

Authorship Disputes: Do they Result from Inadvertent Errors of Judgment or Intentional Unethical Misconduct?

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Abstract

The frequency of conflicts about the authorship of publications has increased along with the increase in the number of people involved in scientific work and its complexity. Some of the factors that strongly influence the generation of conflicts and disputes in authorship definition are the pressure of competition in academia, economic incentives from the pharmaceutical industry in the field of biomedicine, and authors own wishes and expectations of recognition. It is necessary to have clear policies and apply more transparency to these activities. There are clear recommendations from the International Committee of Medical Journal Editors on authorships for medical articles. However, authorship disputes are still seen too often with a wide spectrum of reasons. These may reflect ignorance and errors of judgment on one end to intentional misconduct? In this article, we (1) revisit the international guidelines, (2) present and discuss illustrative examples of authorship disputes, and (3) explore possible solutions for authors and editors to avoid and resolve this problem. Solutions stem from the ethical imperative in clinical research, clear rules of engagement among research/authorship teams, and effective governance within research institutions.

Keywords: Authorship standards, authorship, collaboration, collegiality, conflict resolution, editorial, mentoring, multidisciplinary research teams, publication ethics, publishing, research ethics, research integrity, research misconduct, responsible publication

INTRODUCTION

In the academic field, publications are the currency and the door for promotion and academic progress. The amount of publications has become a parameter for qualifying the scientific production and academic merit.^[1] There are clear recommendations from the International Committee of Medical Journal Editors (ICMJE) on authorships for medical articles.^[2] However, the scientific and technological progress that has taken place has brought an ever-growing volume of scientific research, and inflation in coauthorship. Recently, it has been observed that an increasing number of publications have listed authors or coauthors whose participation in the published research was minimal or even nonexistent.^[3] The rising number of new investigational projects in which numerous scientists participate, multi-authorship is inevitable. Articles may be damaged, modified, or altered purposely with erroneous information and plagiarism, against the original author's will.^[4] The unconformities among the research team members may also indicate a tense and stressful work atmosphere that

may interfere with investigational process itself.^[5] The rules and realities of authorship of articles submitted to biomedical journals are discussed in an accompanying article in this issue of the journal.^[6] In this article, we revisit the forms and causes of authorship disputes, their roots and how to resolve them. Solutions stem from the ethical imperative in clinical research, clear rules of engagement among research/authorship teams, and effective governance within research institutions.

METHODS

This is a narrative, non-systematic review with a view to exploring the forms and roots of authorship disputes. A search of the literature was done using an online database

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(PubMed, NLM, USA) with the following search terms in various combinations: authorship, authorship misconduct, authorship ethics, authorship disputes, authorship misconduct. Relevant records were retrieved and reviewed. In addition, a series of case scenarios illustrating potential authorship disputes were presented. The initial draft was developed and further developed by all of the authors via several rounds of multilateral electronic communications. In this article, we will (1) revisit legal, ethical, and intellectual rationale for why appropriate authorship attribution matters, (2) present and discuss illustrative case scenarios of authorship disputes, and (3) explore possible solutions for authors and editors to avoid and resolve authorship disputes.

WHY AUTHORSHIP MATTERS?

Authorship confers credit and has important academic, social, and financial implications. Authorship also implies responsibility and accountability for published work. Therefore, authorship cannot be settled by just a toss of a coin.^[7] Author lists should inform readers about who did a piece of research. If authorship attribution is incorrect, the wrong people may take the credit or the blame. Correct authorship of medical papers is also important because the research and publication process relies on trust. It is strongly argued that, if investigators are prepared to lie about who was truly involved in a research project, why should we believe their findings at all?^[8] Despite the lack of agreement, authorship of journal articles continues to be the basis for academic appointments and is used to measure the research output of departments, and therefore, to determine the future funding.

