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A Nurse-Led intermediate care package in patients who have been hospitalised with an acute exacerbation of chronic obstructive pulmonary disease.

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Abstract

A Nurse-Led intermediate care package in patients who have been hospitalised with an acute exacerbation of chronic obstructive pulmonary disease.

Objectives:
To determine the effects of a nurse-led intermediate care programme in the management of patients who have been hospitalised with an acute exacerbation of COPD (AECOPD).

Design:
Randomised controlled trial.

Setting:
Care in the community and a teaching hospital in West London.

Participants:
One hundred and twenty-two patients who had been admitted to Hammersmith Hospitals NHS Trust with a diagnosis of AECOPD.

Intervention:
A care package incorporating initial pulmonary rehabilitation and self-management education followed by the provision of a written, personalised COPD action plan, monthly telephone calls and three monthly home visits by a specialist nurse for a period of two years.

Main outcome measure: Hospital readmission rate
Secondary outcomes**:** Unscheduled consultations with general practitioners and disease-specific health-related quality of life.

Results:
There were no differences in hospital admission rates or in exacerbation rates between the intervention and control groups. Self-management of exacerbations was, however, significantly different and patients in the intervention group were more likely to have exacerbations treated with oral steroids alone or oral steroids and antibiotics than the control group, and the initiator of treatment for exacerbations was statistically more likely to be the patient themselves in the intervention group. Twelve patients in the control group died during the two-year period, eight as a result of COPD, compared with six patients dying in the intervention group, of which one died from COPD. This is a significant difference. When the numbers in the intervention and control groups are adjusted to reflect the numbers still alive at two years, 55 of the 61 patients of the intervention group were still alive and these patients had had a total of 171 unscheduled contacts with their GP. In the control group, 49 of the 61 patients were still alive and they had 280 contacts with their GP. The number needed to treat equals 0.558. That is to say, for every one COPD patient receiving the intervention and self-management advice, there was 1.79 less unscheduled contacts with the GP. There were no important differences in quality of life.

Conclusions:
An intermediate care package incorporating pulmonary rehabilitation, self-management education and the receipt of a written COPD action plan, together with regular nurse contact, is associated with a reduced need for unscheduled primary care consultations and a reduction in deaths due to COPD but did not affect the hospital readmission rate.

Introduction

Chronic obstructive pulmonary disease (COPD) represents a global health burden and will move from 12th place to be the 5th largest cause of disability adjusted life years lost by 2020[1]. In the UK, 30,000 deaths per year are attributed to COPD, over 5% of all deaths[2], and up to one in eight emergency hospital admissions may be due to COPD[3]. Much of the morbidity and mortality related to the condition results from exacerbations of the disease and frequent exacerbations are associated with more rapid decline in lung function[4]. These exacerbations are much feared by patients who dislike their impact upon everyday life and fear being housebound, bedridden or hospitalised[5, 6]. Previous research has focussed on optimal therapeutic strategies for both the prevention [7, 8, 9, 10] and treatment of acute exacerbations[11] and also on the effectiveness of care interventions such as "hospital at home" and early discharge schemes for those having acute exacerbations of COPD[12, 13]. A systematic review of the effectiveness of innovations in nurse-led management has concluded that there is little evidence to date to support such interventions, but the authors conclude that the data is too sparse to be certain and none of the studies extended beyond a duration of 12 months[14]. There is a similar lack of evidence to show whether self management education alters outcomes in COPD[15].

We have undertaken a randomised controlled trial to determine the effects of a nurse led intermediate care programme in the management of patients who have been hospitalised with an acute exacerbation of COPD. The care package incorporated initial pulmonary rehabilitation followed by an emphasis on self management education and nurse follow up for two years.

Methods

A list of patients who had been admitted to Charing Cross and Hammersmith Hospitals between 1st January 2000 and 31st August 2004 with the main reason for admission being coded on discharge as having been due to an acute exacerbation of COPD was obtained from the hospital database. The clinical notes of these patients were reviewed by the investigators using a proforma. If thought to represent a suitable patient, the casenotes were discussed and where necessary further information obtained. Exclusion criteria included significant co-morbidity such as severe heart disease or cancer, or any condition that would preclude participation in the physical therapy component of a pulmonary rehabilitation programme. None of the patients had previously undertaken a pulmonary rehabilitation programme. Those patients thought to be suitable were sent a letter inviting them to participate in the study and those who responded were invited for initial assessment, and if still suitable and agreeable, randomised to the intervention or usual care groups.

