

EDITORIAL

Authorship Ethics: A Practical Approach



GRANT A. JUSTIN, RON W. PELTON, FASIKA A. WORETA, AND GARY L. LEGAULT

AUTHORSHIP GIVES PUBLISHING CREDIT AND IS THE “medium of exchange” in the competitive environment of academia, used in performance reviews, salaries, and funding. However, conferring authorship often results in ethical dilemmas in academic medicine because of uneven power relationships that may impair objective decisions and result in a lack of scientific integrity.^{1,2} Critically, ethical problems in authorship are much more common than data fabrication, modification, and falsification.^{3,4}

Over the past 50 years, there has been an increase in the number of research papers published with multiple authors.^{3,5,6} One recent publication had over 5,000 authors, raising the question “What is a valid author?”⁷ To address this issue, the *American Journal of Ophthalmology*, the *Journal of the American Medical Association Ophthalmology*, and the *Ophthalmology* journal used the International Committee of Medical Journal Editors (ICMJE) criteria to define authorship.⁸

The following 4 criteria were used to define a valid author: 1) substantial contributions to the conception or design of the work or the acquisition, analysis, or interpretation of data for the work; 2) drafting the work or revising it critically for important intellectual content; 3) final approval of the version to be published; and 4) 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.

A key strength of the ICMJE criteria is the rigorous qualification for authorship: an author must meet each of the 4 criteria. Individuals who contributed but did not meet those conditions should be included in the acknowledgements. Unethical conduct can be avoided and fair authorship distribution can be established by discussing and

adhering to specific standards such as those set by the ICMJE criteria.

Despite those guidelines, we have found that 3 concerns pertaining to academic authorship commonly cause the most difficulty among residents, fellows, medical students, and faculty: honorary authorship, ghost authorship, and authorship order.^{9,10}

HONORARY AUTHORSHIP

HONORARY AUTHORSHIPS OCCUR WHEN INDIVIDUAL(S) not meeting ICMJE authorship criteria are nonetheless included due to prestige or seniority. Types of honorary authorship may include “guest” authorship of a well-known author to increase the chance of manuscript acceptance; “gift” authorship in appreciation for mentorship or to foster collaboration on future projects; “coercion” authorship, when an author bullies the research team to include them as an author; and “collaboration” authorship, where individuals decide to include each other on a series of manuscripts, despite not meeting authorship criteria. Rates of honorary authorship vary from 17%-56%, and 1 paper even stated that up to 18% of such honorary authorships were due to coercion.^{5,11,12}

GHOST AUTHORSHIP

GHOST AUTHORSHIP OCCURS WHEN AN INDIVIDUAL MEETS the ICMJE criteria for authorship, yet is excluded from authorship.¹³ This commonly occurs to trainees who are involved in data collection but are not given the opportunity to be involved in the drafting of the manuscript. In addition, it can occur after the trainee leaves the institution before the project is complete, and despite the trainees’ prior work on the project, they are left off the authorship byline. Co-authors should make attempts to reach the departed researcher before transferring the project to someone else or to remove their name from the authorship list. The reported rates of ghost authorship range from 7.9% to 29%.^{5,11,12}

Accepted for publication Sep 10, 2020.

From the Department of Ophthalmology (G.A.J.), Walter Reed National Military Medical Center, Bethesda, Maryland, USA; Department of Surgery (G.A.J., G.L.L.), Uniformed Services University of the Health Sciences, Bethesda, Maryland, USA; Pinnacle Eye Center (R.W.P.), Colorado Springs, Colorado, USA; Wilmer Eye Institute (F.A.W.), Johns Hopkins University School of Medicine, Baltimore, Maryland, USA; and the Department of Ophthalmology (G.L.L.), Brooke Army Medical Center, San Antonio, Texas, USA.

Inquiries to Grant A. Justin, Walter Reed National Military Medical Center, 104 Wood Rd, Bethesda, MD, USA; e-mail: Grant.a.justin@gmail.com

AUTHORSHIP ORDER

AUTHORSHIP ORDER SHOULD REFLECT THE LEVEL OF contribution to both the research and the manuscript development.^{5,9} The first author is the individual who contributed not only the most to elements such as data collection or analysis but also to the writing of the manuscript. The second author is the person who participated the second most to the project. If the first and second authors have contributed evenly, equal contribution authorship can be considered if allowed by the journal.³ The last author is often at a more advanced career stage and is commonly but not necessarily the senior supervisor of the research team. The senior author may have developed the research idea and/or guided the project to completion. Middle authors are generally listed in the sequence of contribution, in alphabetical order or by progressive seniority. The corresponding author should be the individual most able to communicate with the journal and is generally the first, second, or last author.

5. Authorship Criteria and Responsibility. Complete a matrix chart of the ICMJE criteria for each author. Emphasize that every author is responsible for the integrity of the manuscript. Authors should be involved early in planning of data collection and/or analysis and manuscript drafting.
6. Duties and Timeline. Ensure a shared understanding of the duties and timeline for completion of the project and manuscript.
7. Corresponding Author. Submit manuscript, reply promptly to journal inquiries, and ensure authorship paperwork is completed and signed by all co-authors.
8. Monthly Appraisal. Review manuscript progress. Reconsider expectations of authorship and authorship order if deadlines are not met.
9. Tracing Potential Authors. Develop a departmental plan to address potential authorship issues when a faculty member or trainee leaves the department.
10. Resolving Disagreements. Create a departmental plan for addressing authorship disagreements and ensure authors understand institutional policies for dealing with such matters.