Not only the ICMJE's recommendations are intended to ensure that contributors who have made substantive intellectual contributions to an article 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.^[2,6] 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 contribution policy. The ICMJE criteria of authorship are widely used by all medical journals including those that distinguish authors from other contributors. The ICMJE recommends that authorship is based on four cardinal criteria.^[2,6] 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 these criteria should be acknowledged. However, 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 two or three. Therefore, all individuals who meet the first criterion should have the opportunity to participate in the review, drafting, and final approval of the manuscript. Contributors, who meet fewer than all four of the above criteria for authorship, should not be listed as authors; however, they should be acknowledged.^[2,6] Although these criteria are widely accepted, they may not be

the practiced in real life. It was demonstrated that criteria for authorship outlined by the ICMJE do not seem to be congruent with the self-identified contributions of researchers.^[9,10]

ILLUSTRATIVE CASE STUDIES

Illustrative case scenarios are presented in Boxes 1-3. To allocate adequate details and discussion fairly, these are presented as one long case [Box 1], two short cases [Box 2], and three "spots diagnosis" [Box 3] following the traditions of "good old" style of clinical examinations and to break the monotony!

The long case [Box 1] exemplifies a fundamental lack of understanding of the ICMJE's criteria and lack of prior agreement about authorship leading to "running away" with data and bending rules. It is usually clinicians who tend to publish work and "ignore or forget" to give due credit to laboratory physicians and scientists' contributions.^[6] The opposite is strange, especially in this case, where the authors (nondiabetologists) are not entitled to manage let alone publish on diabetes or its clinical profiles and risk factors. Strangely, the clinicians involved in patients' care have been excluded even from the acknowledgment section. The claim that the group follows the ICMJE criteria reflects a sheer ignorance with the said rules [Table 1].^[2,6] Indeed, what has happened is precisely the opposite. Potential collaborators here were invited to discuss the project's different aspects with a written commitment that they will be involved as authors. However, soon after data collection process, which is the cardinal stage of all scientific research and where "physician A" contribution was crucial, the rest of the team "ran away with the data." By deliberately excluding the clinician "physician A" from further involvement in the project, they claimed he does not fulfill the ICMJE criteria. This case illustrates a deliberate act of deception with exclusion rather than simple omission. In this manner, ICMJE rules were invoked unfairly. It seems that there is something fundamentally wrong in the scientists' group's perception of collaboration. Did it ever happen to them to ask some basic questions? Why should clinicians supply samples to them? What would be the doctors' motive if he/she are not part of a collaboration? However, the relevant question to the present argument is: Can authorship be disputed? It is unlikely that any editor would enjoy getting involved in these matters, yet how do we protect the authorship rights of core people like clinician "A" and their teams?

The two short cases [Box 2] reflect poor regulation of research in an institution. They also reflect the poor sense of collegiality and research ethics. It would be strongly argued that access should not have been granted by the institutional review board (IRB) and the medical administrator against the concerns of the primary physicians who generated the data and indeed the owner of the intellectual property who is still practicing in the same institution with another colleague who just left to another center in the city (Dr. E). The two clinicians (D and E) are still actively involved in patients' care, data collection, and analysis.

Box 1: Long case of “running away with data” and “bending the authorship rules”

A practicing Clinician A at a tertiary referral center received a phone call from Scientist B working in a local university inviting him to discuss collaboration between the caller's institution and his own busy diabetes center. That call stimulated exchanges of visits to the two centers, discussions of potential, collaboration, and ethical committee approvals. The following 2 years witnessed a busy research exercise of clinical, biochemical, and body composition data collected by a team of nurses and students under the supervision of Clinician A. As a collaborator, Physician A discussed the protocols, submitted IRB application to cover his clinic involvement, and acted as the site coordinator supervising the students and nurses, recruiting participants, and obtaining informed consent and from patients and helping students to get all the required data from the clinics electronic system. Once, the data collection phase of the project was complete, and all the samples were collected, Scientist B and her team disappeared and even stopped responding to phone calls and emails. As a busy physician, Clinician A forgot about this completely only to discover en passes that almost all the data he helped generate were fully published in a major clinical journal with no reference to his or any other colleagues in the clinic. Few years later, Physician A mentioned his previous negative collaboration experience casually to a colleague. It turned out that, this seemed to have happened to others too. This information was leaked back to Scientist B who then attempted to pacify the situation by writing to Clinician A offering to meet and discuss future research and claiming that her institution uses the rules of ICMJE. His reply was this is too little, too late. His only concern that other colleagues should not come to similar situation. His institution is currently putting together a clear policy on collaboration with clear binding terms and condition. *How do we protect the authorship and acknowledgment rights of core people like clinician “A” and their teams?*

Box 2: Two short cases of “whose data is it anyway?”