The study intervention involved all patients initially participating in a hospital based pulmonary rehabilitation programme consisting of two attendances per week for four weeks. During this the patients received general education about their disease and its treatment (one hour per session) and underwent an individualised physical training programme (one hour per session). Following completion of the pulmonary rehabilitation programme, the patients received a baseline home visit by a specialist respiratory nurse and during this first visit, the patients were given a personalised written COPD action plan (a copy of which is shown in Appendix A). This contained both lifestyle advice and advice about their usual medication and gave specific advice about when the patient should start a course of antibiotics and when they should start a course of steroid tablets. The general practitioners of these patients were requested to provide for the patient reserve supplies of these medications.

Subsequently those in the intervention group had monthly telephone calls from the respiratory nurses and a home visit every three months. During each interview and visit, the nurses undertook a structured approach to history taking and during home visits measured pulse and respiratory rate, oxygen saturation and end-tidal carbon monoxide. Spirometry was performed at baseline and after 12 and 24 months. During both telephone and home visits they reinforced advice regarding treatments, smoking cessation if relevant, the need to continue their exercise therapy and discussed and reinforced the self management education which had been given and offered encouragement for successful self treatment. The patients were also given written advice about the treatment of chronic obstructive pulmonary disease which they were asked to show to their doctor if they underwent any unscheduled healthcare.

Patients in the control group received usual care from their primary care physician, or secondary care and/or the respiratory nursing service as appropriate. No attempt was made to influence this care. Patients in both the control and intervention group had their use of healthcare monitored by monthly telephone self report verified by confirmation of the general practice and hospital records. General practice records alone were not used because they do not always contain a record of hospital admissions and it is not always possible to tell which consultation within primary care was scheduled and which was unscheduled. Corroboration of patient self reported GP consultations was undertaken by the GPs themselves from their records. Corroboration of patient self reported hospital admissions was undertaken by the respiratory research nurses against local hospital records. A copy of the death certificate was requested for all patients who died.

Quality of life was assessed using the Chronic Respiratory Questionnaire (CRQ) [16,17] at baseline and three further times during the subsequent two years.

The study was approved by the Riverside Research Ethics Committee.

Statistical Analysis

The primary endpoint for our trial was to be hospital readmission rate with secondary outcomes being unscheduled consultations with general practitioner and quality of life. Retrospective review of previous local hospital admission rates suggested that over a two year period 579 patients might accrue a total of 1180 admissions (mean 2.04 admissions per patient). We calculated that we would need a study of 88 patients to have an 80% chance of detecting a difference (95% readmission in usual care versus 75% in the intervention group), using a two sided alpha = 0.05. All statistical analysis was carried out using the software program SPSS (Version 12.0). For all analyses Chi-square tests, Mann Whitney, independent or paired t-tests were used.

Results

There were 2,305 admissions to Hammersmith Hospitals NHS Trust between the 1st January 2000 and 31st August 2004. Many of those were multiple admissions and the total number of patients admitted with an acute exacerbation of COPD in that period was 1,247. Five hundred and seven of these patients had died at the time we began recruiting to this study and of the 740 who were alive, 166 lived outside our area and were not therefore able to attend the pulmonary rehabilitation programme if randomised to intervention. This left 574 patients who were assessed. Two hundred and seventy-seven of these were thought to be unsuitable for the reasons shown in Table 1.

Table 1

Reasons for patients being regarded as unsuitable to be included in the trial n=277
Alternative diagnosis, no evidence of COPD - 122 (44.1%) These were mainly because perusal of the notes gave clear evidence of another major pulmonary condition, such as asthma, diffuse parenchymal lung disease or bronchiectasis.
Psychosocial problems and significant cognitive impairment - 68 (28.5%) (e.g. dementia, blindness, alcohol abuse, psychiatric illness, homelessness or in prison).
Severe limiting co-morbidity involving other major organ systems - 50 (18.1%) (mainly cardiac but also cancer and alcohol-related liver disease etc.)
Factors limiting mobility and locomotion - 37 (13.3%) (housebound, wheelchair-bound, previous CVA, severe arthritis).

