Responsible Conduct of Research:
Responsible Authorship

Dennis Brown, PhD,
Professor of Medicine,
Director, Office for Research Career Development

October 14, 2014

Guidelines from the *International Committee of Medical Journal Editors*
http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html

1. Why Authorship Matters

Authorship confers credit and has important academic, social, and financial implications. Authorship also implies responsibility and accountability for published work. The following recommendations are intended to ensure that contributors who have made substantive intellectual contributions to a paper are given credit as authors, but also that contributors credited as authors understand their role in taking responsibility and being accountable for what is published.

Because authorship does not communicate what contributions qualified an individual to be an author, some journals now request and publish information about the contributions of each person named as having participated in a submitted study, at least for original research. Editors are strongly encouraged to develop and implement a contributorship policy, as well as a policy that identifies who is responsible for the integrity of the work as a whole. Such policies remove much of the ambiguity surrounding contributions, but leave unresolved the question of the quantity and quality of contribution that qualify an individual for authorship. The ICMJE has thus developed criteria for authorship that can be used by all journals, including those that distinguish authors from other contributors.

2. Who Is an Author?

The ICMJE recommends that authorship be based on the following 4 criteria:

- Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
- Drafting the work or revising it critically for important intellectual content; AND
- Final approval of the version to be published; AND
- Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

In addition to being accountable for the parts of the work he or she has done, an author should be able to identify which co-authors are responsible for specific other parts of the work. In addition, authors should have confidence in the integrity of the contributions of their co-authors.

All those designated as authors should meet all four criteria for authorship, and all who meet the four criteria should be identified as authors. Those who do not meet all four criteria should be acknowledged—

see Section II.A.3 below. These authorship criteria are intended to reserve the status of authorship for those who deserve credit and can take responsibility for the work. The criteria are not intended for use as a means to disqualify colleagues from authorship who otherwise meet authorship criteria by denying them the opportunity to meet criterion #s 2 or 3. Therefore, all individuals who meet the first criterion should have the opportunity to participate in the review, drafting, and final approval of the manuscript.

The individuals who conduct the work are responsible for identifying who meets these criteria and ideally should do so when planning the work, making modifications as appropriate as the work progresses. It is the collective responsibility of the authors, not the journal to which the work is submitted, to determine that all people named as authors meet all four criteria; it is not the role of journal editors to determine who qualifies or does not qualify for authorship or to arbitrate authorship conflicts. If agreement cannot be reached about who qualifies for authorship, the institution(s) where the work was performed, not the journal editor, should be asked to investigate. If authors request removal or addition of an author after manuscript submission or publication, journal editors should seek an explanation and signed statement of agreement for the requested change from all listed authors and from the author to be removed or added.

The corresponding author is the one individual who takes primary responsibility for communication with the journal during the manuscript submission, peer review, and publication process, and typically ensures that all the journal's administrative requirements, such as providing details of authorship, ethics committee approval, clinical trial registration documentation, and gathering conflict of interest forms and statements, are properly completed, although these duties may be delegated to one or more coauthors. The corresponding author should be available throughout the submission and peer review process to respond to editorial queries in a timely way, and should be available after publication to respond to critiques of the work and cooperate with any requests from the journal for data or additional information should questions about the paper arise after publication. Although the corresponding author has primary responsibility for correspondence with the journal, the ICMJE recommends that editors send copies of all correspondence to all listed authors.

When a large multi-author group has conducted the work, the group ideally should decide who will be an author before the work is started and confirm who is an author before submitting the manuscript for publication. All members of the group named as authors should meet all four criteria for authorship, including approval of the final manuscript, and they should be able to take public responsibility for the work and should have full confidence in the accuracy and integrity of the work of other group authors. They will also be expected as individuals to complete conflict-of-interest disclosure forms.

