

Guidelines for Determining Co-Authorship for Biostatisticians

Determining whether a statistical consultant should be a co-author can be a difficult issue and should be negotiated on a case-by-case basis. Generally speaking, authorship should be based on the level of participation and should not be influenced by whether or not the consultant was paid. The following guidelines should be seen as recommendations that may be helpful in determining co-authorship.

According to the International Committee of Medical Journal Editors (<http://www.icmje.org>): "All persons designated as authors should qualify for authorship, and all those who qualify should be listed. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content. Authorship credit should be based only on:

1. a) substantial contributions to conception and design **or**
 b) acquisition of data **or**
 c) analysis and interpretation of the data

2. a) drafting of the article **or**
 b) revising it critically for important intellectual detail

3. a) final approval of the version to be published.

Conditions 1, 2, and 3 must all be met."

Recommendation: In keeping with the above guidelines, If the statistician participating in the study performs some activity in each of categories 1. and 2. above and then approves the final version of the manuscript prior to submission to a journal, he or she should be given co-authorship. The most common situation is that the statistician helps with the design of the study (including determining the appropriate sample size), analyzes the data once they have been collected, and explains the results to the principal investigator(s). The statistician then writes the statistical methods section of the manuscript (or edits a version written by one of the other investigators) and may write and/or edit some or all of the Results section. In addition, the statistical consultant usually makes significant contributions to the tables and figures in the manuscript. If the statistician then reads the final version of the manuscript prior to submission (which is always recommended) and offers his or her comments, these activities would qualify the statistician as a co-author under the above guidelines. Furthermore, some journals require that "Any part of an article essential to its main conclusions must be the responsibility of at least one author..." (*Academic Medicine Complete 2006 Instructions for Authors* <http://www.academicmedicine.org>). If the statistician is not listed as a co-author, then one or more of the authors would have to take responsibility for the statistical analysis. Generally speaking, clinician researchers in the health sciences probably would not be experienced enough statistically to do this.