Of the 297 patients who were suitable for inclusion in the trial, 120 (40.4%) responded that they did not wish to take part in the trial, 55 (18.5%) did not reply and 122 (41%) patients were suitable and recruited and were randomised by the use of random numbers to intervention or control groups. This data is summarised in the Consort diagram in Figure 1. Demographic data and details of severity, treatment, unscheduled use of healthcare and quality of life for all patients at baseline and at the end of Year 2 is shown in Table 2.

Table 2 Data for patients in the intervention and control groups at entry to the trial, and for those alive, at the end of Year 2

Variables	Treatment (n=61)				Control (n= 61)				Percentage difference at 2 years between intervention and control (treatment – control)	P value (Control versus treatment end of year 2, all chi [2] statistical analysis except where stated)
	Baseline (n=61)		Year 2 (n= 55)		Baseline (n=61)		Year 2 (n= 49)			
	%	n	%	n	%	n	%	n		
Male (%)	49.2	(30/61)			49.2	(30/61)			0	Not Sig
Mean Age yrs **(std dev)**	69.9	(9.6)			69.68	(10.4)			0.22	0.474[t]
Median BMI (range)	25.0	(14 – 38)			24	(16–40)			1	
Smoking status										
Current smoker	29.5	(18/61)	29.1	(16/55)	19.7	(12/61)	22.4	(11/49)	6.7	0.426
Median MRC dyspnoea score (range)	3	(1-5)	4	(1-5)	3	(1–5)	4	(1–5)		
Home O2										
Yes (%)	19.7	(12/61)	25.4	(14/55)	21.3	(13/61)	26.5	(13/49)	-1.1	0.901
Cylinder	33.3	(4/12)	28.6	(4/14)	46.1	(6/13)	46.1	(6/13)	-17.5	
Concentrator	66.6	(8/12)	71.4	(10/14)	53.8	(7/13)	53.8	(7/13)	17.6	
Mean FEV1 (std dev)	1.04	(0.44)	0.95	(0.42)	1.17	(0.49)	1.06	(0.44)	-0.16	0.186*
Mean FVC (std dev)	2.12	(0.74)	1.98	(0.65)	2.2	(0.77)	2.1	(0.79)	-0.12	0.387*
Mean FEV1 % pred (std dev)	42.9	(15.5)	41.1	(17.1)	48.9	(18.69)	45.7	(17.48)	-4.6	0.201*
Mean Change in FEV1 mls (std dev)			-94.9	(162.1)			-162.7	(249.9)		0.111*
Prior Hospital Admissions (before randomisation)										
Total No. of Admissions	73				64				**9**	0.186*
%patients having an admission in the 2 years prior to recruitment	80.3	(49/61)			68.8	(42/61)			11.5	0.145
Median No of Admissions/patient/2 yrs (Range)	1.0	(0-6)			1.0	(0-6)				
Long Acting Beta -2 Agonist prescription										
Yes (%)	67.2	(41/61)	92.7	(51/55)	63.9	(39/61)	71.4	(35/49)	21.3	**0.004**
LABA inhaler alone	29.3	(12/41)	0.00	(0/51)	33.3	(13/39)	8.6	(3/35)	8.6	
LABA & ICS combination inhaler	70.7	(29/41)	100	(51/51)	66.7	(26/39)	91.4	(32/35)	8.6	
Inhaled Corticosteroid prescription										
Yes (%)	88.5	(54/61)	94.5	(52/55)	80.3	49/61	100.0	(49/49)	**-5.5**	**0.097**
Inhaled corticosteroids alone	46.3	(25/54)	1.9	(1/52)	46.9	23/49	24.5	(12/49)	**-22.6**	
ICS & LABA combination inhaler	53.7	(29/54)	98.0	(51/52)	53.1	26/49	65.3	(32/49)	**32.7**	
Anti-cholinergic prescription										
Yes (%)	73.7	(45/61)	89.1	(49/55)	63.9	(39/61)	65.3	(32/49)	23.8	
Short-acting	53.3	(24/45)	6.1	(3/49)	58.9	(23/39)	31.2	(10/32)	-25.1	**0.004**
Long-acting	46.6	(21/45)	93.9	(46/49)	41.0	(16/39)	68.7	(22/32)	25.2	

