important to call to the attention of readers of Chest that consulting a statistician is very much in order when complex statistical analyses are necessary.

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REFERENCES


To the Editor:

In reply to Payne, we agree, as stated in our report, that the specific airway conductance (Gaw/VL) is more sensitive than the forced expiratory volume in one second (FEV₁) in detecting a response to bronchodilator therapy in normal subjects; however, for evaluating bronchodilator therapy in our patients, the one best test, which we define as that test which demonstrates the highest number of statistically significant differences in regimens of treatment, is the FEV₁. This in no way implies that other tests don’t add additional information.

Chester and Jones criticize our use of the time-dependent data. This is unjustified. Although Figure 1 and Table 1 in our report apply to the time-weighted percent improvements, we performed similar analyses that were not time-weighted at each separate time and obtained similar results as stated in the report. Chester and Jones misquote us in that at no time did we state that the F value for the time-weighted mean was significantly greater for the FEV₁ than for other measurements.

Our aim was to find the test that best separated different regimens of treatment. At no time could statistically significant conclusions be made with the Gaw/VL, the airway resistance, or the mean forced expiratory flow over the middle half of the forced vital capacity (FEF25-75%) that could not be made with the FEV₁ and forced vital capacity. Therefore, in differentiating pharmacologic regimens in patients, we concluded that the FEV₁ is the best test because with it the most statistically significant conclusions could be made.

We agree that it is possible that if this same analysis were repeated on another set of data obtained in a similar fashion, the F values and the statistically significant conclusions available could be different. In fact, Doggett et al² found that the FEF25-75% was superior in separating different pharmacologic regimens several hours after the drugs were administered. We have cited their study in our report. Interestingly, Doggett et al² used the same statistical analysis (analysis of variance) in their study that Chester and Jones now criticize in our report.

Finally, it should be noted that our statistical methods were reviewed by independent biostatisticians, both while our report was being prepared and after the letters by Payne and by Chester and Jones were received. Both biostatisticians concluded that our statistical approach was valid.

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