Some large multi-author groups designate authorship by a group name, with or without the names of individuals. When submitting a manuscript authored by a group, the corresponding author should specify the group name if one exists, and clearly identify the group members who can take credit and responsibility for the work as authors. The byline of the article identifies who is directly responsible for the manuscript, and MEDLINE lists as authors whichever names appear on the byline. If the byline includes a group name, MEDLINE will list the names of individual group members who are authors or who are

collaborators, sometimes called non-author contributors, if there is a note associated with the byline clearly stating that the individual names are elsewhere in the paper and whether those names are authors or collaborators.

3. Non-Author Contributors

Contributors who meet fewer than all 4 of the above criteria for authorship should not be listed as authors, but they should be acknowledged. Examples of activities that alone (without other contributions) do not qualify a contributor for authorship are acquisition of funding; general supervision of a research group or general administrative support; and writing assistance, technical editing, language editing, and proofreading. Those whose contributions do not justify authorship may be acknowledged individually or together as a group under a single heading (e.g. "Clinical Investigators" or "Participating Investigators"), and their contributions should be specified (e.g., "served as scientific advisors," "critically reviewed the study proposal," "collected data," "provided and cared for study patients", "participated in writing or technical editing of the manuscript").

Because acknowledgment may imply endorsement by acknowledged individuals of a study's data and conclusions, editors are advised to require that the corresponding author obtain written permission to be acknowledged from all acknowledged individuals.

Harvard Medical School Authorship Guidelines
http://hms.harvard.edu/about-hms/integrity-academic-medicine/hms-policy/faculty-policies-integrity-science/authorship-guidelines

Introduction

Authorship is an explicit way of assigning responsibility and giving credit for intellectual work. The two are linked. Authorship practices should be judged by how honestly they reflect actual contributions to the final product. Authorship is important to the reputation, academic promotion, and grant support of the individuals involved as well as to the strength and reputation of their institution.

Many institutions, including medical schools and peer-reviewed journals, have established standards for authorship. These standards are similar on basic issues but are changing over time, mainly to take into account the growing proportion of research that is done by teams whose members have highly specialized roles.

In practice, various inducements have fostered authorship practices that fall short of these standards. Junior investigators may believe that including senior colleagues as authors will improve the credibility of their work and its chances of publication, whether or not those colleagues have made substantial intellectual contributions to the work. They may not want to offend their chiefs, who hold substantial power over their employment, research opportunities, and recommendations for jobs and promotion. Senior faculty might wish to be seen as productive researchers even though their other responsibilities prevent them from making direct contributions to their colleagues' work. They may have developed their views of authorship when senior investigators were listed as authors because of their logistic, financial, and administrative support alone.

Disputes sometimes arise about who should be listed as authors of an intellectual product and the order in which they should be listed. When disagreements over authorship arise, they can take a substantial toll on the good will, effectiveness, and reputation of the individuals involved and their academic community. Many such disagreements result from misunderstanding and failed communication among colleagues and might have been prevented by a clear, early understanding of standards for authorship that are shared by the academic community as a whole.

Discussions of authorship in academic medical centers usually concern published reports of original, scientific research. However, the same principles apply to all intellectual products: words or images; in paper or electronic media; whether published or prepared for local use; in scientific disciplines or the humanities; and whether intended for the dissemination of new discoveries and ideas, for published reviews of existing knowledge, or for educational programs.

The Faculty Council of Harvard Medical School has endorsed the following statement. Although authorship practices differ from one setting to another, and individual situations often require judgment, variation in practices should be within these basic guidelines.

Authorship

1. Everyone who is listed as an author should have made a substantial, direct, intellectual contribution to the work. For example (in the case of a research report) they should have contributed to the conception, design, analysis and/or interpretation of data. Honorary or guest authorship is not acceptable. Acquisition of funding and provision of technical services, patients, or materials, while they may be essential to the work, are not in themselves sufficient contributions to justify authorship.

2. Everyone who has made substantial intellectual contributions to the work should be an author. Everyone who has made other substantial contributions should be acknowledged.

3. When research is done by teams whose members are highly specialized, individuals' contributions and responsibility may be limited to specific aspects of the work.