Deaths in 2 year study period Total (%) COPD Non-COPD				9.8 16.7 83.3	(6/61) (1/6) (5/6)			19.7 66.6 33.3	(12/61) (8/12) (4/12)	-13.1 -41.6 41.7	**0.126** **0.015**
Hospital Admissions Total number of admissions in study period % patients having an admission in study period Median number of admissions per patient (range)				70 52.7 0	(29/55) (0-13)			52 48.9 0	(24/49) (0-5)	3.8	**0.421*** **0.361**
Days Alive and Out of Hospital / 2yrs Total Median (Range)				41400/44530 (93.0%) 724 (244-730)				39 578 / 44 530 (88.9%) 730 (19–730)			**0.705***
Self Management of COPD Reserve oral antibiotics prescribed Reserve oral steroids prescribed	4.9 4.9	(3/61) (3/61)		92.7 92.7	(51/55) (51/55)	11.5 6.5	(7/61) (4/61)	24.5 16.3	(12/49) (8/49)	68.2 76.4	**<0.001** **<0.001**
No. of patients who reported an exacerbation Treated with oral Antibiotics only Treated with oral Steroids only Treated with both oral antibiotics & steroids				86.9 36.2 19.8 44.0	(53/61) (161/445) (88/445) (196/445)			86.9 63.8 7.7 28.3	(53/61) (233/364) (28/364) (103/364)	0 -27.6 12.1 15.7	 **<0.001** **<0.001** **<0.001**
Who initiated treatment for Exacerbation? Self Research Nurse GP A&E doctor Outpatients Clinic doctor In-patient hospital doctor				 43.1 6.3 31.5 0.9 2.9 15.3	 (192/445) (28/445) (140/445) (4/445) (13/445) (68/445)			 10.4 0 68.7 2.5 5.2 13.5	 (38/ 364) (0/364) (250/364) (9/364) (19/364) (49/364)	 32.7 6.3 -37.2 -1.6 -2.3 1.8	 **<0.001** **<0.001** **<0.001** **0.077** **0.095** **0.464**
Total number of unscheduled GP visits/contact **Telephonic Consultation** **Practice Attendance** **Home Visit**				171 9.9 67.8 22.3	 (17/171) (116/171) (38/171)			280 3.5 88.2 8.2	 (10/280) (247/280) (23/280)	-109 6.4 -20.4 14.1	**<0.05*** **0.006** **<0.001** **<0.001**
Disease Specific QoL Questionnaire: CRQ Dyspnoea Fatigue <u>Physical Domain</u> Emotional Function Mastery <u>Emotional Domain</u> Total Score	47 (fully completed) 3.55 3.62 4.58 4.71 16.46	 (1.12) (1.26) (1.22) (1.26) (4.05)		47 (fully completed) 2.83 3.68 4.74 5.14 16.41	 (1.21)ǂ (1.35) (1.43) (1.33)ǂ (3.94)	40 (fully completed) 3.49 3.59 4.39 4.71 16.18	 (1.26) (1.51) (1.37) (1.46) (4.56)	40 (fully completed) 2.65 3.24 4.03 4.44 14.37	 (1.23)ǂ (1.11) (1.30) (1.45) (3.97)ǂ		ǂSignificant differences between baseline and 2 years p<0.05 (paired t-test)

ǂ Student t-test, *Mann Whitney

From these tables it will be seen that at baseline both control and intervention groups were well matched for age, gender, severity of disease, previous hospitalisation rate, breathlessness scores, weight, smoking habits and use of home oxygen. Both groups had similar numbers of initial and persisting smokers and the breathlessness scores worsened during the course of the study in both groups. Lung function appeared to decline to a greater degree in the control group than in the intervention group, but this difference was not statistically significant. At baseline similar proportions of patients were on long acting beta agonist bronchodilators and anti-cholinergic agents and the majority of patients in both the intervention group and control group were taking inhaled steroids at entry to the trial. At the end of the trial patients in the intervention group were statistically more likely to be on a long acting inhaled beta agonist or a short or long acting anti-cholinergic agent in the intervention group, compared with the control group.