Short Case A. A young Physician (Dr. C) returns home from a postgraduate fellowship program and want to do research to enhance her career. She looks around within the department and discovers a patient population that can be easily identified and studied to generate a dataset to publish. However, the primary data “imaging and cytology were generated by another Clinician (Dr. D) who is still practicing in the same institution and another colleague who just left to another center in the same city (Dr. E). The two Clinicians (D and E) are still actively involved in patients' care, data collection, and analysis. Despite making their dissatisfaction known, Dr. C continued in data collection, analysis, and presentation in local and international conferences. *What went wrong here? At which point does the system interfere and/or stop Dr. C? Should the IRB have refused to grant approval based on that Dr. C is not the primary care provider in the case?*

Short Case B. A case report is submitted for publication based on a rare presentation, unusual physical examination features and complex radiological findings detected by specialized dynamic investigations. The case report is written by a junior Doctor (Dr. F) and one of his “friendly” supervising consultants (Dr. G) (but not the same physician who was involved in the diagnosis and management of the patient neither during her inpatient care nor after discharge (Dr. H). The journal happens to use an open review process, and both the handling editor and one of the reviewers are familiar with this particular case. *Is it right for junior Doctor Dr. F to submit a case report based on other people's effort in the work up? Should the supervising Consultant Dr. G, or the journal editor, or the IRB be on the alert and act differently?*

Box 3: Spot cases of “sneaky authors”

Spot A. The ignored biochemist: when the core academic value of the case lies in the complex laboratory investigations performed locally and sent away. *Who recognizes the role of the biochemist? Can he/she challenge this conduct? What is the role of the editors?*

Spot B. “The used Masters student” when the student is assigned a supervisor who takes ownership of the data and the work. *What can she do? What is the role of the research director and/or the postgraduate director?*

Spot C. The privileged surgeon's “son” when a surgeon and a team of endocrinologists diagnose and manage a complicated case jointly. One of the endocrinologists finds out that the case is published by the “surgeon's son” who is out of state medical student with no credit or involvement in the case. *What can the primary endocrine provider and the radiologists who performed core radiological tests do?*

Having failed to convince the administrator, would she be able to argue her case of dispute authorship? probably yes but would only stand if she had fully documented communication with the IRB, IT department, and the medical management. Should the supervising consultant (Dr. G), or the journal editor, or the IRB be on the alert and act differently.

The three spots in Box 3 demonstrate three scenarios, the common theme among them is “sneaky behavior” of authors who for no decent reason ignored the contribution of colleagues or a student or trainee (A, B) or favor one involved doctor over another for no clear justification (C). Although the behavior is obviously inappropriate, it may sound so trivial to many that there would be no grounds for disputing. The may cause bitterness rather than pain.

AUTHORSHIP DISPUTES

The “publish or perish” mindset has placed extraordinary pressures on interested clinicians and academic physicians

alike. There are several other drivers for authorship disputes [Table 1]. Authorship controversies have received considerable attention in the medical literature. Although guidelines are available to help determine how attribution should be acknowledged,^[2,6] experiences with disputes associated with authorship continue to exist in everyday life.^[11,12] In most journals, the number of authors per paper published has gradually increased.^[13] The responsibility is multifactorial. The senior author should have resolved the potential conflict. Editors should promote a policy with the aim of creating a true balance between authorship and originality of papers. Numerous examples of irresponsible authorship are associated with the rise in the number of authors per article and with the documented rise in authorship disputes. Multiple coinvestigators have become the norm. For instance, currently nowhere in the system, the author is asked “who does the data belong to” if it's a case report or a case series this should be critical ... if it is a data series then somehow showing ownership should be mandatory?

