Inhaler Drugs

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About 25 years ago, the choice of an inhaled corticosteroid was easy because only one delivery system existed with one corticosteroid preparation in one strength. During the last 20 years, new corticosteroids for inhaled use have been launched and improvements in safety profile and potency have been obtained. This has given the clinician more options to choose among inhaled drugs. The pressurised metered dose inhaler driven by CFC propellants was the first inhaler containing topical corticosteroid. This medication containing beclomethasone dipropionate (Becotide) became widely used and distributed all over the world and is still the inhaled corticosteroid used most frequently. In many countries, CFC has been substituted with HFA, which requires some readjustment of the patient. During the last 15 years, several types of dry powder inhalers have been developed and the fraction of an inhaled drug delivered to the lungs and its distribution within the lungs have been studied for most inhalers. This evolution in device technology has resulted in a shift of focus from the drug to the inhaler device. The performance of a device is as important as the drug delivered by the device. The inhaler device must deliver a constant dose, a consistent fraction of respirable particles, be easy to use and carry around, be discrete in use, and the delivery to the lungs must be as independent of the inspiratory flow as possible. It must be resistant to heat, humidity and other environmental stress. This makes patient preference another important issue. Usually it has been argued that pressurised metered dose inhalers were the most popular because of their widespread use and the much larger market share compared to dry powder inhalers. However, economy and tradition play the central role and dry powder inhalers are, in many parts of the world, much more expensive than traditional pressurised metered dose inhalers. When patients in clinical trials are allowed the

free use of different inhaler types, the large majority prefer dry powder inhalers as evident in the articles regarding the use of Easyhaler and the Clickhaler dry powder inhalers [see also Morice et al., *Respiration* 2000;67:298–305, this issue]. These inhalers, like other dry powder multi-dose inhalers, are very easy to use and much more discrete when used in public. This put new pressure on health providers to give the patient a real choice as to the type of inhaler device he/she could use. This is very important because chronic obstructive lung diseases are present over many years and are often life-long diseases. The patient will have to use the inhaler daily for many years and it is important that the patient is comfortable with the device and was involved in the selection procedure. Also, when a new inhaler device is invented, patients should be aware of its existence and possible advantages. Preferably, groups of patients should be consulted to direct the inventors and manufacturers of inhaler devices to user-friendly products.

Metered dose inhalers should, of course, contain effective drugs that control disease, but in addition, cost-effectiveness and comparison of cost-effectiveness between inhalers and drugs should be part of the outcome measures of clinical studies.

When comparing two different drugs in different devices it is possible to obtain a proof of concept, that is that the corticosteroid in the device can improve lung function, symptoms, bronchial hyperresponsiveness and other outcome measures of the same relevance when compared to an established reference drug. However, it is imperative to perform proper dose responses to simultaneously evaluate clinical effects and local and systemic side effects to obtain a therapeutic index. This is the reason why such studies have to be performed in patient populations and not normal volunteers and the reason why clinical studies in patient populations are mandatory.