At the beginning of the trial, 5% of the intervention group and 11.5% of the control group had a reserve supply of antibiotics; the same figures for steroid tablets were 5% and 7% respectively. After the intervention, over 95% had both type of reserve treatments available, compared with the control group, where 17% had antibiotics available at the end of one year and 25% of them had it at the end of two years. Sixteen percent of the control group had a reserve supply of steroid tablets at the end of two years. There were no differences in exacerbation rates between the two groups (an exacerbation being defined as unscheduled need for healthcare, or need for steroid tablets, or antibiotics for a worsening of their COPD), nor was there a difference in the total number of exacerbations per group over the two year period. There was also no difference in the total number of hospital admissions, nor in the number of patients having an admission to hospital during the two year period. Because this could have been influenced by differences in the death rates, this was also analysed as days alive and out of hospital in the two groups, but there was no statistically significant difference. Self management of exacerbations was however significantly different and patients in the intervention group were more likely to have exacerbations treated with oral steroids alone or oral steroids and antibiotics than the control group, who were more likely to be treated with antibiotics alone. The initiator of treatment for exacerbations was statistically more likely to be the patient themselves in the intervention group and the GP in the control group.

Twelve patients in the control group died during the two year period, eight as a result of COPD, compared with six patients dying in the intervention group of which one died from COPD. The number dying from COPD in the control group is significantly higher both as a proportion of the total deaths and as a proportion of all patients in the trial compared to those in the intervention group. The non-COPD deaths included four deaths due to pneumonia (three in the control group and one in the intervention group), one due to metastatic lung cancer, one due to cerebral haemorrhage, two due to coronary artery disease, and one due to septic shock. All but two patients died in hospital. Stated cause of death was confirmed by acquisition of copies of the death certificates in all but one case. One patient died on a cruise ship off the coast of West Africa and death was reported by relatives to have been due to a worsening of their lung condition over a several day period following exposure to adverse environmental conditions. When the numbers in the intervention and the control groups are adjusted to reflect the numbers still alive, it can be seen that at two years, 55 of the 61 patients in the intervention group were still alive, and these patients had had a total of 171 unscheduled contacts with their GP. In the control group, 49 of the 61 patients were still alive, and they had had 280 contacts with their GP. The number needed to treat, therefore, equals 0.558. That is to say, for every one COPD patient receiving self management education, there was 1.79 less unscheduled contacts with the GP. The health economic costs of the pulmonary rehabilitation programme are shown in Table 4, and suggest that the costs of the intervention are only very slightly greater per patient than the savings on unscheduled primary healthcare (£153 compared to £142).

Within the CRQ there was a statistical and clinical significant worsening in the mean dyspnoea score in both the intervention and control groups from baseline to end of Year 2 and the mean mastery score improved in the intervention group but this change was not clinically significant.

To ensure that any differences did not reflect differences in routine healthcare received, data in Table 3 shows that equal numbers of patients received primary care alone in both the intervention and control groups but some in the control group also received care from the local respiratory nursing service. They may have been offered care which contained some similarities to that offered by the research respiratory nurses.

Table 3

Care received by those in the Intervention and Control Groups
RNS = Respiratory Nursing Service

	Intervention Group	***Control Group***
Primary Care	**31/61**	**36/61**
1' Care Doctors Only	31	32
1' Care Doctors & RNS	0	4
Secondary Care	**30/61**	**25/61**
1' and 2' Care Doctors Only	30	16
1' and 2' Care Doctors & RNS	0	9

Table 4

	Treatment n=61	Control n=61
GP unscheduled contacts	**171**	**280**
Cost of GP consultations (Netten 2006)	£5301	£8680
Cost of self management education (1hr group sessions n=8 and 1 home visit (approx 70 mins)	81 nurse hours= £2511	No self management education / home visits given
Travel costs for home visits (Netten 2006)	£37.21	£0
Routine follow-up calls for patients (by nurses)	547 calls, 48 hours (total length) COST: £28.82	No follow-up calls COST= £0
Nurse costs for telephone calls	£1488	-
Total	Nurse costs (£2511 + £1488) + telephone calls (£28.82) + unscheduled healthcare costs (£5301) £9,328.82	 £8,680.00
Approx cost of intervention (per patient)	£66	
Mean cost of unscheduled healthcare for all in the intervention group	(171x£31)/61 =£86.90	(280x£31)/61 =£142.30
Total cost (per patient)	**£153**	**£142.30**