Table 1: Roots and drivers of authorship disputes

“Publish or Perish” mindset	Interference by poor medical writers and sponsors
Multiauthorship	Abuse of students trainees by postgraduate tutors
Multicenter working.	Poor supervision of junior researchers/ students
Poorly prepared researchers	Unfair competition
Lax institutional traditions and systems	Complacency with ethical principles
Sheer ignorance of authorship principles	Orchestrated unethical behavior

The answer, in the tradition of scientific transparency, is for authors to decide together with their individual contributions and disclose these to their readers. This disclosure is now required by many major general medical journals and has been adopted by the ICMJEs as the standard. In developing regions, shocking practice exists whereby the head of the department name has to be included in every paper as an author!! This is simply because he or she has to countersign the IRB form for the researcher. Another malpractice is for team members (e.g., 7 or 8 people) to work individually on 7 or 8 projects then they share authorship! that way they will nominally increase their research work productivity, although they may have no idea about the content of the other projects.

Misunderstanding and disputes about authorship are commonplace among members of multi/interdisciplinary health research teams. If left unmanaged and unresolved, these conflicts can undermine knowledge sharing and collaboration, obscure accountability for research, and contribute to the incorrect attribution of credit. To mitigate these issues, certain researchers suggest quantitative authorship distributions schemes (e.g., point systems), while others wish to replace or minimize the importance of authorship by using “contributorship” – a system based on authors’ self-reporting contributions. Whereas both methods have advantages, we argue that authorship and contributorship will most likely continue to coexist for multiple ethical and practical reasons. Smith and Master^[14] developed a five-step “best practice” that incorporates the distribution of both contributorship and authorship for multi/interdisciplinary research. This procedure involves continuous dialog, and the use of a detailed contributorship taxonomy ending with a declaration explaining contributorship, which is used to justify authorship order. Institutions can introduce this approach in responsible conduct of research training as it promotes greater fairness, trust, and collegiality among team members and ultimately reduces confusion and facilitates resolution of time-consuming disagreements.

Little guidance is currently available for handling disputes between research mentors and students when working with shared data. The ethical guidelines from the American Psychological Association, the Office of Research Integrity, and the American Educational Research Association were

suggested as a good source to inform common disputes in this area.^[15] Additional insights about the nature of the research relationship can be derived from contract and copyright law. Practice guidelines were proposed to safeguard student and faculty welfare in research collaboration, and recommendations are provided to help prevent and resolve disputes between students and faculty.

Disputes associated with achieving recognition for work done may affect both morale and subsequent resource allocation to medical researchers.^[16,17] Wilcox^[16] assessed authorship disputes brought to the Ombuds Office at an American medical school and affiliated hospitals. Disputes increased from 2.3% to 10.7% in 1996–1997. The number of individual involved increased particularly involving females and expatriates. Hence, institutions should increase enforcement of published authorship standards and place more emphasis on managerial skills for laboratory and research department heads.

PREVENTION OF AUTHORSHIP DISPUTES

Whose responsibility is it?

It is the collective responsibility of the individuals who conduct the work, not the journal, to identify all individuals who meet the criteria and ideally should do so when planning the work, making modifications as appropriate as the work progresses. Journal editors should seek an explanation and signed a statement of agreement for the requested change from all listed authors and from the author to be removed or added. The corresponding author conventionally 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 are properly completed. In addition, the ICMJE recommends that editors send copies of all correspondence to all listed authors. This is particularly readily available with online submission. 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.

Are Journals’ guidelines on authorship enough?

Determining the authorship of scientific papers can be difficult. Less experienced authors may benefit from clear advice about authorship from journals, while both authors and readers would benefit from consistent policies between journals. Some surveys of authors have suggested that there are no universally known or accepted criteria for determining authorship. For instance, Wager^[18] reviewed and analyzed instructions to contributors from a broad sample of biomedical

journals to discover how much guidance they provide about authorship and whether their advice is consistent with one another and with international guidelines in biomedical journals that publish instructions in English on the Internet. Based on examination of the instructions to contributors from 234 biomedical journals, he concluded that journals do not provide consistent guidance about authorship and many editors are therefore may be missing an important opportunity to educate potential contributors and to improve the accuracy, fairness, and transparency of author listing.

