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## Upgrading Our Instructions for Authors

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**See editorial, p. 561.**

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In this issue of *Annals of Emergency Medicine*, we introduce the print version of the substantially revised “Instructions to Authors” (page 18). This editorial highlights major changes from the previous version and briefly explores the philosophy that led to these changes.

Our goal at *Annals* is to provide readers with research articles that comprehensively and truthfully convey the findings of scientific inquiry. We seek to bring readers as close to the data as possible, so they may make their own determination about the findings and their meaning. By doing so, we hope to minimize the many unintentional biases that even the most objective of authors can introduce.<sup>1</sup> Standards of scientific reporting in medicine endlessly evolve, driven by the continuing need to increase the completeness and accuracy of the underlying data and its interpretation. We fully recognize that there is no one exclusive right way to do or report science and that our Instructions for Authors are guidelines, not edicts. Nevertheless, we believe that those who follow the spirit of these Instructions will produce documents that are more likely to be helpful to readers and to honestly convey study findings.

We recognize the irony of using an in-print editorial to broadcast our first message—that authors are encouraged to use the Web version of this document as their primary resource (<http://www.mosby.com/AnnEmergMed/InstructionsforAuthors>). The Web

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version of the Instructions for Authors is more comprehensive and has links to supplementary information, references, and other Web sites, which are not available in the print version. We plan to repeatedly update the Web version, with the goal of creating a resource that will assist authors in the design, execution, and reporting of their research efforts.

The new Instructions make explicit the guidance and direction that the journal's editors and peer reviewers have provided to contributors over the past several years. This guidance can be summarized as: tell us in clear, succinct prose what you did and why you did it; show us your data; emphasize estimation over hypothesis testing (and estimates and confidence intervals instead of *P* values); and be explicit about the assumptions inherent in any descriptive or analytic models that you use.

There has been sufficient controversy about our requests regarding hypothesis testing and *P* values that these topics are given their own space in this issue (see editorial on page 561).<sup>2</sup> We consider the other topics here. We expect that authors always wish to communicate effectively with readers and thus should use simple, lucid language with a minimum of mysterious new abbreviations never previously occurring in the English language. They should avoid scientific circumlocution and vague, long-winded explanations that sound impressively like science but do not reveal it.

The Instructions for Authors note, "Much of the medical literature is written as if studies were perfectly conducted, but we know that this is not possible. We fully expect that some part of every clinical study will deviate from the ideal. The candid disclosure of such deviations and the reasons they occurred is encouraged because it enhances the scientific process."

This statement reflects our conviction that the purpose of the medical literature is to communicate what happened, not what we wished had happened.

Not long ago, the pages of medical journals were filled with case reports, case series, and other highly subjective forms of evidence. The introduction of controlled trials, statistics designed to distinguish chance

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findings from observations of clinical importance, and structured reporting styles that comprehensively convey methods and results have unquestionably increased the objectivity and validity of journal contents. Yet, these techniques, even when perfectly used, cannot eliminate the anecdotal and subjective nature of all observation and, ironically, can easily mask the subjectivity inherent in every study. Thus, the same old blemishes can hide behind seductively elegant new scientific models. For manuscripts describing original research, we now require a separate "Limitations" section, where a study's blemishes can be exposed to the light and their effects on the conclusions can be examined. There is no shame in such blemishes; all studies have them. The better they are revealed, the more useful the studies' conclusions become.

Whether a paper is describing a single interesting case or a complex multicentered, randomized trial, it is still a story, an attempt to communicate an experience. It is our belief the best science writing brings the reader as close to the actual experience as possible. Hence, we emphasize the importance of describing what was done and what was observed in the most direct manner possible. We strive not to let jargon or poorly defined nomenclature substitute for accurate description.

In addition to describing what transpired in the clearest manner possible, it is equally important that authors explain the rationale for their research and the theoretical model that underlies the effort. Manuscripts will be more helpful to readers if they explain the rationale for the choice of study design, the choice of variables to be measured (and perhaps more importantly, the decision not to measure others), and the methods for measuring these variables.<sup>3</sup>

"Show your data," means just that. Computers have revolutionized the way journals are prepared, and scientific figures, once limited by prohibitive cost, can now be produced for virtually the same cost as text. Authors who restrict themselves to reporting means and ranges or graphing means and standard deviations are depriving readers of the opportunity to see the distributions that underlie these measures.<sup>4-6</sup> Why make

readers imagine what a distribution of  $n$  subjects with a mean of  $y$  and a standard deviation of  $z$  might look like? Why miss the opportunity to show them the distribution of the outcome variable stratified on important covariates? By using graphs, investigators can present data in a manner that is freer of abstruse statistical assumptions, thereby empowering readers to make their own judgments and inferences and compare them with the authors'. There are excellent resources for authors who wish to learn more about the graphical presentation of data.<sup>5-10</sup>

Finally, we emphasize our preferences regarding the mathematic modeling of data. Statistical tests and estimates all assume some form of model, as do techniques for the development of decision rules. Too often, we see papers where the authors do not justify their choice of model form (eg, linear regression is used, but the basis for assuming a linear relationship is not evident), or they do not explain the specific implementation of their model form (eg, the variables age and height are included in the model but sex is not, with no explanation for these decisions).<sup>11</sup> All models require assumptions, and it is essential that authors consider the assumptions implicit in any models that they use, and explain why these assumptions are reasonable. Here again, our goals are clarity and reasonableness, not perfection. By definition, a model is neither truth nor reality, or as George E. P. Box put it "... all models are wrong, but some are useful."<sup>12</sup> A general principle is that theory, not statistical tests, should guide model development. For example, variables should be included in a regression model because of their postulated importance, not because they were found to have a statistically significant relationship to the outcome.<sup>11</sup>

We close by acknowledging our awareness of the many controversies and uncertainties regarding the execution and publication of research. This is, and always has been, a complex topic and will continue to grow more complex as standards and expectations continue to be raised. We perform peer review not merely to select the best science but to improve it before publication. We reaffirm to our readers and authors our com-

mitment to improving the value of the journal by providing the most rigorous but also the most constructive peer review for manuscripts submitted to us.

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