A PRACTICAL APPROACH

WE HAVE DEVELOPED A SET OF PRACTICAL STEPS TO IMPLEMENT the ICMJE criteria for authorship within an academic medical setting and are confident that they will provide an effective framework that can be adopted in other institutions. These steps should be implemented by the first, corresponding, or senior author of the manuscript.

1. Department and Institutional Engagement. Encourage your academic center to develop a committee dedicated to research integrity that can take a proactive approach by establishing policies, developing educational materials, and providing arbitration.
2. Awareness. Ensure that incoming trainees and faculty are educated on research integrity, including publication ethics, early in their tenure in the department.
3. Determine authorship. Use the ICMJE criteria to guide determination of authorship at the inception of the project. Honorary authorship should not be allowed, and ghost authorships should be avoided.
4. Determine Order. Develop departmental criteria for first, second, senior, and corresponding authorship.

An easy way to avoid problems with authorship credit is to have clear, frank communication, early and often, outlining the role(s) and expected contributions of each participant. A collaborative, ethical outcome requires each colleague to honestly assess their contribution and to decide a fair allocation of publishing credit. If no agreement can be reached, a neutral party such as the departmental chairman, residency director, or an ombudsman can use the ICMJE authorship criteria to help resolve the disagreement.⁷ There is a critical need for both a departmental and an institutional role in teaching publication ethics. Establishing a committee to help resolve authorship conflicts can provide mediation or arbitration to solve many authorship issues.^{7,14,15} Incoming researchers could receive information from these entities on co-authorship pitfalls as well as existing support resources.

Authorship, as the currency of the academic world, is frequently the source of departmental frustration and arguments across scientific fields. The authors of this paper have used the tenets above to reduce friction and apply ethical approaches to authorship within their departments. By establishing guidelines for departmental use and through the strict use of ICMJE criteria, researchers can feel more confident in determining authorship and ensuring the integrity of their scientific work.

THE AUTHORS HAVE COMPLETED AND SUBMITTED THE ICMJE FORM FOR DISCLOSURE OF POTENTIAL CONFLICTS OF INTEREST and none were reported. Financial support: none. Conflict of interest: none. The view(s) expressed herein are those of the author(s) and do not reflect the official policy or position of the American Academy of Ophthalmology, Brooke Army Medical Center, the US Army Medical Department, the US Army Office of the Surgeon General, the Department of the Air Force, the Department of the Army, Department of Defense, the Uniformed Services University of the Health Sciences, or any other agency of the US Government. G.A.J. and G.L. are government employees through the US Army. No authors received grant support from government or non-government entities.

REFERENCES

1. Newman A, Jones R. Authorship of research papers: ethical and professional issues for short-term researchers. *J Med Ethics* 2006;32(7):420–423.
2. Wilcox LJ. Authorship: the coin of the realm, the source of complaints. *JAMA* 1998;280(3):216–217.
3. Marušić A, Bošnjak L, Jerončić A. A systematic review of research on the meaning, ethics and practices of authorship across scholarly disciplines. *PLoS One* 2011;6(9):e23477.
4. Teixeira da Silva JA, Dobránszki J. Multiple authorship in scientific manuscripts: ethical challenges, ghost and guest/gift authorship, and the cultural/disciplinary perspective. *Sci Eng Ethics* 2016;22(5):1457–1472.
5. Kornhaber RA, McLean LM, Baber RJ. Ongoing ethical issues concerning authorship in biomedical journals: an integrative review. *Int J Nanomed* 2015;10:4837–4846.
6. Kassirer JP, Angell M. On authorship and acknowledgments. *N Engl J Med* 1991;325(21):1510–1512.
7. Faulkes Z. Resolving authorship disputes by mediation and arbitration. *Res Integr Peer Rev* 2018;3:12.
8. International Committee of Journal. Defining the role of authors and contributors. Available at: <http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html>. Accessed November 5, 2020.
9. Feeser VR, Simon JR. The ethical assignment of authorship in scientific publications: issues and guidelines. *Acad Emerg Med* 2008;15(10):963–969.
10. Dighe MK, Berquist TH. Education in authorship ethics: should it be compulsory? *AJR Am J Roentgenol* 2011;196(2):235–236.
11. Wislar JS, Flanagin A, Fontanarosa PB, Deangelis CD. Honorary and ghost authorship in high impact biomedical journals: a cross sectional survey. *BMJ* 2011;343:d6128.
12. O'Brien J, Baerlocher MO, Newton M, Gautam T, Noble J. Honorary coauthorship: does it matter? *Can Assoc Radiol J* 2009;60(5):231–236.
13. The World Association of Medical. Ghost writing initiated by commercial companies. *J Gen Intern Med* 2005;20:549.
14. Cutas D, Shaw D. Writers blocked: on the wrongs of research co-authorship and some possible strategies for improvement. *Sci Eng Ethics* 2015;21(5):1315–1329.
15. Graf C, Deakin L, Docking M, et al. Best practice guidelines on publishing ethics: a publisher's perspective, 2nd edition. *Int J Clin Pract* 2014;68(12):1410–1428.