4. All authors should participate in writing the manuscript by reviewing drafts and approving the final version.

5. One author should take primary responsibility for the work as a whole even if he or she does not have an in-depth understanding of every part of the work.

6. This primary author should assure that all authors meet basic standards for authorship and should prepare a concise, written description of their contributions to the work, which has been approved by all authors. This record should remain with the sponsoring department.

Order of Authorship

Many different ways of determining order of authorship exist across disciplines, research groups, and countries. Examples of authorship policies include descending order of contribution, placing the person who took the lead in writing the manuscript or doing the research first and the most experienced contributor last, and alphabetical or random order. While the significance of a particular order may be understood in a given setting, order of authorship has no generally agreed upon meaning.

As a result, it is not possible to interpret from order of authorship the respective contributions of individual authors. Promotion committees, granting agencies, readers, and others who seek to understand how individual authors have contributed to the work should not read into order of authorship their own meaning, which may not be shared by the authors themselves.

1. The authors should decide the order of authorship together.
2. Authors should specify in their manuscript a description of the contributions of each author and how they have assigned the order in which they are listed so that readers can interpret their roles correctly.
3. The primary author should prepare a concise, written description of how order of authorship was decided.

Implementation

1. Research teams should discuss authorship issues frankly early in the course of their work together.

2. Disputes over authorship are best settled at the local level by the authors themselves or the laboratory chief. If local efforts fail, the Faculty of Medicine can assist in resolving grievances through its Ombuds Office.

3. Laboratories, departments, educational programs, and other organizations sponsoring scholarly work should post, and also include in their procedure manuals, both this statement and a description of their own customary ways of deciding who should be an author and the order in which they are listed. They should include authorship policies in their orientation of new members.

4. Authorship should be a component of the research ethics course that is required for all research fellows at Harvard Medical School.

5. These policies should be reviewed periodically because both scientific investigation and authorship practices are changing.

Questions and scenarios from the audience

Topic 1 – Order of authorship

1. How is the first author selected – what are the criteria?

2. When is shared first authorship (co-first authors) appropriate – what are the criteria?

3. How is the senior author selected?

4. How to choose when multiple investigators want to be senior author?

Topic 2 – Minimum contributions for authorship

1. A colleague and I meet weekly to discuss projects, ideas and troubleshooting. While he has not directly contributed to my paper through benchwork, I would like to add him as co-author for his helpful input. Is this ok? 2) Should key staff in core facilities be includes as co-authors? While they did a lot of work and provided input, they were paid for their role.

2. A non-collaborating researcher (in a similar but different field) suggests an additional test for your research study during an informal conversation that you eventually incorporate and is a minor part of the publication. The non-collaborating researcher was not involved otherwise in the conduct of the study other than providing the idea. Should they be listed as an author? What constitutes (ideas and/or work) who should be listed as an author and who shouldn't?

3. If someone contributes essential equipment or reagents to the study, but was not involved in designing the study, collecting the data, or analyzing it, does their contribution grant co-authorship (e.g. as a middle author), versus mere mention in the acknowledgments section?

Topic 3 – How and when to address order of authorship

1. If multiple post docs are collaborating on a project when should authorship be discussed--once the data is collected or before the project is started?

2. How is authorship determined when fellows leave the lab before the work is finished?

3. When workload changes from original plans as a study progresses, how should this be addressed in authorship plans?

Topic 4 – How to discuss authorship within the mentor/mentee relationship as work progresses

1. I started to collect some preliminary data as a postdoc for my K22 grant (career transition award to PI). I am continuing the studies as an aim for the grant. For a publication, I would like to be last author and include my postdoc mentor as middle author. The concept and progression were my ideas. My mentor allowed me to pursue this project independently and contributed to the study by supplying reagents and supporting my salary as a postdoc. My mentor always told me I could take whatever was in the K22 grant, but we never had the opportunity to discuss this publication. I was going to email him to discuss the matter. Is this the right approach?

2. As an early-career scientist moves towards independence, how should the issue of including the supervisor/mentor as an author on papers be addressed?