

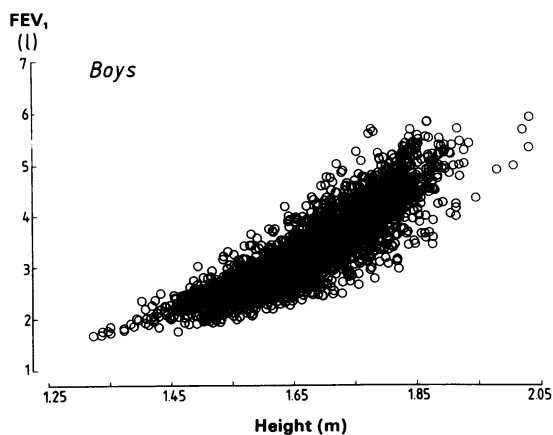
*Allergy—An International Textbook.* MH Lessof, TL Lee, DM Kemeny, eds. (Pp 656; £65.) Chichester: Wiley, 1987. ISBN 0-471909270.

There is now stiff competition in textbooks of allergy and it is very much horses for courses. Samter, Middleton, Bellanti, and now Lockey and Bukantz are available and some very much cheaper than this. This volume, however, is well referenced with a generally up to date bibliography. The book is divided into four main sections—namely, basic mechanisms, diagnostic tests, clinical allergy, and treatment of allergic diseases. From the presentation point of view some chapters have no illustrations at all and some others only an occasional table. Books now sell on both content and presentation; this volume does well on the former and badly on the latter. As regards the “how to do it” aspect of clinical medicine, readers will get little help from many of these chapters. From the educational point of view the book can be recommended as background material. IgE is the cornerstone of classical atopic allergy and the chapter by Platts-Mills (apart from the paucity of illustrations) is an excellent introduction to the biological role of allergy. In the chapter on IgE itself the pioneering studies by Stanworth on the biological characteristics of “reaginic” antibody are, sadly, not mentioned. Some chapters are replete with practical details, such as the inhalation provocation tests by Hargreaves. This is a book for libraries or the enthusiastic professional; I hope that the next edition will be more attractively set out.

## Correspondence

### Predicted values: how should we use them?

SIR,—I read with much interest the editorial by Drs M R Miller and A C Pincock (April 1988;43:265–7), in which they made a plea to abandon the use of expressing the results of tests of ventilating function as percentages of predicted values. They recommend the use of the standardised residual (that is, the [recorded–predicted value] divided by the residual standard deviation from the regression line) as a dimensionless index, to show how far the observed value is removed from the predicted one. Although I fully support their recommendation, which is an endorsement of the one made for adults by the European Coal and Steel Community (ECSC),<sup>1</sup> I would like to point out that their verdict that “the % predicted has no scientific basis in any scientific discipline” is an overstatement. The point is that when a model is adopted in which the scatter about the regression is the same for any mean value (as in the prediction equations of the ECSC) obviously for the same deviation the % predicted will



*FEV<sub>1</sub> plotted against height in 2224 boys.*

be different for a high and for a low predicted mean. There are many situations, however, in which the scatter of data is proportional to the mean, particularly in the paediatric age range. This is illustrated in the figure below for 2224 data on adolescent boys (age 12–19 years), in whom FEV<sub>1</sub> is non-linearly related to stature, with heteroscedastic scatter; logarithmic transformation leads to a linear relationship with homoscedastic spread. Note that the regression equation is  $\ln FEV_1 = -0.4930 + 3.25385 \ln H$ , RSD 0.1155, where stature (H) is in m and FEV<sub>1</sub> is in l/s. This transforms into  $FEV_1 = 0.6108H^{3.25385}$ , where RSD is  $e^{0.1155}$  or 1.12, denoting that the spread deviates proportionally—by 12%—from the mean. Thus for boys of 1.4 m and 1.8 m, the predicted FEV<sub>1</sub> is 1.83 and 4.14 litres respectively; when observed FEV<sub>1</sub> values are 1.46 and 3.31 l, deviating by 0.37 and 0.83 l from the predicted mean, it is justifiable to say that they are 80% predicted and that these boys have comparable ventilatory function. As in the age range from birth to adulthood power functions or exponential functions of stature fit ventilatory data so well, the residual standard deviation being proportional to the mean, the use of % predicted is entirely appropriate in that age range.

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1 Quanjer PH, ed. Standardized lung function testing. Report of Working Party of European Coal and Steel Community. *Bull Eur Physiopathol Respir* 1983;19(suppl 5):1–93.

\* \*This letter was sent to the authors, who reply below.

SIR,—We thank Professor Quanjer for his comments and his general agreement with our suggestions. He raises the case of paediatric lung function data, where there is heteroscedasticity such that the scatter about the mean is proportional to the mean. We carefully stated that in such a circumstance a

given percentage of the predicted value may fortuitously agree with a recognised confidence limit and that this is not found in adult lung function data. It is important to state that in such a case the method of standardised residuals retains its universal validity.

In the example given the lower 95% confidence limit happens to coincide with 79% of predicted, irrespective of height. For an example, or index, with a different RSD the coincident % predicted for the same limit would be different from the example of 79%, whereas the method of SR maintains the same scale with all examples. We see no merit in endorsing special circumstances when the use of % predicted may be admissible, with the added need to allocate limits for the % predicted for each individual case, when there is an alternative method for relating to a predicted value that is universally valid. We believe that any such limited endorsement is likely to foster the continued incorrect usage

of the method.

We still maintain that there is no scientific basis for the use of % predicted as its usage firstly relies on a chance association with a scientifically proved method for judging acceptable limits for a test and secondly will always require reference to this proved method to justify it. We are not aware of any independent reasoning to defend the use of % predicted.

We are grateful for the opportunity to expand these points which the constraint of the brief for the original article did not permit.

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