Who did what? way forward for defining authorship and contribution

If misunderstanding and disputes about authorship are left unmanaged and unresolved, these conflicts can undermine knowledge sharing and collaboration, obscure accountability for research, and contribute to the incorrect attribution of credit. Publication of new findings and approaches in peer-reviewed journals is fundamental to advancing science. As interprofessional, team-based scientific publication becomes more common; authors need tools to guide collaboration and ethical authorship. To mitigate the authorship dispute issues, certain researchers suggest quantitative authorship distributions schemes (e.g., point systems), while others wish to replace or minimize the importance of authorship by using “contributorship” – a system based on authors’ self-reporting contributions. Whereas both methods have advantages, we argue that authorship and contributorship will most likely continue to coexist for multiple ethical and practical reasons.

In most medical journals, the number of authors per paper published has gradually increased.^[13] Furthermore, Erlen *et al.*^[19] highlighted several issues related to authorship including the assignment of authorship credit, the increased pressures to publish, and the complexity of authorship issues associated with multisite studies. Numerous other examples of irresponsible authorship are associated with the rise in the number of authors per article and with the documented rise in authorship disputes. Multiple coinvestigators have become the norm, and a result is that old concept of authorship – which, when there was but one author, automatically linked credit with accountability – have eroded. There is a lack of adequate guidelines to address issues that may arise from multiple authorship heightens the possibility of disputes. Although multidisciplinary and community-academic partnerships provide fertile ground for publication efforts, disputes about authorship and ownership of data may hinder efforts to disseminate information.

In 2008, a Swiss Academies of Arts and Sciences working group issued a memorandum on scientific integrity and the handling of misconduct in the scientific context, together with a paper setting out principles and procedures concerning integrity in scientific research.^[20,21] Unjustified claims of authorship in scientific publications were referred to as a form of scientific misconduct – a view widely shared in other countries. In the principles and procedures, the main criteria for legitimate authorship are specified, as well as the

associated responsibilities. It is, in fact, not uncommon for disputes about authorship to arise with regard to publications in fields where research is generally conducted by teams rather than individuals. Such disputes may concern not only the question who is or is not to be listed as an author but also, frequently, the precise sequence of names, if the list is to reflect the various authors’ roles and contributions. Subjective assessments of the contributions made by the individual members of a research group may differ substantially. As scientific collaboration – often across national boundaries – is now increasingly common, ensuring appropriate recognition of all parties is a complex matter and, where disagreements arise, it may not be easy to reach a consensus. In addition, customs have changed over the past few decades, for example, the practice of granting “honorary” authorship to an eminent researcher – formerly not unusual – is no longer considered acceptable. It should be borne in mind that the publications list has become by far the most important indicator of a researcher’s scientific performance; for this reason, appropriate authorship credit has become a decisive factor in the careers of young researchers, and it needs to be managed and protected accordingly. At the international and national level, certain practices have, therefore, developed concerning the listing of authors and the obligations of authorship. The Scientific Integrity Committee of the Swiss Academies of Arts and Sciences has collated the relevant principles and regulations and formulated recommendations for authorship in scientific publications. These should help to prevent authorship disputes and offer guidance in the event of conflicts.

