



The Ineffective Use of Inhalers in Chronic Obstructive Pulmonary Disease

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ABSTRACT

Chronic Obstructive Pulmonary Disease (COPD) is the most common adult respiratory disease in Nepal. It is a disabling condition and requires the use of inhaled and/or oral medications for stabilisation. *Inhaled* medications are preferable to oral medications because of their superior effect and lack of side effects. Spacer devices are also available; these reduce the need for inhaler co-ordination.

The aims of this study were to determine a) the percentage of patients with COPD attending the medical clinic who use inhaled medication. b) the skill level of patients regarding inhaler technique. c) the benefit of inhaler technique counselling for improving patient skill level.

In this prospective randomised study we interviewed 95 patients with COPD over a 4-month period. Thirty-three patients were regularly using inhalers, but 100% had an unsatisfactory inhaler technique. Only one patient used a spacer device.

Thirty percent of patients claimed that they had never been shown how to use the inhaler.

Subsequent demonstration of inhaler technique by a doctor improved skill level in 85% of patients but resulted in a satisfactory inhaler technique score for only one patient.

Although this is a small study, it is probably representative of the patient population with COPD who attend our clinics. Patients, especially the elderly, have considerable difficulty activating and using MDI – despite demonstration. Doctors infrequently prescribe spacers and the cost of these excludes many patients from using them.

Keywords: chronic obstructive pulmonary disease; metered dose inhalers; inhaler technique; spacers.

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INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is characterised by airflow obstruction secondary to chronic bronchitis, emphysema or both. In Nepal it is the most common respiratory disease in adults presenting to both general practitioners and hospital doctors. In Patan Hospital approximately 25% of all medical inpatients have COPD.

COPD is largely preventable – the main causes being exposure to cigarette smoke¹ and air pollution.²

At present only two interventions – smoking cessation and long term treatment with oxygen, have been found to alter the long-term course of COPD.³

Inhaled anticholinergics, β_2 agonists and oral steroids can give short-term benefits in some patients.^{4,5,6}

Inhaled β_2 agonists and anticholinergics are superior to oral forms both in their effects and lack of side-effects.⁷

Anecdotal evidence at Patan Hospital suggested that the outpatient management of COPD involved the use of oral medications rather than metered dose inhalers (MDI). In addition it seemed that those using MDI had poor technique.

AIMS

1. To investigate the percentage of COPD patients using MDI's in a random sample of patients.
2. To determine their skill level for MDI technique.

3. To examine the benefit of MDI technique counselling for improving technique.

METHODS

From May-July 2000 one senior doctor examined a random selection of patients with COPD who attended the Medical Review Clinic. A tick-box questionnaire was completed for each patient detailing type of COPD medication used. Patients regularly prescribed a MDI were asked to demonstrate their inhaler technique. Inhaler technique was scored according to the following scale. Each step properly completed received one point:

- a) shake inhaler, b) hold inhaler upright, c) fully expire, d) close lips around mouthpiece, e) fire device at the start of inspiration, f) inspire to full lung capacity, g) hold breath for 10 seconds.

Properly inhaler technique scored a max of 7 points and unsatisfactory inhaler technique 5 points or less. Proper MDI technique was then demonstrated by the doctor and performed by the patient. All patients were reviewed one month later and inhaler technique rescored.

RESULTS

A total of 95 patients with COPD were interviewed and of these 33 patients were regularly using MDI's in addition to other oral theophylline and steroid medications. Of the 33 patients – 13 male, 20 female. The age range was 40-63 years. The average time patients had been using MDI's was 3.1 years.

Only one patient was using only MDI's.

The average initial inhaler technique score for the 33 patients was 1.9 and the most common steps incorrectly performed were:

1. not breathing out before closing lips around device,
2. not inspiring to total lung capacity and,
3. not holding breath for 10 seconds after inspiration. No patient attained a MDI technique score of greater than 5.

Less than 22% of patients remembered to shake inhaler before using it. Only one patient was using a spacer device with the MDI. Of the 33 patients using MDI only 70% said that they had previously been given

personal demonstration of how to use an inhaler. Previous (ie. Prior to the study) MDI instruction did not equate with a high inhaler technique score. Thirty patients returned for follow-up and MDI score had risen on average to 3.3. Only one patient attained a MDI technique score of greater than 5. The most common steps incorrectly performed on review were:

1. not breathing out before closing lips around device
2. not inspiring to total lung capacity

On review 22 patients remembered to shake inhaler before activating it.

Initial MDI evaluation score	Number of patients attaining each score	Post demonstration MDI score	Number of patients attaining each score
0	1	0	-
1	14	1	3
2	12	2	4
3	2	3	10
4	3	4	8
5	1	5	4
6	-	6	1
7	-	7	0
	Average score 1.9		Average score 3.3

DISCUSSION

This study has confirmed that more patients with COPD are regularly prescribed oral medications rather than MDI's. In addition most patients regularly using MDI's are doing so ineffectively.

Despite inhaler technique demonstration by a doctor only 1 patient acquired a satisfactory inhaler score ie. >5 on review. It is possible that after repeated demonstrations of inhaler technique at subsequent visits the inhaler score would become satisfactory. However it would seem appropriate that the majority of patients with COPD are maintained on oral medications rather than MDI's.

A spacer device was infrequently used along with the MDI's. Use of a spacer device reduces the need for co-ordination and can reduce systemic absorption of drug.⁸ The present cost of spacers – 450 nrps often makes this an unrealistic alternative for most of the very poor patients who are in most need.

We advise that patients using inhalers should have inhaler technique checked at each clinic review and where co-ordination is a problem a spacer should be prescribed or donated.

Patients who remain unable to use MDI even with a spacer device should be maintained on oral β_2 agonists or anticholinergic medication.

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