Discussion

The proportion of patients who had been admitted to hospital with an exacerbation of COPD who were eligible for and consented to take part in this trial was lower than anticipated. This was because of both polymorbidity and non consent and the latter was due more to the intervention including pulmonary rehabilitation than it was due to it being a research trial [18]. As a result recruitment was lower than expected but neither the total number of readmissions nor the number of patients having an admission during the 2-year follow up period differed between the intervention and control groups. This result is thus consistent with a previous review [14] but extends our knowledge to show that the same applies if the intervention continues for 2 years. The secondary outcome of rate of unscheduled GP consultations was significantly less in the intervention group.

It thus looks as though the self management education part of the intervention, given in group format during the pulmonary rehabilitation programme and individually by the nurse subsequently, led to intervention patients being more likely to have received supplies of antibiotics and steroids and more likely to start these themselves to treat an exacerbation than the control group.

Unexpectedly we showed a significant reduction in deaths due to COPD in the intervention group. We acknowledge the difficulties around the accuracy of death certificates. However this reduction in death rate could be explained by a reduction in the severity of exacerbations as a result of self treatment with antibiotics and steroid tablets and it is probable that the ready availability of reserve medications leads to their prompter use, and earlier treatment of exacerbations has been shown to be associated with improved outcomes[19]. A less likely explanation for a reduced death rate would be differences in routine inhaler therapy in the intervention group compared with the control group. Whilst controversial, there have been suggestions that the use of inhaled steroids[20-24] might be associated with a reduction in mortality. However, essentially all patients in both the intervention and control arms in our trial were on inhaled steroids, but there were differences in the use of anti-cholinergic agents and long acting beta agonists in our intervention arm and this may have contributed to increased survival[8, 9, 24]. However most of those who died were also on these medications. The likelihood that the reduction in mortality instead reflected prompt self treatment would be consistent with review of eleven randomised controlled trials comparing antibiotics with placebo for acute worsening of COPD, which showed that regardless of antibiotic used, antibiotic therapy significantly reduced mortality[25]. Such a reduction in mortality as a result of steroid tablet use has not been demonstrated[26]. Why we demonstrated a significant reduction in unscheduled need for primary healthcare and a reduction in mortality, but no reduction in hospital admission rates is less clear. Self administration of antibiotics (and steroid tablets) may have reduced the severity of exacerbations sufficiently to reduce mortality without influencing the need or otherwise for admission to hospital which is in any way likely to be influenced by social factors such as isolation, depression and available support in the home.

There are clearly still many unknowns with regards to what constitutes optimal care for those with COPD. We included pulmonary rehabilitation within our intermediate care package because it contains elements of exercise therapy, group support and group education and has been shown to beneficially affect outcomes such as quality of life, exercise ability, and breathlessness scores. It has not however been shown conclusively to affect hospitalisation rate, mortality or primary care consultation rates[27]. The improvements in the latter two outcomes in our study are therefore unlikely to reflect incorporation of pulmonary rehabilitation within the intervention package. Regular follow up by nurses in this study has again failed to demonstrate a benefit in terms of reduction in hospital admission rates and this result is almost identical to a shorter study from this hospital 20 years ago[28] However we have demonstrated that an intervention which includes group advice regarding self-management education, followed by the issuing to each patient of a personalised action plan leads to an alteration in self-management behaviour and reduced need for unscheduled primary care. Previously the case for self management education in COPD was not proven[15]. Studies reported subsequent to that review, and subsequent to us starting this study, have shown conflicting results. One group[29] showed no differences in Quality of Life Scores or walking distance and no reduction in