Erlen *et al.*^[19] and Ahmed *et al.*^[22] developing a blueprint for the preparation and presentation of papers emanating from a research team’s work early in the project can avoid conflicts and ensure that the efforts of the appropriate individuals are reflected in the publications. Erlen *et al.*^[19] made recommendations to reduce problems that may arise among members of a research team because of authorship issues. In addition, they include the guidelines that their multidisciplinary research team developed early in their project. Ahmed *et al.*^[22] described a process for dealing with authorship in multiprofessional collaborations. It provides an authorship scale, similar to a neonatal Apgar scale, to determine the order of authorship in multiprofessional projects. Key components or activities in the process of authorship are identified, and points are assigned to each component in proportion to an investigator’s level of activity in each component/activity. Scores are summed and can range from 1 to 35 for each author. The order of authorship is then determined by the relative score of each participant. The answer, in the tradition of scientific transparency, is for authors to decide together with their individual contributions and disclose these to their readers. This disclosure is now required by many major general medical journals and has been adopted by the ICMJEs as the standard. Editors should promote a policy with the aim of creating a true balance between authorship and originality of papers. Finally, to maintain multicenter and multidisciplinary collaboration without the risk of conflicts and including

authorship disputes, a paradigm shift from the current system is needed, where enforcement of ethical authorship practices is shifted away from journal editors.

Novel ideas to prevent authorship disputes in multidisciplinary teams

Smith and Master^[14] proposed a five-step “best practice” that incorporates the distribution of both contributorship and authorship for multi/interdisciplinary research. This procedure involves continuous dialog and the use of a detailed contributor’s hip taxonomy ending with a declaration explaining contributorship, which is used to justify authorship order. Institutions can introduce this approach in responsible conduct of research training as it promotes greater fairness, trust, and collegiality among team members and ultimately reduces confusion and facilitates resolution of time-consuming disagreements. Phillippi *et al.*^[23] presented three forms of authorship grids that are based on national and international author recommendations, including guidelines from the ICMJE, the Committee on Publication Ethics, NIH data sharing policies, common reporting guidelines, and GCP standards from the International Conference on Harmonization. The author grids were tailored to quantitative research, qualitative research, and literature synthesis. These customizable grids can be used while planning and executing projects to define each author’s role, responsibilities, and contributions as well as to guide conversations among authors and help avoid misconduct and disputes. The grids also can be submitted to journal editors and published to provide public attribution of author contributions.

CONCLUSIONS

The discussion presented above argues strongly that the expanding publications movements and the competitiveness on getting recognized for these contributions resulted in a risk of bypassing, ignoring, or deliberate breaking of the authorship rules.^[24-30] These have and will continue to result in authorship disputes due to several causes [Table 1]. However, disputes based on the order of authors seem by far the most common form.^[25,26] More in-depth disputes involving differences of opinion on who did what and much more academic, ethical, and legal ramifications may occur.^[24,27,28]

The proliferation of translational research and clinical trials clearly resulted in multiauthorship becoming the norm. With strict criteria for academic promotion and competition for grant money, authorship dispute surfaced as a major academic issue. We believe that the issue is multifaceted and is not the responsibility of one group versus the other. The authors, the laboratory chief, as well as the journal editors have to share the responsibility. Although prevention remains better than cure, however, policies and procedures must be in place to deal promptly and effectively with such incidents if and when they happen by editors, publishers, and academic institutions.^[29,30]

The following recommendations were to decrease the frequency of authorship disputes. Each laboratory should

have written publications policy. Such policy could be strict or fluid, but at minimum guides, the potential authors through the process. The group should determine the sequence of authors and their ranking before writing the manuscript. Journal editors should ask for the signature of all authors before forwarding the manuscript for peer reviewers. Editors should correspond with all authors for major decisions. Online submission systems allow this to happen at all stages despite expecting one single author to be the corresponding author.

In regions new to research and authorship, we believe that learning from experienced authors and getting it right is better than reinventing the wheel. Instruction on the topic should be provided very early onto medical trainees as they learn about ethics and basics of research in medical school and later in postgraduate training. Open discussion on the topic, roles, and responsibilities before the commencement of a research project should become standard. A process should also be outlined to resolve authorship disputes. These measures should help raise awareness with time and encourage researchers to make unbiased decisions on authorship as well as to resolve authorship conflicts in a constructive manner. We also hope that this paper will encourage further work on this critical topic.

Authorship contribution

All authors conceived the idea of the article. SAB prepared the cases and drafted the manuscript. All authors critically and extensively revised the manuscript, and all approved its final version.

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