studies included in our meta-analysis fails to support Nannini’s argument [14]. Three of the studies adjusted for enterococcal species as a possible confounder, 2 of which restricted their population to patients with Enterococcus faecium infection [5, 9], and 1 of which controlled for differences in enterococcal species in a multivariate regression model [15]. Of these 3 studies, 2 showed a significant association between vancomycin resistance and death [9, 15]; the third showed an association that did not reach statistical significance [5], but the study was underpowered. Although we acknowledge the limitations of existing data, we do not think the currently available evidence supports the hypothesis that the association between vancomycin resistance and mortality observed in our meta-analysis is confounded by differences in the virulence of individual enterococcal species.

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A Clinically Dangerous Flaw in Reporting Statistical Significance

To the Editor—Having read the article by Maggiolo et al. [1] on the effect of adherence on the risk of virologic failure, we pinpoint several major flaws in their statistical analyses that can invalidate their conclusions. They stated that, with respect to the number of pills in the prescribed regimen and to the number of daily doses that the prescribed regimen required, “the mean adherence rate was significantly higher for patients receiving once-daily regimens (94.8% [95% CI, 90.2%–99.3%]), compared either with patients receiving a twice-daily regimen (mean adherence rate, 92.0% [95% CI, 90.8–93.2%]; P = .042) or with patients receiving a regimen requiring >2 daily doses (mean adherence rate, 91.9% [95% CI, 89.9%–94.9%]; P = .009)” (p. 161).

First, these statements show a conceptual confusion between significance tests and statistical inference. Although there is a relationship between P values and confidence intervals, strictly speaking they are not the same [2]. Maggiolo et al. [1] do not interpret the reported 95% CIs; they only write that the differences among the adherence rates are statistically significant. What the reported 95% CIs show is extremely important: the 3 intervals overlap. In statistical reasoning, this means that no final conclusion can be drawn and that all values of the population adherence rates within the limits of the three 95% CIs are consistent with the observed data at a confidence level of 95%—that is, population adherence rates may or may not differ, because they share some possible parameter values.
What underlies these flaws is the problem of hypothesis testing, which has been repeatedly reported [3–5]. Even the International Committee of Medical Journal Editors (ICMJE) has long recommended to “avoid relying solely on statistical hypothesis testing, such as the use of P values, which fails to convey important information about effect size” [4, section IV.A.6] and to report results by means of confidence intervals. (Bayesian methods are another alternative.) Consequently, for the reasons that support these recommendations and from a statistical standpoint, it is currently not acceptable to conclude from the results that the mean adherence rate for patients receiving once-daily regimens is higher than those for the 2 other groups, especially on the basis of a marginally significant P value.

Second, the authors write that a logistic regression model was used for the multivariate analyses of the association between variables and virologic outcome. However, they do not report either the complete final model or its goodness of fit. Without this information, readers cannot assess the model, which impedes drawing any conclusion about its validity and that of the results [6–8].

The consequences of these statistical flaws may be dangerous from a clinical, managerial, and economical standpoint. We think that both authors and editors should keep abreast of and adopt the recommendations of academia and the ICMJE concerning these statistical principles.

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Reply to Campillo et al.

To the Editor—We read with interest the comments of Campillo et al. [1]. Adherence is a fundamental variable in the management of antiretroviral therapy. Its multifactorial nature makes interpreting experimental data difficult; nevertheless, several studies have shown that the complexity of HAART is reported by patients to be a major limiting factor [2]. Difficulties are increased further by the lack of a gold standard system for measuring adherence [3]. We therefore agree on the need for a rigorous approach to evaluating data for such a complex topic. It is widely recognized that the use of confidence intervals (CIs) adds an important piece of information to the arbitrary cutoff of P values for statistical significance. For this reason, in accordance with the recommendations of the International Committee of Medical Journal Editors, we presented our data in a detailed way, clearly stating the mean values and their 95% CIs. However, means and CIs do present some limitations, especially when data are not normally distributed [4]. In our case, the data set of adherence rates was highly skewed to the left (skewness, −2.34) because ~50% of patients reported the maximum possible adherence rate (100%). The best graphical representation of our data set is shown in figure 1. The box plot clearly indicates that the 3 groups presented a similar skewness of data (position of median bar), a different interquartile

![Box plot representation of adherence rates by the number of daily doses in the patients’ HAART regimens. Unblackened circles indicate outliers, and asterisks indicate far outliers (>99th percentile).](https://academic.oup.com/cid/article-abstract/42/8/205/283337/11002/2.34)