

Correspondence

To the Editor:

I would like to point out some statistical errors in your last issue (1). In calculating the correlation coefficient between two methods a more appropriate test should be used (2). These errors are:

- 1) r measures the strength of a relation between two variables, not the agreement between them.
- 2) Correlation depends on the range of the true quantity in the sample. If this is wide the correlation will be greater than if it is narrow.
- 3) The test of significance may show that two methods are related, but two methods designed to measure the same quantity have to be related, if not, one of the tests is invalid.

A more accurate method is to plot differences against the mean. By applying limits \pm two standard deviations of the differences a method of validity is available. These "limits of agreement" are only estimates of the values for that study. 95% confidence intervals and standard errors can be calculated and a measure of precision may be obtained.

Sincerely,
Peter Swanney, ACP
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1. Zucker ML, Walker C, Jobes D, LaDuca F. Comparison of celite and kaolin based heparin and protamine dosing assays during cardiac surgery: The in vitro effect of aprotinin. *J Extra-Corpor Technol.* 1995; 27(4): 210-207.
2. Bland JM, Altman DG. Statistical methods for assessing agreement between two methods of clinical measurement. *Lancet.* 1986; 307-310.

To the Editor:

I would like to thank Mr. Swanney for his comments on the statistical analyses employed in our paper "Comparison of celite and kaolin based heparin and protamine dosing assay during cardiac surgery: The in vitro effect of aprotinin" (1). His comments on the limitations of correlation analyses are correct.

As stated by Mr. Swanney, the correlation coefficient r is a measure of the strength of the relationship between two variables. The data presented in our paper reveal a strong relationship between celite and kaolin test results. The tests of significance, again as stated by Mr. Swanney, were used to illustrate the validity of the kaolin dosing methods.

The statistical methods described by Bland and Altman are very interesting. I have analyzed our data by their methods, and have discovered that these analyses also support the conclusion that the kaolin and celite systems yield similar clinical results.

Rather than apply all relevant statistical methods to the limited data set available in this study, the authors chose to present those analyses most familiar to the paper's intended audience.

Sincerely,
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1. Zucker ML, Walker C, Jobes D, LaDuca F. Comparison of celite and kaolin based heparin and protamine dosing assays during cardiac surgery: The in vitro effect of aprotinin. *J Extra-Corpor Technol.* 1995; 27(4): 210-207.