exacerbation rate following self-management education, whilst another demonstrated significant reduction in hospital admissions, emergency department visits and physicians visits[30]. In the latter study however, and indeed in our own, it is difficult to be certain which of several parts of a complex package achieved which benefit. The relationship between possession of antibiotics and oral steroids, their self-administration and the reduced need for unscheduled primary care in our study does appear to be causally related. One explanation for differences in previous studies may lie in the way in which the personalised self-management advice was given. In asthma, where there is overwhelming evidence in favour of self-management education[31,32], written action plans are a key component. In the systematic review of self-management in COPD[15] only two studies involved patients receiving a written action plan and study of the action plans used in those two studies shows that one was a typical asthma action plan[33] and did not for example include any advice to the patient about antibiotics. The other study[34] did include an action plan which included advice as to when to start antibiotics and this did show an alteration in patient usage of antibiotics and steroids but the study was not powered to show a change in outcomes.
A subsequent Cochrane review[35] has suggested that use of action plans can alter self management behaviour in those with COPD but did not lead to any hard outcomes. Our study does show that self management education can be associated with change in patient behaviour and a reduction in the need for urgent primary care, and this plus follow up by nurses and possibly optimisation of inhaled therapy can be associated with reduced mortality due to COPD.

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Appendix A

Oxygen
Use your oxygen as advised – either long term or supplementary during exertion – know when to increase this and be aware of the importance of early morning confusion or headaches which might suggest that you are retaining your exhaust gas (carbon dioxide).

If you have been given a COPD Alert Card (because you have previously had Type II Respiratory failure) make sure that you show this to any doctor you see and to Ambulance Personnel.

Further Information
If you want further information about your condition do ask your doctor or nurse, or you can contact -
British Lung Foundation
78-79 Gosvell Road
London EC1V 7ER
Tel: 020 7688 5555
www.lunguk.org

Self-management Plan

Department of Respiratory Medicine
Charing Cross Hospital

C.O.P.D. Self management Card

Name: ……

Hospital No.:

Chest Consultant: ……

Respiratory Health Worker: ……

General Practitioner……

Lifestyle changes

1. Stop smoking (and avoid smoky environments).
2. Use nicotine replacement therapies as appropriate as advised.
3. Use effective breathing methods.
4. Use effective coughing methods.
5. Undertake your exercise programme as advised during your pulmonary rehabilitation course. Remember: Getting "puffed" isn't bad for you.
6. Eat a balanced diet: include plenty of fresh fruit and vegetables and drink plenty of fluids to help keep mucus thin. Avoid gas-forming foods such as broccoli, cabbage, onions, beans and sauerkraut. It is often best to eat little and often.
   If eating makes you breathless, use supplementary oxygen whilst chewing or liquidise solids. Try high energy foods if you are underweight.
7. Adjust daily activities of living. Sit down to do personal tasks such as washing or shaving or doing household tasks such as washing up or preparing meals.
8. Use a stool in the shower and use a hairdryer to dry feet or back.
9. Have flu vaccination every year and pneumovax every 5 to 10 years.

Treatment changes

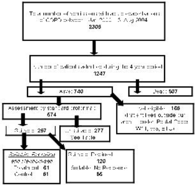
1. Take your …… Inhaler (……) in the dose of …… puffs, …… times every day.
2. Take your …… Inhaler (……) in the dose of …… puffs, ……times every day.
3. Take your ……Inhaler(……..) in the dose of …… puffs, …… a day.
4. Take your…….. Inhaler (……) in the dose of …… puffs …… times a day.
5. If you feel any more breathless, you may take your …**BLUE**…… inhaler 2 puffs, every 3 to 4 hours to relieve symptoms.

6. If despite this you are becoming increasingly breathless and you are having to use your Blue inhaler very often you should start a course of steroid tablets by taking 6 tablets (5mg strength) immediately and repeat this dose every morning for 7 days before stopping the tablets (or (or reducing them according to individualised advice)
7. If you notice more than two of the following situations then you should start your reserve supply of antibiotics and complete the whole course –
   - Increasingly short of breath
   - increasing quantities of phlegm/sputum
   - phlegm or sputum has turned persistently green
8. If your ankles are more swollen than normal you should see your doctor.

If despite all of these measures you still feel your symptoms are worse then you should ring your doctor on

……

If you contact your Doctor because of worsening symptoms could you also inform the Respiratory Nurses (Renay Taylor and Simonne Dawson on: 020 8846 1356)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