

Short reports

Irregularities in the use of regular aerosol inhalers

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Inhalers are frequently prescribed for patients with asthma and other forms of airflow obstruction. These inhalers fall into two main categories: (1) bronchodilators that are usually taken on demand for quick symptomatic relief, and (2) prophylactic agents—corticosteroids or disodium cromoglycate (DSG)—that should be taken regularly, uninfluenced by acute symptoms, for maximum effect. It is our impression that patients are frequently confused about the different actions of these inhalers and consequently use them inappropriately. Although the actual mechanics of aerosol inhaler usage have been well studied,^{1,2} there is little information on how often and when patients use their inhalers at home and their understanding of correct usage. Such information is vital when assessing poor response to treatment. A questionnaire survey was, therefore, carried out on patients using prophylactic corticosteroid or DSG inhalers or both.

Methods

A simple questionnaire (available from authors) was devised to obtain information on the instructions patients were given on starting the inhalers, when they actually took their inhalers at home, and whether they varied the dosage or forgot inhaler therapy on some occasions.

There was a sheet for each type of inhaler (that is, β -adrenergic bronchodilator, corticosteroid inhaler, and DSG inhaler) and a separate page, completed by a doctor, for personal details, diagnosis, and treatment as recorded in the clinic outpatient notes.

Patients who were using at least one prophylactic inhaler and were awaiting consultation at the Chest Outpatient Clinic, Churchill Hospital, Oxford, were asked to complete the questionnaire by the clinic nurse. She explained the importance of answering the questions accurately and truthfully.

Results

One hundred and seven consecutive patients filled in the questionnaire. One hundred of these were

completed satisfactorily and were analysed. There were 56 men and 44 women with a mean age of 50 years \pm 20 SD. Eighty-four were using a steroid inhaler (beclomethasone dipropionate in 76 cases, betamethasone valerate in eight), 33 a DSG inhaler (Intal plain in 30 cases, Intal compound in three), and 80 were also using an adrenergic bronchodilator inhaler (salbutamol in 76 cases). Eighty-five patients (85%) were using two or more inhalers.

Forty-seven patients (47%) admitted to varying the dose of their corticosteroid and/or DSG inhaler, day by day, depending on whether their chest was good or bad. Of these, 13 patients (28%) took no puffs or capsules of their prophylactic inhalers on days when their chest was good and nine (19%) took \geq 10 puffs/capsules on bad days. Thirty-six patients (69%) varied their prophylactic inhaler dosage twofold or more, day by day, depending on their symptoms.

There was no significant difference in the age, sex prevalence, or diagnosis between those who took their prophylactic inhalers regularly and those who varied the dose. Twenty-one per cent of all patients taking a steroid inhaler forgot to use it some days, as did 33% of patients using DSG.

The table shows that the majority of patients in each group knew that they should use their inhalers regularly. However, for the variable user group, significantly more of the instructions remembered were incorrect, forgotten, or never given (28.6% of instructions) compared with the regular user group (4.8% of instructions) ($p < 0.01$ by the chi-squared test).

Sixty-three per cent of patients varying their pro-

Table *Instructions for use remembered by patients who were using prophylactic corticosteroid or DSG inhalers, grouped into those who used them regularly and those who varied the dose day by day.*

Instructions	Regular users	Variable users
Use it regularly whether chest is good or bad	57 (92%)	34 (69.4%)
Use it before doing something that makes your chest worse—eg exercise	2 (3.2%)	1 (2%)
Use it when wheezy	1 (1.6%)	6 (12.3%) + 1 Intal Co
Given no instructions/advice	1 (1.6%)	2 (4%)
Can't remember	1 (1.6%)	6 (12.3%)

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phylactic inhalers daily felt these inhalers improved their chest symptoms within 15 minutes of use, compared with 65% of patients taking them regularly. However, 91 and 75% respectively of those who felt benefit were also using bronchodilators simultaneously.

A comparison between the inhaler dosage recorded in the outpatient notes and the dosage that the patient thought he should be taking showed disagreement in 31% of cases. Of these, the difference in dosage was two or more puffs or capsules in 84% and four or more puffs or capsules in 26% of cases.

Discussion

This study shows that nearly 50% of patients with airflow obstruction on corticosteroid or DSG inhalers take these inhalers on a variable, symptom-related basis. It is generally accepted that such inhalers should be taken regularly for maximum effect, although there is no hard evidence for this.

Since studies have shown that the mechanics of self-administration of an aerosol spray are unsatisfactory in 14%² to 75%³ of patients, and that this is significantly worse in irregular inhaler users,¹ the problem of inefficient and incorrect inhaler usage is indeed large.

There is obviously room for further education of the patients as nearly one-third of our patients who varied their steroid/DSG inhalers symptomatically appeared to be ill-informed about their correct usage. Indeed 12% were taking these inhalers when they became wheezy. Patients are often instructed to take adrenergic bronchodilator inhalers together with their prophylactic inhalers. This may be one

reason why two-thirds of our patients felt that steroid or DSG inhalers helped their chest within 15 minutes as the majority were taking bronchodilators simultaneously. This may lead to confusion unless the different actions of the inhalers have been carefully explained. It may be helpful if corticosteroid and DSG inhaler plastic holders displayed the words "Take regularly—do not vary prescribed dose." Written instruction given out at clinics may also overcome the other problem of patients being unclear of the inhaler dosage prescribed, as we found in 31% of cases.

It therefore seems certain that if doctors expect maximum therapeutic effect from inhaler therapy, they must be prepared to spend time informing their patients not only how, but also when to use their different inhalers, and this information should be reinforced verbally and preferably by written instruction at each consultation.

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