Pressurized Aerosol Bronchodilator Instruction

To the Editor:

The correct use of a pressurized aerosol bronchodilator is a goal that is rarely realized. The instruction in the correct use is a time-consuming and often frustrating experience for the physician. It is estimated that 25-32 percent of patients fail to coordinate or synchronize inhalation with pressing (actuating) the aerosol canister and 62 percent may fail to coordinate inhalation and dosage or maintain an adequate breath-holding pause at the end of inspiration.1 Discussions about "open" and "closed" mouth techniques abound, but a slow, deep inhalation, pressing the canister just after initiation of inspiratory flow, and breath-holding at the end of inspiration are important.1 The use of a spacer tube2 or horn have been described2 to facilitate use of the aerosol device.

Regardless of what particular technique is used, I suggest instructing the patient in front of a mirror and requesting the patient to utilize a mirror during treatment whenever possible. Most people utilize a visual input channel and think in a visual representational system in contrast to auditory or kinesthetic systems.4 In essence, people usually need to see what they are doing. Utilizing a mirror permits visual orientation and visual input. The mirror must be large enough so the patient can see himself or herself fully or at least down to the waist. A full length mirror is preferable and a mirror of adequate size is almost always available in a hospital room or physician's office. A full length (68 inches) mirror for mounting on the back of a door is readily available for $30-$45, depending upon the width. The patient stands sideways (profile) to the mirror and then turns the head slightly toward the mirror so he/she can completely see himself or herself. The patient then watches the entire process in the mirror. The patient can then easily see the position of the mouthpiece in relation to the open mouth (if you prefer that technique), the end of expiration, the beginning of inspiration and the subsequent pressing of the pressurized canister, and the breath-holding pause. If the canister is pressed during inadequate inspiratory airflow or too early or too late in relation to inspiration, the patient can actually see the aerosol "bounce back out" of the oral cavity. With a mirror, the patient can see (visual input channel), hear (auditory input channel), feel (kinesthetic input channel), and utilize whichever input is his or her most valued representational system. Without a mirror, the patient is deprived of visual input and must "feel" or "hear" the relation of the mouthpiece to the mouth, inspiration, pressing the canister, and breath-holding. Additionally, it is a rewarding practice to have the patient demonstrate his or her use of the pressurized aerosol during each office visit or hospitalization. Bad habits return with surprising frequency in the best of patients.

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References:
1. Newman SP, Pavia D, Clarke SW. How should a pressurized β-adrenergic bronchodilator be inhaled? Eur J Respir Dis 1981; 62:3-21

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To the Editor:

We fully agree with the valid arguments concerning a cautious approach in demonstrating associations between PiM subtypes and pathologic conditions, in view of the possible occurrence of technical errors in genetic typing. We also agree that the results observed in the Italian population of Livorno (Table 2) and in the German population are unlikely to have non-random breeding structures.

We would like to make clear, however, that our Table 2 did not concern our control population, as Dr. Horne and Dr. Cockroft apparently understood. The data which referred to our control population were summarized at the foot of our Table 1. Table 2 referred to a different population of different geographic background, which was studied with the intent of determining quantitative serum levels of alpha1-AT in relation to the various subtypes.

Nevertheless, as pointed out in their letter, errors in genetic typing (M,M misdiagnosed as M,M) may have occurred, and may well explain inconsistencies with Hardy-Weinberg equilibrium, but phenotypes diagnosed as M,M were undoubtedly M,M, and alpha1-AT mean quantitative serum levels were therefore reliable. Although a small number of M subtypes were probably M,M, in reality, the total number of M, phenotypes is so high that final quantitative results should not have been affected by error of typing and should be considered reliable.

In summary, we agree with Drs. Horne and Cockroft that technical errors in genetic typing of alpha1-AT may occur, and furthermore, as we pointed out in our communication, some M, subtypes may not be detected easily.

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