



## Inhaled steroid use in adult asthmatics — experience at a primary health care centre

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**To the Editor:** Patient adherence to the correct dosage of inhaled corticosteroids may be as low as 38%, leading to further medical and social costs.<sup>1,3</sup> When correctly used, more than half of the costs of adding inhaled corticosteroids to inhaled  $\beta_2$ -agonists are compensated for by a reduction in the costs of other health care services.<sup>4</sup> In South Africa the problem of non-adherence may be compounded by the poor quality of care offered by doctors and public sector clinics.<sup>5</sup> Another problem is that up to 82% of patients are not able to demonstrate adequate inhaler technique.<sup>6</sup> Although nearly two-thirds of all medical visits for asthma are to primary care physicians,<sup>7</sup> little is known about primary care patients' understanding of and adherence to prescribed treatment regimens.<sup>2</sup>

The objectives of the study were to determine whether patients with chronic persistent asthma adhere to the prescribed dose of inhaled steroid, to assess the ability of patients to use the inhaler correctly, and to assess patient knowledge regarding the use of inhaled steroid as a preventive intervention.

The study was conducted at Mitchell's Plain Community Health Centre (MPCHC), which offers primary care services to a low socio-economic population in the Cape Town metropole. A cross-sectional survey was done of 268 patients who had been attending MPCHC for at least 6 months, who were aged at least 18 years, who had a diagnosis of asthma, and were on inhaled corticosteroids. The maximum number of asthmatic patients treated regularly at the MPCHC was estimated at 400 - 500 per month. Non-booked non-emergency and emergency patients were selected once a week by one of the authors (TAN), taking the first and second patient on that day who met the inclusion criteria. In addition, the first 7 booked patients seen by the author in the asthma clinic, who met the inclusion criteria, were also selected. As research had to be incorporated into the routine of the clinic, a convenient sample of the first 7 patients was taken, which could be a potential source of bias. In the asthma clinic, peak flow rate was done on all patients. Patients were booked into the clinic only if they were already diagnosed with asthma/chronic obstructive pulmonary disease

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(COPD) by other clinicians. Inhaled steroids were given to the patients with chronic persistent asthma. It was sometimes difficult to differentiate clearly between asthma and COPD visits. Severity of asthma and smoking status were not routinely recorded.

After obtaining written consent, interviews were conducted using a structured questionnaire.<sup>6</sup> Assessment and scoring of the patient's inhaler technique was performed according to a series of predetermined steps (Fig. 1). Adherence to the prescribed dose was calculated and defined as good in those taking 80% or more of the prescribed dose, moderate in those taking between 60% and 79%, and poor in those taking less than 60%.<sup>8</sup> Data were analysed using Statistica, and 95% confidence intervals (CIs) were calculated. *p*-values were obtained using analysis of variance (ANOVA) and CIs were calculated using categorical analysis. Differences were considered significant at a *p*-value of less than 0.05.

Baseline characteristics of the 268 patients are shown in Table I. Adherence with dose of inhaled steroid was good in 38%, moderate in 17% and poor in 44% of study patients. Thirty-six per cent of patients had good inhaler technique, another 36% moderate technique, and 27% poor inhaler technique. Only 19% of patients had both good adherence with

**Table I. Baseline characteristics of patients (N = 268)**

Characteristics	% of patients
Age (yrs)	25
18 - 40	55
41 - 60	19
> 60	
Sex	
Female	71
Duration of asthma (yrs)	
0 - 10	59
> 10	41
Mode of admission	
Booked patients	72
Non-booked patients	16
Emergency patients	12
Number of emergency visits in preceding year	
0 - 5	84
> 5	16
Use of inhaler with spacer	
Yes	61
Patient knows that steroid inhaler is a preventive intervention	
Yes	34

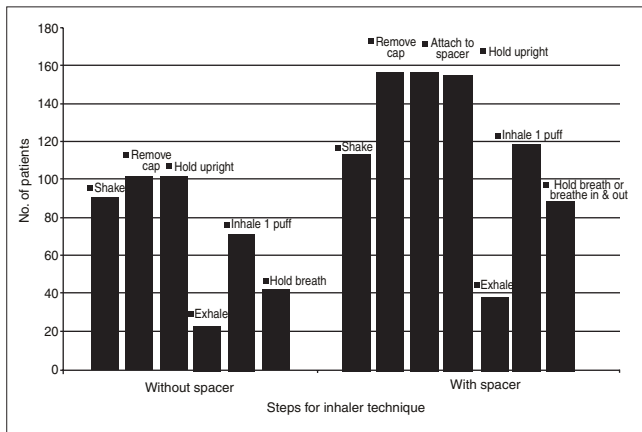


Fig. 1. Correct steps for inhaler technique performance by patients without spacer (N = 106) and with spacer (N = 162).

dose of inhaled steroid and good inhaler technique. Another 52% of the total number of patients had a combination of, at least, moderate technique and adherence with dose. Fifty-six per cent of patients were poor in at least in one area.

Patients who understood that the inhaled steroid was a preventive intervention adhered significantly better than those who did not ( $p = 0.0000$ ), with 15% of patients in the former group having poor adherence compared with 85% of those in the latter group.

Inhaler technique was significantly better in the 18 - 40-year age group than in those aged over 60 years ( $p = 0.015$ ), with 71% of patients in the former group having good inhaler technique compared with 29% of those in the latter group.

Patients who attended the emergency room more than 5 times in the year had better inhaler technique than those who did not attend at all ( $p = 0.034$ ), with 47% of patients in the former group having good inhaler technique compared with 28% of those in the latter group.

The rate for good adherence of 38% in this public sector health centre is substantially lower than the rate of 54% reported for a health maintenance organisation,<sup>9</sup> but similar to rates reported in other primary care centres.<sup>10</sup> The rate of 36% for good inhaler technique is similar to ratings reported elsewhere.<sup>11</sup>

This study demonstrates that use of inhaled corticosteroids is still suboptimal in the public health sector, which impacts negatively on both quality of life for the patient and emergency costs for the health service. However, effective health education on the concepts of prevention and relief is associated with better adherence. Patients who attended the emergency room more than 5 times in the year had better inhaler technique than those who did not attend. Although the study only included emergency visits during normal working hours and such

patients may have had different characteristics from those attending after hours, this finding suggests that the mini-clinic is not fulfilling its potential<sup>12</sup> of providing better quality care for patients. It is possible that patients who attended as emergencies received more individual attention and education than the large group of asthmatic patients processed in the weekly mini-clinic. Further research is necessary to determine if the mini-clinic is making a positive difference to the quality of care.

Limitations of this study reflect weaknesses in the organisation and quality of care offered by the MPCHC. The lack of a disease register made identification and sampling of asthma patients difficult. Assessments in the medical record made it difficult to determine disease severity and to correlate this with the appropriate dose of inhaled steroids, and therefore the study could only assess adherence to the prescribed dose. No standard treatment guidelines were followed in the clinic and the differentiation between asthma and COPD was not always clear. The large number of older patients in the study could imply that COPD was misdiagnosed as asthma.

Certain interventions in the asthma clinic could help to improve adherence and inhaler technique. Standard protocols for asthma management need to be followed in the clinic. Guidelines should be available to diagnose asthma and COPD. Patient diagnosis should be evaluated and inhaled steroids only given to asthmatics or COPD patients with significant reversibility of airway obstruction. The medical officer should complete an asthma record sheet for each patient, documenting important information such as smoking status, occupation, severity of asthma, etc. Adherence to the inhaled steroid regimen and correct inhaler technique should be emphasised on each visit.

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