*[5] reported a preference for inpatient care in their cohort of 32 patients with COPD. In contrast, in a similar trial with 184 patients with an acute exacerbation of COPD,[2] a satisfaction questionnaire was administered to the HaH arm and 95% of respondents reported complete satisfaction with the service. However, they did not ascertain the degree of satisfaction of those in hospital nor were the views of the carers documented.

An important feature of our policy for HaH service was that patients were able to choose conventional hospital treatment. Our sample was therefore biased towards those who felt they were suitable for HaH care, which might explain why a high percentage of patients in the domiciliary arm preferred HaH care. The significantly higher preference for domiciliary care in the HaH arm of patients and carers compared with the inpatient arm suggests that patients' and carers' conceptions of HaH care were positively reinforced by their experience of this form of care. It is possible that a proportion of patients in the conventional arm who preferred inpatient care may have changed their minds had they experienced HaH care. This finding has important implications in settings where HaH care is offered as a service with no choice given to the patients.

The conventionally managed group had daily visits by the RONs to complete the daily progress charts and symptom questionnaires which would not be the case in usual inpatient care. The patients may have felt more "looked after" than normal inpatients would, and the response in this group may therefore have been tempered by the Hawthorne effect affecting its applicability.

In conclusion, our experience in patients who fulfilled the criteria for HaH care of acute exacerbations of COPD shows that both patients and carers were significantly more likely to prefer domiciliary care if they were in the HaH arm, despite satisfaction with care being similar in the two arms. Since patients had to be willing to be looked after at home, both patients' and carers' perceptions of the benefits of HaH care were reinforced by their experience. HaH care of exacerbations of COPD is the preferred option in suitable patients. The results of this study should encourage clinicians to advocate this form of management. They may also help to reassure patients and carers who are offered HaH management.

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Appendices 1 and 2 are available in full on the *Thorax* website (www.thoraxjnl.com).

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